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Building Organizational Capacity for Enrollment Performance Measurement:

A Mixed Methods Investigation

by

Lynda R. Wallace-Hulecki

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

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Under the Supervision of Professors Ronald Joekel and Alan Seagren

Lincoln, Nebraska

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# Building Organizational Capacity for Enrollment Performance Measurement:

## A Mixed Methods Investigation

Lynda R. Wallace-Hulecki, Ed.D.

University of Nebraska, 2011

Advisors: Ronald Joekel and Alan Seagren

The use of enrollment performance measurement systems can enable the provision of intelligence information to inform strategic decision-making and the effective management of enrollment. A review of the literature indicated that the development of enrollment intelligence systems was a nascent area in which only a select few institutions had successfully developed applications. In addition, no published models or guidelines were found for assessing an organization's capacity for success in developing advanced enrollment performance measurement capabilities linked to enrollment performance improvement.

The purposes of this study were twofold: (a) to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the development of 'advanced' enrollment performance measurement systems at a purposeful sample of 'leading-edge' public North American colleges; and (b) to develop a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management (SEM).

A two-phase, explanatory sequential mixed methods study design was used. Research results indicated that there was no culture value orientation that best

characterized the ‘real’ culture conditions at the time of the initial stages in the system development. However, the ‘ideal’ culture was best characterized as having a leaning toward a collaborative culture. In terms of organizational capacity areas of importance to the success of the initial development of the system, *Strategic Leadership* was identified as ‘most’ important, and *Human Resources* and *Financial Management* were least important. The relative importance of each of the following five other capacity areas was situational to the institutional context: *Organizational Structure and Governance*, *Program Management*, *Inter-organizational Linkages*, *Process Management*, and *Infrastructure*. From this research, 13 foundational guidelines for success were developed that may offer guidance to other institutional leaders in conducting a self-assessment of an organization’s capacity for implementing an advanced enrollment performance measurement system. Implications for use of the guidelines by other institutions are also discussed.

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The quest to attain this doctoral degree has been a lifelong ambition. Throughout my 30-year professional career, I have worked with leaders among leaders, and benefited from both formal and informal learning from my association with them. However, it was not until I had the distinct pleasure to be introduced to Dr. Alan Seagren at the University of Nebraska-Lincoln (UNL) that my journey actually began based upon an intentional education plan. For his wisdom, undying belief in my potential, and guidance as a mentor, advisor, and co-chair of my supervisory committee, I shall always be deeply grateful. I would like to acknowledge deep appreciation to Dr. Ron Joekel, who also co-

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Although the achievement of this doctoral experience represents a significant milestone in my formal academic education, it represents but a step along a continuous path of learning that will continue into the future.

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## **CHAPTER I**

### **INTRODUCTION**

#### **Background**

There were common refrains heard across colleges and universities regardless of institution type, size, or geographic location that warranted researching. What should be the optimal enrollment capacity of an institution? What strategies would increase access and affordability for students? What support systems and associated resources would enhance student persistence, performance, and success? Well before the modern enrollment management era in the first decade of the 21st century, institutions were concerned about achieving enrollment targets, attracting qualified students, and managing resources (Bontrager, 2004a). However, as enrollment issues intensified due to changing environmental conditions resulting from demographic shifts, economic forces, public policy reform, among other market forces, many institutions were challenged to “evolve, adapt, or desist” in response (Swail, 2002, pp. 15-16), and to reconsider traditional models across all aspects of operation. Over time, the concept and function of enrollment management evolved from an ‘admission marketing’ orientation of the mid-1970s, to become broader and more comprehensive in orientation, including the sophisticated use of financial assistance strategies, institutional research, and retention efforts. In the early 1990s, Dolence (1997) introduced the concepts of strategic planning and performance measurement (i.e., key performance indicators) to enrollment management practice. By the late 1990s, the concept matured even further as a consequence of increased requirements for accountability, and in many cases from constrained institutional

resources, to become a sophisticated management function that played a pivotal role in managing the “nexus of revenue, prestige, and diversity” (Bontrager, 2004a, p. 4).

While many institutions had invested in strategic planning and in the development of enrollment plans to enhance student recruitment, marketing, and retention practices, most suffered from an inability to execute the plans (Black, 2008a; Copeland, 2009a). Among the barriers cited in the literature was a lack of actionable intelligence to gain and maintain a competitive advantage through the continuous improvement of strategies. In this context, actionable intelligence referred to having the right information at hand to address a specific situation (Black, 2008a). To be positioned for using actionable intelligence, enrollment services operations must have the capacity to: (a) systematically collect, analyze, and use data; and (b) turn data into meaningful information that is communicated to the right constituents, at the right time, and in the right manner in order to inform strategy formulation, decision-making, and action (Black, 2008a; Norris, 2008). At issue for many institutions was an understanding of how to build the organizational capacity to achieve these ends.

A review of the literature suggested that while a few select public colleges and universities had made laudable advancements in enrollment performance measurement systems by the early 2000s, most institutions deployed only rudimentary approaches to data reporting and analysis and were just beginning to comprehend the need for building their organizational capacity (Goldstein & Katz, 2005; Norris, Baer, Leonard, Pugliese, & Lefrere, 2008). Within the reality of the current day’s rapidly changing higher education environment, enrollment management experts such as Black (2008c), Copeland (2009a), and Norris (2008) stressed that institutions must develop the capacity to leverage

organizational strengths and mitigate risks in order to be successful in managing their enrollment. These experts, among others, viewed the use of enrollment performance measurement systems as a powerful means by which institutions could build understanding of the drivers underlying change, and the need for enrollment outcomes to be a shared responsibility. Performance measurement systems were considered an enabler in the provision of actionable intelligence to inform the strategic development directions of institutions, of policy change, and of organizational performance improvement (Copeland, 2009a).

With the ever-present challenges of managing the nexus between student enrollment, financial imperatives, and academic missions, many institutions were in search of how to optimize their existing organizational capacity (e.g., people, processes, data/information technologies) as a starting point on a continuum of enrollment performance measurement developments (Norris, Baer, & Offerman, 2009). However, there were no published models or guidelines for assessing an organization's capacity for success in developing advanced enrollment performance measurement capabilities linked to enrollment performance improvement.

### **Statement of Purpose**

Two **purposes** guided this explanatory mixed methods study. The first purpose was to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the development of advanced enrollment performance measurement systems at a purposeful sample of leading-edge public North American colleges. The study was designed to obtain the perspectives of the primary individuals who were involved in the development of the systems, including the systems



developers, enrollment managers, and institutional users. By examining the degree to which various organizational factors contributed to and impeded the initial development stages of the system, the organizational factors that were required for success were identified. Therefore, following from the first purpose, a second purpose of the study was to develop a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management (SEM).

### **Research Questions**

The **central research** question guiding this two-phase, explanatory mixed methods study was:

How did the primary developers of 'advanced' enrollment performance measurement systems at a purposeful sample of 'leading-edge' public North American colleges describe the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the system development?

The secondary research questions that guided the quantitative and qualitative research phases respectively, included:

#### ***I. Quantitative Phase (Survey Research)***

1. What **culture value orientations** using the OCAI instrument best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system?
2. What level of importance was each of the following **eight areas of organizational capacity** associated with the IOA model to the success of the initial development of the enrollment performance measurement system:
  - a. Strategic leadership?
  - b. Organizational structure?
  - c. Human resources?
  - d. Financial Management?
  - e. Infrastructure?
  - f. Program management?

- g. Process management?
  - h. Inter-organizational linkages?
3. What were the **defining features of the advanced enrollment performance measurement system**, using the Goldstein and Katz (2005) terminology and relevant survey questions, and profile of the primary systems developers in relation to:
    - a. The alignment of the system objective(s) to the institution's SEM context?
    - b. The primary objectives, scope, and intended users of the system?
    - c. The champion(s) for initiating and implementing the system development project?
    - d. The role of the survey respondent in the systems development project?
    - e. Willingness of survey respondents in participating in the follow-up interview process?

## ***II. Qualitative Phase (Semi-Structured Interviews)***

1. What factors contributed to the "very unbalanced" 'real' culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the *real* and *ideal* culture profiles?
3. What factors contributed to the differences in capacity conditions that were rated as the two *most* important to the success of the initiative at each of the two case study institutions?
4. What factors contributed to the differences in capacity conditions that were rated as the two *least* important to the success of the initiative at each of the two case study institutions?
5. What were the greatest risks to the success of the initiative?
6. In what ways did the differences in drivers for the system development impact the success of the initiative?
7. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
8. How was success defined for the systems development initiative?
9. What was the participant's contribution to the success of the initiative?

### **Overview of Research Approach**

A **two-phase, explanatory sequential mixed methods study design** was used, and involved collecting quantitative data followed by the collection of qualitative data to explain the quantitative data in more depth. In the first phase of the study, a quantitative

survey was constructed and administered at a purposeful sample of five small-to-medium size public North American colleges and universities with undergraduate headcount enrollment between 2,000 and 30,000 (hereinafter referred to as “colleges”). The purpose of the survey was to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial development of the advanced enrollment performance measurement systems. A multi-part survey was administered to institutionally identified representatives from the three constituent groups that comprised the ‘primary developers’ of the system. The analysis of results from the survey research was used to select the case study institutions for inclusion in the qualitative instrumental case study. Stake’s principle of “maximizing what we can learn” (1995, p. 4) was used in selecting the number of case study institutions.

In the second phase of the study, an instrumental case study was conducted at each of two purposefully selected institutions in order to gain a more in-depth understanding of how the predominant culture and capacity factors derived from the survey research contributed to or impeded the success of the initial stages of the development of the system. Interview participants at the selected institutions were drawn from the survey respondent population.

Results from the quantitative survey and qualitative interviews were combined to answer the central research question guiding this study. By examining the degree to which various organizational factors contributed to and impeded the initial development stages of the system, the organizational factors that were required for success were identified. From this analysis, generalizations were drawn from which a set of guidelines were established

for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective SEM.

To inform the research design and methods, an Expert Panel was assembled that was comprised of three highly recognized experts in the theory and practice of SEM, in the application of the Institutional and Organizational Assessment (IOA) theoretical construct for assessing organizational capacity conditions, and in the application of enrollment performance analytics (see *Appendix B.1, Panel of Experts*). The Expert Panel served in an advisory role in the selection of the purposeful sample of institutions, as a 'field test group' for the survey design, as well as in the interpretation of the research results as warranted.

### **Theoretical Frameworks**

Two theoretical frameworks were selected as the foundational constructs for this study based upon their extensive field testing, practical orientation, and flexibility in application. These included:

1. **Construct for the Assessment of Organizational Capacity** — The *Institutional and Organizational Assessment Model* (IOA Model) developed by the International Development Research Centre (IDRC) and Universalia Management Group (Lusthaus, Adrien, Anderson, & Carden, 1999). Within the IOA model, 'organizational capacity' was defined as a function of eight interrelated areas that underlie an organization's performance, and included: strategic leadership, organizational structure, human resources, financial management, infrastructure, program management, process management, and inter-organizational linkages. Permission was granted by the lead author,

Charles Lusthaus, for the use of the IOA model in this study (see *Appendix B.2C, Letters of Permission*).

2. **Construct for the Assessment of Organizational Culture** – The *Organizational Cultural Assessment Instrument* (OCAI) developed by Cameron and Quinn (2006) that was based upon the authors’ theoretical model known as the *Competing Values Framework* (CVF). This empirically tested and validated instrument was used as the basis to establish the culture profile (i.e., culture type, degree of balance, and differences between the ‘real’ and ‘ideal’ scores) of each of the participating institutions in relation to four culture types: Collaborative, Competitive, Creative, and Controlled. Permission was granted by the authors and publisher for the use of the survey in this study (see *Appendix B.2A and B2.D, Letters of Permission*).

In addition, a review of the literature was undertaken to establish standard terminology associated with the topical fields of enrollment performance measurement and ‘advanced’ enrollment performance measurement systems. On the basis of the literature review, select survey questions and terminology from the 2005 study by Goldstein and Katz on ‘academic analytics’ related to the defining features of ‘advanced’ enrollment performance measurement systems were adapted for use in the present study with the permission of the authors (see *Appendix B.2B, Letters of Permission* ).

### **Definition of Terms**

Following from the selected theoretical constructs and review of related literature, the following definition of terms were used in this study:

*Strategic Enrollment Management (SEM)* – A coordinated set of concepts and institution-wide processes designed to achieve and maintain optimum student enrollment and enable fulfillment of students’ educational goals, where ‘optimum’ was defined within the academic context of the institution (adapted from Bontrager, 2004a, 2008; Dolence, 1997).

*Organizational Performance* – The extent to which an organization was efficient in realizing value for money, effective in fulfilling its functional goals, relevant to the needs of key constituents, and financially viable (adapted from Lusthaus, Adrien, Anderson, Carden, & Montalván, 2002).

*Organizational Capacity* – The factors and conditions that enabled an organization to use its resources (human, financial, physical, technology, information) to perform and adapt to change (adapted from Lusthaus et al., 2002).

*Organizational Culture Value Orientation* – The values, beliefs, understandings and ways of thinking that were shared by members of an organization and contributed to or impeded change and improved organizational performance (adapted from Lusthaus et al., 2002).

*Enrollment Performance Metric* – A measurement used to gauge some quantifiable component of an organization’s enrollment performance (e.g., conversion rate of admitted to enrolled students).

*Actionable Intelligence* – The right information to the right people at the right time in the right form to inform tactical decisions.

*Enrollment Performance (Academic) Analytics* – The use of information and technology to support management and decision-making associated with academic

administration, enrollment management, and finance within the higher education context; and that encompassed a variety of activities including reporting, predictive modeling, what-if analysis, and the use of information to automatically trigger a business process (adapted from Goldstein & Katz, 2005). For the purposes of this study, enrollment performance analytics and academic analytics were used as inter-changeable terms.

*Enrollment Performance Measurement System* – A sophisticated software application designed to fulfill the analytical requirements associated with the management of enrollment performance linked to an organization’s enrollment management goals and strategies associated with student access, affordability, retention, and success (adapted from Norris & Leonard, 2008). These systems enabled the generation, reporting, and dissemination of enrollment performance metrics and decision-support analytics linked to strategies for improving operational performance in enrollment-related operations (e.g., marketing, recruitment, admissions, student advising), and for formulating enrollment goals and strategies.

*A ‘Leading-Edge’ Institution* – The characterization of a ‘leading edge’ institution referred to those having developed, implemented, and demonstrated systematic use of a higher order (i.e., advanced) suite of analytic reporting applications, involving at least three of the following five types of applications defined by Goldstein and Katz (2005), including: (a) extraction and reporting of transaction data; (b) analysis and monitoring of operational performance; (c) *what-if* decision support (e.g., scenario building); (d) predictive modeling and simulation; and (e) automatically triggered business process (e.g., early alert systems).

*Primary Developers of the System* – For purposes of this study, the primary developers of ‘advanced’ enrollment performance measurement systems included three constituent groups: (a) the systems developers (technical experts), (b) enrollment managers (functional experts), and (c) institutional users (decision-makers).

### **Validity and Reliability**

Two primary modes of data collection were used in this two-phase study. Phase I involved a structured three-part web-based survey. The quantitative survey was comprised of three sections. *Section One* consisted of the proprietary and extensively field-tested and validated ‘OCAI culture’ survey developed by Cameron and Quinn (2006). *Sections Two and Three* were specifically developed for purposes of this study, and consisted of a series of questions on organizational capacity conditions based upon the IOA model and SEM literature; and select questions on the features of the enrollment performance measurement system adapted from the Goldstein and Katz (2005) study on academic analytics. Therefore, appropriate validity and reliability testing was required in relation to the protocols for administering the multi-part survey, the custom developed question items associated with *Sections Two and Three* of the survey, as well as the qualitative interview questions and protocols for conducting the interview process.

Validity testing of the quantitative survey instrument involved both ‘content’ and ‘face’ validity checking. Content validity checking involved: (a) a meta review of literature, and (b) a review by the Panel of Experts on the relevance of the survey content, as well as on its flow and the interpretability of questions. Face validity checking involved a pilot test of all three sections of the survey with one institution that shared similar attributes to the institutions included in the study. In addition, Cronbach's alpha was used



to test the ‘internal consistency’ (i.e., degree of homogeneity) among the survey question items related to organizational capacity conditions that were developed based upon the literature review. Because of the few numbers of individuals included in the pilot study, meaningful results could not be obtained to test reliability in the piloting of the survey. Therefore, the statistical test was performed only on the actual survey data.

Validity testing of the interview questions and protocols included: (a) ‘member checking’ of interview transcripts with participants, (b) the use of ‘rich descriptions’ of the informants’ experience through verbatim quotes where appropriate, (c) ‘triangulation’ in the interpretation of findings from the survey and interview processes, and (d) a review of previous literature. In addition, interview questions and protocols were pilot tested at one institution with select individuals who shared the attributes of the interview participants.

## **Delimitations and Limitations**

### ***Delimitations***

The scope of this study was limited to an investigation of the elements of ‘culture value orientations’ and ‘organizational capacity’ conditions as defined within the contexts of the two selected theoretical constructs (IOA organizational capacity model, and OCAI culture survey). While the IOA model incorporated two other components associated with change in organizations, namely the ‘external environment’ and ‘organizational performance,’ these components were only addressed to the extent that associated elements emerged in the research as important contributors or impediments to the success of the initial stages in the system development project and/or in its implementation. Although internal performance and external environmental factors may motivate change to occur, this study was focused on understanding what conditions were important in

advancing a change process once the decision to implement the enrollment performance measurement system was taken.

The study did not assess the ‘effectiveness’ of the enrollment performance measurement system in contributing to the institution’s SEM plan or planning process. It was assumed that the continued investment in retaining the enrollment performance measurement system gave testimony to the fact that it had value-adding benefits.

### *Limitations*

#### **Quantitative Research**

The quantitative research was limited to a **purposeful sample** of small-to-medium public North American colleges and universities with an enrollment between 2,000 and 30,000 students. Caution should be exercised in applying this study and the interpretation of findings to other sectors of higher education and to other cultural contexts. The **participation rate** of invited institutions was 27.8%, representing only 5 of the 18 institutions that constituted the purposeful sample. Participating institutions included representation from two-year and four-year colleges with undergraduate headcount enrollment of between 20,000-30,000 and less than 5,000. The study did not include representation from institutions with an enrollment in the middle range between 5,000 and 20,000. The **selection of survey representatives** and representation among the 3 constituent groups (systems developers, enrollment managers, institutional users) from each institution included in the study was left to the discretion of the institution through communication with the president. The process of selection may have some inherent bias within each institutional context. In addition, the self-identification of respondents by constituent group from one institution did not match the list submitted via the president of

the institution. This limited the ability to analyze survey results by constituent group. Given the **timing of the study** and the significant employment churn that occurs in higher education, it is possible that some of the most informed institutional representatives were not available for inclusion in the study. Finally, this study was **conducted retrospectively**. The potential for selective or limited recall was an inherent risk.

### **Qualitative Research**

The risk intrinsic to an instrumental case study was that the case would not be **representative of the larger population** — in this context, other North American colleges and universities that had developed an advanced enrollment performance measurement system. The primary factors limiting the research to two case study institutions were primarily cost and time. The **generalizability** of results from case study research was another inherent risk. According to Stake (1995), “[T]he real business of case study is particularization not generalization” (p. 8). With that said, Stake also noted that these types of studies delve in-depth into particular situations that allow certain generalizations to be drawn. The mixed methods approach to this study was grounded in the potential to draw certain generalizations from the combined results. Another related limitation associated with qualitative research was **researcher bias**. McMillan cautioned that “[Q]ualitative approaches are characterized by the assumption that the researcher’s biases and perspectives must be understood and used in interpreting findings, whereas in a quantitative study researcher bias is a threat to internal validity” (McMillan, 2004, p. 258).

In order to mitigate the limitations associated with both a single case study and the potential for researcher bias, a number of strategies were employed:

1. a mixed methods research design was employed using a quantitative study of multiple institutions as the basis for identifying predominant themes;
2. the criteria used for selection of the institutions included in the survey research were derived from the literature, and subsequently substantiated by the Panel of Experts;
3. in the qualitative phase, member checking was undertaken with interview participants, whereby individuals interviewed were afforded the opportunity to verify interview transcripts for accuracy; and
4. triangulation and pattern matching techniques were used to verify explanatory themes emerging from the qualitative interviews.

### **Significance of the Research**

With the ever-present challenges of managing the nexus between student enrollment, financial imperatives, and academic missions, many institutions were in search of how to optimize their existing organizational capacity (e.g., people, processes, data/information technologies) to build the enrollment performance intelligence systems to support effective SEM planning. There were no published models or guidelines for assessing an organization's capacity for success in developing advanced enrollment performance measurement capabilities linked to enrollment performance improvement. Therefore, the significance of this study was twofold: (a) the study contributed to the literature on organizational capacity for change associated with the evolving discipline of SEM and nascent field of enrollment performance measurement; and (b) the study resulted in the establishment of a set of guidelines for use by other colleges and universities in conducting a self-assessment of their capacity for building an advanced enrollment

performance measurement system to support effective SEM planning. No such tool existed.

### **Dissertation Organization**

The dissertation is organized into five chapters. In *Chapter One*, information is presented on the background to the research, a statement of the problem, research questions, a description of the theoretical constructs underlying the research, and an overview of the research methods. *Chapter Two* consists of a literature review focused on strategic enrollment management as a concept, a process, and a performance management system. Normally, a literature review would include relevant studies that utilized similar evaluation instruments; however, in this instance, no existing validated instrument could be found specific to the purposes of this study. Therefore, this chapter provides an overview of the theoretical constructs and foundational research that were reviewed and were used to inform the design of the study.

A detailed description of the research design and procedures used in this study is the basis for *Chapter Three*. This chapter includes a schematic diagram and explanation of the two-phase explanatory sequential mixed methods research design, including: research methods associated with the selection of the purposeful sample, sampling plan, and data collection strategy; pilot study results; implementation plan; data analysis approach; verification procedures; researcher bias; and ethical considerations. In *Chapter Four*, the findings from the quantitative and qualitative phases of the research are presented. Patterns of study participant understandings and behaviors that contributed to and impeded valid and reliable findings are described in answer to the central research question guiding this study. By examining the degree to which various organizational factors contributed to and

impeded the initial development stages of the system, the organizational factors that were required for success were identified. The chapter concludes with a summary of the ‘mixed methods’ findings from which a set of guiding principles were derived to address the second purpose of this study, which was to establish a set of guidelines for conducting a self-assessment of an organization’s capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management. In the final chapter, *Chapter Five*, a summary of the research results are presented and discussed in relation to the theories and models framing this study, implications for practice are also discussed, along with related conclusions and recommendations for further research.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **Introduction**

Two purposes guided this explanatory mixed methods study. The first purpose was to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the development of advanced enrollment performance measurement systems at a purposeful sample of leading-edge public North American colleges. The second purpose of the study was to develop a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management (SEM). Normally a literature review would include relevant studies that utilized similar evaluation instruments. However, no such studies were identified because there was no existing validated instrument to assess an organization's capacity for change in relation to enrollment performance measurement. Therefore, the review of the literature was designed to guide the research design and question development.

This chapter begins with a literature review focused on SEM as a concept, a process, and a performance management system. A brief account of the historical evolution of SEM is presented followed by a review of literature associated with the theoretical underpinnings of SEM. In relation to the latter, the relevance of SEM to key business concepts is highlighted, including SEM as a function of systems thinking, as an organizational information conduit, as a conceptual framework for strategic planning, as a performance-based management system, and as a process of culture change. This information provided the background and rationale for the study by establishing the

maturing nature of the profession, the relationship of SEM to both strategic decision-making and operations performance management, and the reliance of successful SEM practices on the capacity of organizations to develop performance measurement systems that provide required intelligence information. By examining what many SEM experts associated with the theory behind the practice of SEM in its most sophisticated manifestation, core principles of effective SEM practice were deduced from the literature. The core principles were used as the basis for survey question development in this study.

This chapter also includes a review of the theoretical constructs and foundational research that were reviewed and used to inform the design of the study in relation to: (a) the assessment of organizational capacity for change, (b) the assessment of organizational culture, as well as (c) developments in enrollment performance measurement systems and performance analytics. Rationale is presented for the selection of the theoretical constructs and foundational research used to frame this study.

### **Strategic Enrollment Management as an Evolving Field of Practice**

The field of Strategic Enrollment Management (SEM) was considered by many to be one of the most significant recent developments in higher education administration. By most accounts, the concept and function of SEM had its beginnings within the United States (U.S.) in the early 1970s – a period that coincided with a decline in traditional-aged high school students. In the wake of shifting demographics, and changing economic, social, and competitive environmental forces during the 1970s and into the 1980s, many U.S. colleges and universities were under significant pressure to rethink their missions, shift their emphases to less traditional student segments, adopt more business acumen in student recruitment and marketing, and/or focus on effecting improvements in student



retention and completion (Bontrager, 2008; Hossler, 2004, 2008). During the same period of time, SEM evolved in concept and process to become an organizing construct applied by a growing number of institutions to strategically influence the alignment of these three imperatives (Bontrager, 2008, p. 19). Within the Canadian context, it was not until the mid-1990s that SEM emerged as a professional field of practice in response to similar environmental forces. According to Hossler (2008), post-secondary institutions were likely to continue to face unprecedented challenges in managing the nexus between student enrollment, financial imperatives, and academic mission (p. 3) into the future.

An examination of the literature suggested that there was no universal definition of SEM. In effect, the definition evolved in tandem with the sophistication of the professional field of practice. Since the 1980s, SEM has been a maturing industry. According to Black (2003e), SEM was an eclectic patchwork of the best practices found in business and industry that had been adapted to the academic context. On the strength of the literature review conducted for purposes of this research, Black's assertion was substantiated, as illustrated below:

- Backdating to the 1980s, SEM was referred to as a concept and process that was “**organized by strategic planning**” and “**supported by institutional research**” (Hossler, 1986; Hossler, Bean, & Associates, 1990).
- By the early 1990s, with the infusion of strategic thinking principles into enrollment management practice, Dolence (1997) introduced the notion of the codependence between SEM and the academic enterprise, as well as **performance measurement** through the application of key performance indicators (KPIs) to enrollment management practice.

- Throughout its evolution to date, SEM was conceptualized as a process of **culture change** (Henderson, 2001; Hossler, 1986; Hossler et al., 1990; Hossler & Kemerer, 1986; Kemer, Baldrige, & Green, 1982; Whiteside, 2001). By extension, SEM had also been referred to as a tool by which an organization of learning was transformed into a **learning organization** that continuously improved performance based upon what had been learned through experience (Dolence, 1997; Senge, 1990).
- From an operational perspective, SEM was characterized as “**an inherently goal-oriented process**” (Kalsbeek, 2006) that was manifested within one of four primary “operational orientations”:
  1. *administrative orientation* – through the coordination and integration of enrollment-related processes;
  2. *academic orientation* – as a function of the co-curricular processes that supported student persistence, performance and academic success;
  3. *market-centred orientation* –as a function that elevated an institution’s competitiveness; and
  4. *student-focused orientation* –whereby SEM was a function of the student experience and engagement in the educational process from the initial point of contact with the institution all through the individual’s educational experience.

Therefore, it was not surprising that the concept and practice of SEM had been somewhat elusive in nature. On the strength of the literature review, three distinct conceptualizations of SEM were drawn:

- *Philosophically* — as the study of global variables that affected student enrollment and retention (Kisling & Riggs, 2004).
- *Strategically* — as a comprehensive process designed to help an institution achieve and maintain the optimum recruitment, retention, and graduation rates of students, where ‘optimum’ was defined within the academic context of the institution (Dolence, 1997).
- *Operationally* — as an approach to operationalizing an institution’s strategic plan based upon a “cradle to endowment mentality,” which started with student recruitment and initial student inquiry, and extended throughout the student academic experience to the point when the individual became a contributing alumni (Henderson, 2001).

More recently, Bontrager (2004a, 2008) suggested a definition that contextualized the management of enrollment as a manifestation of institutional mission. He defined SEM as “a coordinated set of concepts and processes that enables fulfillment of institutional mission and students’ educational goals” (2008, p. 18). In combination, the definitions presented by Dolence (1997) and Bontrager characterized SEM as a manifestation of institutional mission that was grounded in both strategic and operational performance management. Therefore, for the purposes of this study, a hybrid definition of SEM was established as **a coordinated set of concepts and institution-wide processes designed to achieve and maintain optimum student enrollment and enable fulfillment of students’**

**educational goals, where ‘optimum’ was defined within the academic context of the institution.**

### *SEM as a Function of Systems Thinking*

Systems thinking was a term popularized by Peter Senge in his seminal book, *The Fifth Discipline* (1990). The term referred to a holistic approach to understanding reality that emphasized the relationships among all parts that made up and interacted with a system, rather than the parts themselves. In its application, systems thinking was a management technique for solving complex problems and for developing strategies to achieve strategic goals.

Higher education institutions existed within an increasingly global and competitive environment. With the advent of rising costs and declining funding within a social policy context of ‘access to education,’ many colleges and universities had been challenged to “evolve, adapt, or desist” in response (Swail, 2002, pp. 15-16), and to reconsider traditional models across all aspects of operation. Therefore, higher education organizations functioned as ‘open systems’ that continuously interacted with their internal and external environments. As Swail (2002) observed, to succeed within a highly competitive and changing environmental conditions, institutions by necessity had to infuse strategic thinking into institutional planning processes.

Hossler and Hoeszee (2001) were the first to write about the application of systems theory to the discipline of enrollment management. The process of SEM had been conceptualized by Dolence (1997), Black (2008c), among others, as a component of strategic planning that brought focus to the planning effort through the application of systems thinking. In a 2008 whitepaper titled, *Enrollment Management: A Systems*

*Approach*, Black asserted that in its broadest terms, SEM was a function of systems thinking, as “[S]uccessful enrollment enterprises look holistically and strategically at enrollment dynamics as well as the interplay between those dynamics” (Black, 2008c).

### ***SEM as an Organizational Information Conduit***

As enrollment management evolved as a function and become more systematic over time, so had the structures, systems, and practices that supported it. The process of enrollment management and the mandate of enrollment managers by definition brought the institution into alignment with its changing environmental context through processes that yielded campus-wide cooperation and coordination. While the literature suggested that there was no apparent single structure that created the ideal organizational conditions for SEM, many notable experts agreed that enrollment management operations — which often included the offices of student recruitment, admissions, registrar, financial aid, among others — should be designed to increase the institution’s capacity in responding to rapid change, and in positively influencing student’s decisions to enroll, persist, and graduate (Huddleston, in Black, 2001).

According to Black (2008c), Hossler and Hoeszee (2001), among others, optimal enrollment outcomes were more likely when enrollment management organizations served as a **conduit for information** to and from other administrative and academic units, and **orchestrated institutional enrollment activities** in collaboration with other campus stakeholders who were content or process owners. As an **information conduit**, enrollment management organizations provided strategic and tactical intelligence to enhance the institution’s competitiveness and success in serving the evolving needs of learners. Within this context, enrollment offices functioned as the primary point of data collection on students

and enrollment, and enrollment leaders became among the most accountable positions on campus (Black, 2008c). Yet the measurement systems to support the work of SEM leaders often seriously lagged in development (Copeland, 2009a). The literature suggested that although most institutions were awash with data, relatively few had developed the necessary infrastructure to collect, analyze, and act on effectiveness measures and metrics (Black, 2008a; Norris, 2008; Norris & Leonard, 2008).

### ***SEM as a Conceptual Framework for Strategic Planning***

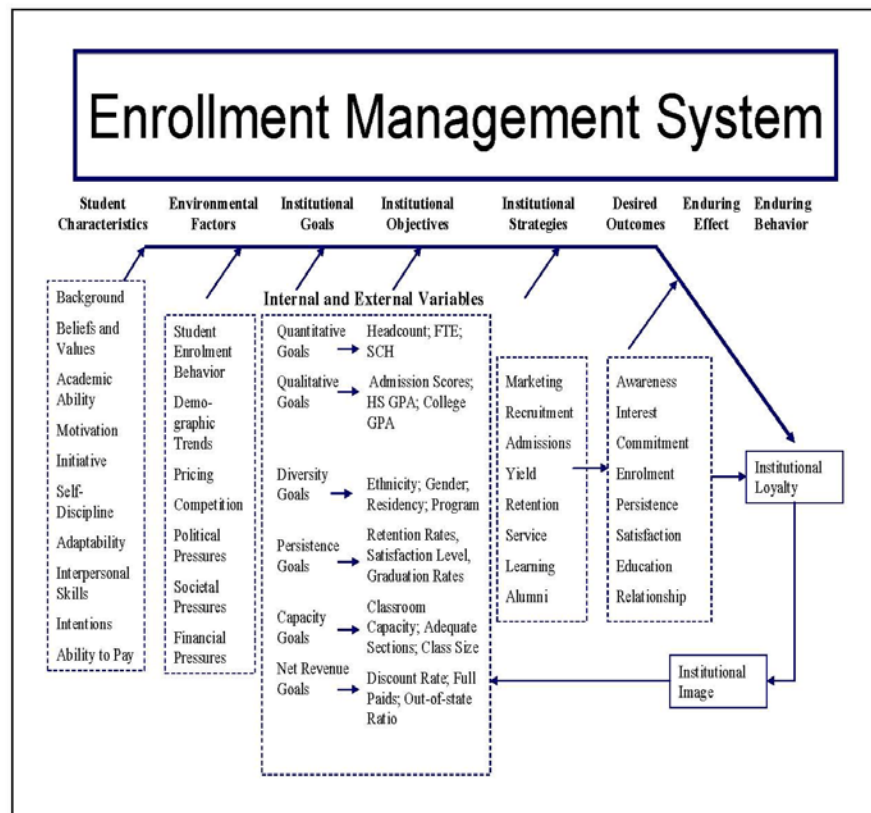
Kotler and Fox (1985) defined strategic planning as “the process of developing and maintaining a strategic fit between the institution’s goals and capabilities and its changing market” (p. 73). Not unlike the private sector, public and nonprofit organizations that wanted to survive, prosper, and do good, had to respond to the changing environmental context (Bryson, 2004). In times of rapid change, the literature suggested that ‘incremental’ changes, such as organizational restructuring, reducing costs, or downsizing the workforce, were seldom sufficient. Rather, ‘transformational’ changes were needed, which meant changing the way organizations approached and responded to the changing environmental context (Horton et al., 2003).

In recent decades, the literature had exploded with new strands of research in order to understand the dynamics associated with ‘high performing’ organizations. Studies abounded in an effort to define the characteristics associated with organizational excellence, and to understand the relationship between organizational performance and the conditions associated with performance improvement, such as leadership styles, change management approaches, applications of systems theory and strategic management, service orientation, quality improvement processes, performance measurement, to name a

few. Much of this research was grounded in the practices of the private sector. However, more recently there was growing attention given to these concepts within the public and nonprofit sectors, and notably within higher education for the reasons elucidated above.

A strategic focus can help to frame the choices that need to be made in determining for whom, how, and with whom an organization serves to most optimally create social value (Institute for Strategy and Competitiveness, website, n.d.; Porter & Kramer, 2006). SEM became a tool that aided organizations in bringing such strategic focus. As stated by Massa (2001), “[N]ot all strategic plans address enrollment management, but enrollment management cannot work without strategic planning” (p. 152). To survive within an increasingly complex higher education environment, public colleges and universities were required to mimic the private sector in their approaches to student recruitment and marketing in order to increase market share of students within their service regions, and to secure greater portions of revenue from student enrollment (Hossler & Hoezee, 2001). Within an ever-expanding and diverse system of higher education providers (private, for-profits, public, virtual), many institutions were challenged by a more competitive environment (Swail, 2002). Opportunities to diversify the enrollment mix were pursued by many institutions largely by increasing access for the traditionally under-served, which represented the largest growing segment of the population in many jurisdictions, while finding new ways to ‘do more with less’ as a consequence of changes in government funding policies. As a result, institutional administrators by necessity infused a more strategic and systems approach to enrollment planning, with particular attention on the relationships between enrollment goals, academic development directions, and resource management decisions (Hossler, 2008; Hossler & Hoezee, 2001). Viewed from a systems

perspective, the *Enrollment Management System* depicted by Black (2008c) in *Figure 1* illustrated the complex inter-relationships underlying the strategic dimensions of SEM planning and the broader dimensions of enrollment performance measurement.



Source: Black (2008c)

*Figure 1.* Enrollment management system.

The *Enrollment Management System* depicted a “systems thinking archetype” through which colleges and universities could view interrelationships and consider processes of systemic change. In his description of SEM from a systems perspective, Black asserted that “[B]y analyzing enrollment patterns through a systems thinking



framework, enrollment managers and institutional leaders could more accurately identify the precise points of leverage necessary to successfully impact outcomes” (¶ 2). The holistic approach to enrollment management presented a construct through which institutions could strategically focus on enrollment dynamics. Applying a systems perspective, institutional enrollment **strategies** and associated **desired outcomes** for enrollment operations such as marketing, recruitment, admissions, among others, brought into balance **student characteristics** (e.g., background, motivation) and external **environmental factors** (e.g., student enrollment behaviour, demographic trends, pricing, competition, etc.) with internal conditions including **institutional goals and objectives** (e.g., enrollment growth, net revenues, student diversity, academic program profile) and **institutional capacity conditions** (e.g., space, faculty and staff resources and capabilities, IT, curriculum strengths).

### *SEM as a Performance-based Management System*

The successful implementation of a strategic change effort such as that depicted in *Figure 1* must involve ongoing ‘strategic management’ of strategy implementation to account for likely changes in circumstances, to ensure that strategies continued to create public value, and to inform ongoing planning and change management processes (Bryson, 2004, p. 264). According to Bryson, many organizations within the public and not-for-profit have determined the need to invest in the development and maintenance of what the literature terms ‘strategic management systems’ or ‘performance management systems’ with a view to maximizing public value (p. 266). These types of systems took various forms and were often defined by an organization’s required ‘business intelligence’ to

support strategic planning, results-based budgeting, performance management, and strategic measurement and evaluation.

At the strategic level, business intelligence systems create *strategic intelligence* — that is, information about the environmental forces (internal and external) required to inform institutional competitive positioning, innovation, and policy; whereas at the operational level, business intelligence systems create *actionable intelligence*— that is, the right information to the right people at the right time in the right form — to inform tactical decisions. It should be mentioned that discussion of the importance of performance measurement systems was not without controversy in the literature. Some experts claimed that the process of strategy formulation could be paralyzed by an over-reliance on objective information, if not balanced by strategic thinking, action, and learning (Bryson, 2004; Mintzberg, 1987, 2009). In this regard, Bryson (2004) argued that performance management systems required an investment not only in the technical aspects of developing the system capabilities, but also in building a culture focused on outstanding performance in their application (p. 293).

There was a rich and extensive body of literature on the importance of performance measurement systems to the high performance of organizations. Within the higher education context, the orientation of business intelligence systems had to reflect all the traditional aspects of the performance of the enterprise, but also the academic issues and processes such as admissions, financial aid, academic advising, and the learning process (Norris & Leonard, 2008). Perhaps among the most notable examples of a performance measurement system designed to bring strategic fit between the internal operations of an organization and its strategic development goals was the ‘Balanced Scorecard’ — a system

first conceptualized and introduced by Kaplan and Norton in 1992. In application, a Balanced Scorecard measurement system brought into balance traditional performance measures that were tangible to an organization (e.g., financial performance, business process performance), with less tangible factors (e.g., customer relations, innovation, and organizational learning) that impacted organizational performance and realization of financial imperatives.

Kalsbeek (2006) maintained that as an inherently a goal-oriented process, effective SEM practice must be tied to accountability and the availability of key performance indicators (i.e., measures of performance outcomes such as 2% enrollment growth) and associated enrollment performance metrics (i.e., measurement of performance such as ‘acceptance rate of admissions offers’) in order to gauge the effectiveness and efficiency of strategies and tactics introduced. At the strategic level, SEM planning processes may be used to effectively inform institutional competitive positioning, policy, program innovation, and resource management decisions. To illustrate, *Table 1* provides an example a strategy development framework associated with an institution’s market positioning that is linked to key performance indicators (KPIs) and associated performance metrics. According to Black (2008a), using this example, strategies would be developed to **increase market share** for each metric listed. These strategies would likely be related to a combination of marketing and recruitment initiatives, and for metrics 3–9 also might include scheduling and program development strategies.

Applied at the operational level, the strategy framework could be used to operationalize the strategic directions through the development and implementation of strategies in enrollment operations related to student recruitment, marketing, advising,

Table 1

*SEM Strategy Framework Linked to KPIs and Performance Metrics*

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Strategic Opportunity: Increase Market Share

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KPI #1: Increase Headcount

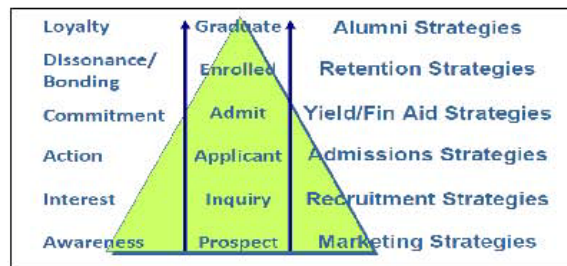
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Metrics	<ul style="list-style-type: none"> <li>• % increase of recent HS grads from previous years</li> <li>• Market share by high school</li> <li>• % increase of adult learners (first-time freshmen) from previous years</li> <li>• % increase of adult learners (transfers) from previous years</li> <li>• % increase of online learners from previous years</li> <li>• % increase of dual enrollment from previous years</li> <li>• % of full-time vs. part-time enrollment</li> <li>• Enrollment between credit and non-credit courses</li> <li>• Enrollment in undersubscribed programs</li> </ul>
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Source: Black. (2008a)

program development among others. A more commonly used framework for enrollment performance management is the *Cradle to Endowment Enrollment Funnel* presented in *Figure 2*. This enrollment funnel framework depicts the traditional view of the student life cycle and the systematic processes by which ‘prospective’ students move along the life cycle chain to become ‘enrolled’ students and ultimately ‘contributing alumni.’



Source: Black (n.d.)

*Figure 2.* Cradle to endowment enrollment funnel.

Operationally-based enrollment strategies could be defined for each stage of the enrollment funnel with a view to influencing the volume, quality, diversity, profile, and movement along the student life cycle chain. SEM strategies could be implemented by organizational units responsible for the associated enrollment functions, typically including: (a) marketing, (b) recruitment, (c) admissions, (d) student service, (e) student retention, (f) student affinity/advancement, (g) financial aid, and (h) resource management. Enrollment management becomes a performance-based management process when each strategy is linked to measurable goals (KPIs) and associated performance metrics that are benchmarked against internal or external standards.

The aforementioned types of performance metrics are based primarily upon a single data source (e.g., application dynamics associated with data from the admissions, registration activities). While information from single data sources may be essential to effective enrollment management practice, institutions increasingly seek more sophisticated decision support information that are based upon data from multiple sources and that utilize advanced statistical modeling techniques to inform scenario planning and strategic decisions associated with resource allocations. This type of information requires highly complex data modeling that connects enrollment with associated costs attributable to processes that effect change in enrollment numbers, quality, diversity, and mix as well as in the decision processes of students.

Results from the literature review suggested that while many institutions had invested in strategic planning and in the development of enrollment plans to enhance student recruitment, marketing, and retention practices, many suffered from an inability to execute the plans large due to a lack of the requisite intelligence information (Black,

2008a; Copeland, 2009a). The literature also suggested that while many institutions operated with the goal of increasing enrollment, few had the ability to define “optimum enrollment capacity” in order to gauge how best to allocate resources to realize optimal tuition revenues (Campbell & Oblinger, 2007; Goldstein & Katz, 2005). However, a few institutions were noted within the literature as ‘leading edge’ in the development of more robust applications of enrollment performance measurement capabilities, sometimes referred to as *academic analytics* (Campbell & Oblinger, 2007; Goldstein & Katz, 2005). For example, some institutions brought data together from multiple sources to help faculty and advisors determine which students faced academic difficulty in order to proactively apply interventions to help students succeed. Results from a study on academic analytics conducted by Goldstein and Katz (2005) at some 380 higher education institutions established a typology of five types of academic analytic reporting applications, including:

1. extraction and reporting of transaction data
2. analysis and monitoring of operational performance
3. what-if decision support
4. predictive modeling and simulation, and
5. automatically triggered business process.

Results from their study suggested the following:

- these types of systems developments were driven largely by the needs of decision makers;
- the level of sophistication of the systems remained at the rudimentary level (i.e., level #1) for most institutions;
- among the factors impacting future developments, the top three were competing IT priorities, lack of resources, and cultural resistance;
- the initiative to create the capacity to develop these systems came from IT, followed by institutional research (IR) and the finance office;
- the most active users of the systems tended to be Finance, IR and Admissions offices, and the least active users of these systems were the academic community; and
- improved outcomes resulting from the use of these systems was greatest in relation to admissions and enrollment management.

The authors observed that while the institutions that used advanced tools remained small in number, “they potentially represent the way many institutions will be using their academic analytical tools in the future” (Goldstein & Katz, 2005, p. 65). The authors posited that the use of analytics within public institutions would grow as competition for students – especially under-represented populations- grew. They advanced the argument that while the technical capacity for institutions to use these tools was within reach, the primary constraints noted were in the **cultures** of institutions, and behaviors and predispositions of **institutional leaders** (p. 103).

According to Norris and Leonard (2008), “[T]he first examples of true analytic applications appeared in commercial settings in the late 1990’s and their sophistication grew steadily” (p. 4). The term ‘analytics’ emerged in subsequent years as new information technologies allowed businesses to collect and analyze vast amounts of data (Campbell & Oblinger, 2007, p. 3). Campbell and Oblinger (2007) observed in their research that, “in higher education, admissions was among the first units to apply analytics, using formulas to narrow the pool of applicants based on information from standardized test scores, high school transcripts, and other data sources” (p. 3). In an article by Campell, DeBlois, and Oblinger (2007) titled *Academic Analytics: A New Tool for a New Era*, the authors noted the growing application of analytics in the areas of enrollment management and fund-raising, and indicated that “[W]ith the increased concern for accountability, academic analytics had the potential to create actionable intelligence to improve teaching, learning, and student success” (p. 41). In addition, Brown (2008) and Dolence (1997) observed that given the increasing emphasis on organizational performance efficiency, effectiveness, and accountability, there was increasing attention given to leveraging institutional resources in

the forms of people, processes, and technology to achieve these results, while not sacrificing quality in the learning environment.

These experts, among others, agreed that advanced systems of enrollment performance measurement were in their infancy in higher education. They argued that the development of enrollment intelligence systems was a nascent area in which a select few institutions had successfully developed applications related to the use of predictive modeling and statistical/econometric analytics to understand the complex factors that influence college choice in the recruitment and marketing processes, and student persistence and academic success through “early alert” systems applications. Often these types of enrollment performance measurement systems were defined in accordance with accreditation and accountability requirements (both internal and external), and served to monitor performance progress relative to established goals (both strategic and operational) and/or industry standard performance benchmarks.

Davenport and Harris (2007) in their book *Competing on Analytics*, identified a typology of query, reporting, and analytics capabilities that organizations could use to improve performance and competitiveness (In Norris, 2008). Norris demonstrated how these capabilities could be applied to SEM, as shown in *Figure 3*.

According to Norris, the development and implementation of such intelligence systems involved people, process, technology, and data. The development of intelligence systems required the involvement of operations experts from enrollment operations, finance, among other operational areas in conjunction with institutional research analysts, information systems specialists, and institutional users.





Source: Norris (2008)

Figure 3. Application of Davenport and Harris' (2007) analytics typology to SEM.

### ***SEM as a Process of Culture Change***

The literature was replete with references to SEM as a process of change (Henderson, 2001; Hossler, 1986; Hossler et al., 1990; Hossler & Kemerer, 1986; Kemer et al., 1982; Whiteside, 2001). Hossler (1986) was among the first proponents of enrollment management to suggest that SEM organizations developed based upon the urgency of the need for change. Whiteside (2001) advanced the view that implementing SEM techniques required an understanding of the dynamics underlying change. According to Whiteside, understanding what needed to be done was not sufficient to be successful. “Effective enrollment management depends upon two things: doing the right things and doing things right” (Whiteside, 2001, p. 76).

More recently, Norris et al. (2008) articulated the codependence between the development and application of more advanced enrollment performance measurement

systems and culture change. According to Norris and his colleagues, the greatest challenges to adopting an ‘evidence-based culture’ in which research and data were effectively used to inform operational and strategic decisions was changing behaviors across the institution, and particularly in achieving faculty buy-in to the importance of adopting performance measurement processes in the instructional practice. Norris et al. (2009) in a White Paper on the outcomes of the *National Symposium on Action Analytics* described the use of ‘action analytics’ (a variant of performance analytics and academic analytics) as a K-20 education imperative for enabling the reimagining of proactive practices to gain post-recession financial stability. These experts argued that “[A]chieving action analytics is more about leading and navigating significant changes in organizational culture and behavior than acquiring technology solutions” (p. 1).

Several noted authorities on performance analytics (Goldstein & Katz, 2005; Norris et al., 2008) asserted that the leaders in enrollment performance analytics were for-profit institutions, where these types of business concepts were fundamental guiding principles and practice. With that said, these experts have noted that significant advancements had been made on the part of a cadre of leading-edge colleges and universities. Such ‘early adopters’ had developed a degree of sophisticated analytics capabilities to leverage their people, processes, and technology in support of their academic and business operations. Examples of these types of developments included predictive enrollment models, and early alert systems for students at risk, as well as resource allocation models tied to enrollments, performance-based executive dashboards, recruitment and admissions balanced scorecards, and constituent relationship management (CRM) systems. The industry-leading institutions were noted for their advancements in

discovering ways to achieve buy-in to the concept of ‘evidence-based decision-making’ and the utility of enrollment performance analytics. In the words of Norris et al. (2008):

Advancing performance measurement and improvement in a college or university requires changing from a culture of reporting to a culture of high-agility, evidence-based decision-making and action. Such culture change calls for committed institutional leadership and attention to navigating change and to transforming behaviors at all levels. (p. 4)

### **Theoretical Constructs and Foundational Research**

The previous sections of this chapter provided an overview of strategic enrollment management as a concept, a process, and a performance management system. This section presents an overview of the theoretical constructs and foundational research that were reviewed and used to inform the design of this study in relation to the following:

- assessment of organizational capacity for change;
- assessment of organizational culture; and
- definitions and nomenclature used in relation to academic analytics and advanced applications of enrollment performance measurement systems.

#### ***Assessment of Organizational Capacity for Change***

There was an abundance of research regarding the critical importance of change to an institution’s vitality, the factors that motivate change, the processes for introducing change, and the leadership approaches for managing change. For example, Birnbaum (1988) noted that change was crucial to institutional survival, success, and long-term viability. Hersey and Blanchard (1972) defined change as a modification of individual and group behaviours, and provided a useful analysis of the change process according to various types of behavioural change, as follows:

- ‘knowledge’ change (i.e., building understanding) required little time or effort, and resulted from interactions of individuals operating in contact with one another;
- ‘participatory’ change required considerable time, but was broad-based and long lasting;
- ‘coerced’ change often was applied when time was a constraint, and was more likely to lead to resistance.

Noted social psychologist Kurt Lewin (1947) was one of the first researchers to study group dynamics in organizations. On the strength of his research, he defined a Force Field Analysis approach in identifying the forces motivating and restraining change (i.e., is it your way or my way?). Kotter (1995) and Owen (2001) advanced the perspective that the process of introducing transformative change required both a willingness and ability to change. They advocated a change process that began with establishing a sense of urgency, followed by a series of steps to bring about organizational engagement in the change process. Bolman and Deal’s (1991) developed a four-frame model which was one of the most commonly cited in the literature for diagnosing an organization’s situational context to assist change agents in conceptualizing different approaches to leading the change agenda.

However, in relation to an ‘organization’s capacity for change’ (OCC), a review of the literature suggested that OCC was a nascent field of research (Judge & Blocker, 2008) and represented “a new and relatively comprehensive organizational construct emerging from the resource based perspective that addresses many organizational issues confronting strategic leaders today” (p. 919). According to Judge and Elenko (2005), an organization’s capacity for change was defined as “a dynamic organizational capability that allows the enterprise to adapt old capabilities to new threats and opportunities as well as create new capabilities” (p. 893). While OCC was related to other change constructs associated with

change readiness, the authors argued that it went beyond an “individual level of analysis to describe an organizational unit’s collective capacity for change” (p. 919).

On the basis of the literature review, relatively few empirically tested and practical models were identified for conducting an assessment of organizational capacity in support of a change initiative. Among the most notable theoretical constructs were: "*A Causal Model of Organizational Performance and Change*" (Burke & Litwin, 1992), the *McKinsey Seven-S Framework* (cited in Peters & Waterman, 1982), and the *Weisbord Six-Box Model* (Weisbord, 1978) . However, these models lacked practicality in application for the purposes of this study.

Strong consideration was also given to the use of the Malcolm Baldrige Education Criteria for Performance Excellence (MBECPE), which was identified as among the best known published frameworks to measure, assess, and improve quality and performance specific to the education sector. Since the late 1980s, the standards associated with the MBECPE were increasingly used within higher education as a tool for measuring performance and planning in an uncertain environment. The Malcolm Baldrige assessment framework focused primarily on assisting educational institutions with an integrated approach to performance management that provided ever-improving value to students and stakeholders, and that contributed to education quality and organizational stability, overall organizational effectiveness and capabilities, and organizational and personal learning. An overview of the MBECPE categories and core values and concepts is presented in *Table 2* presents.

A limitation of the MBECPE framework was its primary focus on ‘organizational performance’ — i.e., the extent to which an organization is efficient, effective, relevant,

Table 2

*Malcolm Baldrige Education Criteria for Performance Excellence*

Categories of Performance	Core Values and Concepts
1. Leadership	a. Visionary Leadership
2. Strategic Planning	b. Learning-centered Education
3. Customer Management	c. Organizational and Personal Learning
4. Knowledge Management	d. Valuing Workforce Members and Partners
5. Workforce Engagement	e. Agility
6. Process Management	f. Focus on the Future
7. Results Orientation	g. Managing for Innovation
	h. Management by Fact
	i. Societal Responsibility
	j. Focus on Results and Creating Value
	k. Systems Perspective

Source: Baldrige, (n.d.)

and financially viable, versus ‘organizational capacity for change’ – i.e., the ability of an organization to use its resources to perform and adapt to change.

However, one construct was identified that provided a framework for assessing organizational capacity – namely, the *Institutional and Organizational Assessment Model* (IOA Model) developed by the International Development Research Centre (IDRC) and Universal Management Group (Lusthaus et al., 1999). The IOA model was designed to aid an organization in defining and improving its overall performance by analyzing four elements associated with organizational performance improvement: (a) the environment, (b) organizational motivation (including an assessment of culture), (c) organizational performance, and (d) **organizational capacity**. A schematic representation of the IOA model as represented in the handbook, *Enhancing Organizational Performance: A Toolkit*

for *Self-Assessment* (Lusthaus, 1999) is shown in *Figure 4*. The self-assessment model was based upon established theoretical constructs and was extensively field tested in a variety of organizations around the world and refined over time (Lusthaus et al., 2002, pp. 7-9).



Source: Lusthaus et al. (2002, p. 10)

*Figure 4.* Schematic representation of the IOA model.

The IOA model offered a clear methodology to diagnose institutional strengths and weaknesses, and was selected as the framework for this study because of its open systems orientation (i.e., focus on the interaction between the internal and external environments) and practicality for implementation. One particularly important feature in the selection of the IOA model for this study was its flexibility. According to the authors, depending on the scope and issues under investigation, parts or all of the framework could be selected to frame an organizational assessment. Therefore, for the purposes of this study, two components of the four-dimension framework were adopted: (a) an assessment of organizational motivation associated with a **culture audit**, and (b) an assessment of **organizational capacity**.

Organizational capacity under the IOA framework consisted of eight interrelated areas related to an organization's performance, including: (a) strategic leadership, (b) organizational structure, (c) human resources, (d) financial management, (e) infrastructure, (f) program management, (g) process management, and (h) inter-organizational linkages. Each component of organizational capacity involved various sub-components that ranged in importance across organizations (Lusthaus et al., 2002, p. 41). A description of each of these capacity areas and related sub-components as defined by Lusthaus et al. is presented below.

**Strategic leadership** – This organizational capacity area involved activities that assisted an organization stay on course in service of its mission through setting vision and goals, and in influencing and engaging stakeholders within and external to the organization to support and commit to change efforts. Sub-component elements of 'strategic leadership' included: (a) effective and empowered leadership, (b) participatory strategic planning processes, and (c) effective use of strategic intelligence systems (such as enrollment performance management systems) in identifying and leveraging organizational competencies to gain a competitive edge.

**Organizational structure** – This organizational capacity area consisted of two inter-related elements: (a) governance structures related to an organization's legal and social responsibilities, and (b) operating structures that create the conditions for the successful deployment of people in realization of the organization's vision and goals. In relation to the latter, such conditions involved clarity of roles, responsibilities, accountabilities, and structures that support cross-functional collaboration and coordination.

**Human resources** – This organizational capacity area referred to the knowledge and skills of the work force within an organization, as well as the commitment and accountabilities of people as individuals and work teams to achieve performance that was aligned with the organization's strategic development directions. Human resource management systems involved planning (i.e., the right people in the right positions), developing people through and investment in training and development, assessing and rewarding individual and team performance, and maintaining effective relations to retain a loyal work force.

**Financial management** – This organizational capacity area involved the planning, implementation, and monitoring of monetary resources that were committed to a change effort. Financial management systems included the ability to predict



financial needs through the use of appropriate resource planning systems to inform decision-making (e.g., enrollment alert systems tied to tuition revenues), accounting for return on financial investment associated with change initiatives, and monitoring performance progress through routine reporting systems.

**Infrastructure** – This organizational capacity area referred to the facilities and technologies (information and communication) that provided the conditions that support people and enable work to proceed.

**Program management** – This organizational capacity area involved that processes associated with the management of large initiatives, and the ability to translate associated strategies into action. This capacity area was connected with an organization's quality assurance processes, which involved a cycle of careful planning, implementation, and evaluation.

**Process management** – This organizational capacity area referred to the processes associated with aligning and integrating the cultures and practices of different segments of an organization through the application of common systems and operations. These included: (a) processes for diagnosing and addressing problems, (b) approaches to planning and visioning, (c) practices associated with idea generation and exploration of options and alternatives in the decision-making process, (d) systems and practices associated with communication with stakeholders to build shared understanding, and (e) organizational monitoring and evaluation to assess performance and impact.

**Inter-organizational linkages** – This organizational capacity area involved how an organization functioned within the broader environment in which it was a part, including linkages with regulatory bodies such as governments, accrediting agencies, strategic partners, to name a few.

Although the IOA model had been applied at many institutions and organizations around the world for diagnosing organizational performance, there were no standard data collection tools associated with the diagnostic process. Sample questionnaires and interview protocols were available in the handbook and associated on-line resource sites, as well as tips for the development of data collection tools. Therefore, the IOA model provided an organizing construct for the development of an original survey that focused on organizational capacity conditions related to a SEM change initiative. The alignment

between the IOA construct and SEM theory-based principles derived from the preceding review of SEM literature is shown in *Table 3*.

According to Lusthaus et al. (2002), “[A]nalyzing organizational culture is critical in trying to understand the motivational forces that support or oppose change and improved performance” (p. 87). While the IOA assessment handbook offered sample questionnaires for a culture audit, the instruments were not empirically tested and validated, nor were they considered appropriate for the audiences included in this study. However, based upon a review the literature review, one tool was identified that had been applied within the higher education context by numerous institutions — namely, Cameron and Quinn’s (2006) empirically tested and validated *Organizational Cultural Assessment Instrument* (OCAI), which was used in conjunction with the authors’ theoretical model known as the *Competing Values Framework*. A brief account of the theoretical background to the OCAI instrument and rationale for the selection of this survey tool for purposes of this study are presented below.

### ***Assessment of Organizational Culture***

Organizational culture had long been considered a pivotal variable in the success of institutional change initiatives (Birnbaum, 1988; Tierney, 1988), and had been postulated by some to be one of the most important theoretical levers required for understanding organizations (Zaheer, ur Rehman, & Ahmad, 2006). The shift in the developed world from an industrial-age economy to an information-age economy since the 1960s gave rise to an environment where organizational survival required dramatic and rapid change (Cameron & Quinn, 2006). Since the 1960s, various organizational development approaches took hold, such as Total Quality Management (TQM), downsizing, and re-engineering (to name a few), as organizations grappled with the transformative and

Table 3

*Alignment of IOA Framework for Organizational Motivation and Capacity to SEM Core**Principles*

IOA Areas <sup>(1)</sup>	IOA Components	SEM Core Principles (Derived from a Meta-Review of the Literature)
<b>Organizational Motivation</b>		
History, Mission, Incentives & Rewards, and Culture	Culture Audit	<p>SEM focus is student learning-centered and service-oriented. It is about adding value to the student's experience with a view to creating ongoing institutional affinity (Black, 2001).</p> <p>SEM as a process involves culture change (Henderson, 2001; Hossler, 1986; Hossler et al., 1990; Hossler &amp; Kemerer, 1986; Kemer et al., 1982; Whiteside, 2001), whereby higher education institutions are transformed from learning organizations to organizations of learning (Swanson &amp; Weese, 1997).</p>
<b>Organizational Capacity</b>		
Strategic Leadership	Leadership, strategic planning, and niche management	<p>SEM decision-making processes are grounded in strategic planning, knowledge management, and a culture of evidence through which research and data are effectively used as actionable intelligence to inform decisions (Black, 2003c, 2008a, 2008b, 2008c; Campbell &amp; Oblinger, 2007; Henderson, 2004; Kalsbeek, 2001; Norris, 2008; Norris &amp; Leonard, 2008; Norris et al., 2008).</p> <p>SEM leadership requires executive commitment, articulation and communication of a vision and values where enrollment is linked to the academic mission and the well-being of the institution (Black, 1999, 2003c, 2003d).</p>
Organizational Structure	Governance structure, operational structure	<p>SEM structure when considered through the academic lens is only important to the extent that it facilitates the involvement of the academic enterprise (Henderson, 2004; Dolence, 1997).</p> <p>SEM structural orientations often follow one of four goal-orientations: administrative, academic, market-centred, student-focused (Kalsbeek, 2006).</p>
Human Resources	Planning, staffing, developing, appraising & rewarding, maintaining effective human relations	<p>SEM strategic decisions are people-driven and embody organizational learning as a key priority (Black, 1999, 2003b; Kalsbeek, 1997).</p>

Table 3 continues

IOA Areas <sup>(1)</sup>	IOA Components	SEM Core Principles (Derived from a Meta-Review of the Literature)
Organizational Capacity (cont'd)		
Financial Management	Financial planning, financial accountability, financial statements and systems	Throughout its evolution, there has been growing recognition of the co-dependencies between the concepts and processes associated with the strategic management of enrollment and the broader institutional processes of strategic planning and resource management linked to accountability (Black, 2008c; Bontrager, 2008; Hossler, 2008; Kisling & Riggs, 2004; Norris et al., 2008).
Infrastructure	Facilities management, technology management	<p>With increasing emphasis on organizational performance efficiency, effectiveness, and accountability, there has been increasing attention given to leveraging institutional resources in the forms of people, processes, and technology to achieve these results, while not sacrificing quality in the learning environment (Brown, 2008; Dolence, 1997).</p> <p>Use of performance measurement systems to provide actionable and strategic intelligence are recognized as the future agenda for sustained institutional success (Campbell et al., 2007; Campbell &amp; Oblinger, 2007; Copeland, 2009a, 2009b; Norris, 2008; Norris et al., 2008; Norris &amp; Leonard, 2008).</p>
Program & service management	Planning, implementing, and monitoring programs/projects	<p>SEM as a concept is focused primarily on enhancing institutional performance and quality (Black, 2008b).</p> <p>Optimal enrollment outcomes are more likely when enrollment management organizations serve as a conduit for information to and from other administrative and academic units, and orchestrate institutional enrollment activities in collaboration with other campus stakeholders who are content or process owners (Black, 2008c; Hossler &amp; Hoezee, 2001).</p>
Process management	Problem-solving, decision-making, communications, monitoring and evaluation	<p>SEM operations are characterized by a workplace environment, organizational structures, and governance processes that foster campus-wide engagement, coordination, shared responsibility, and accountability for enrollment outcomes (Black, 2008b).</p> <p>SEM success while inherently goal-oriented and results-driven, is also measured by the effectiveness of the process in sustaining positive change over time (Kalsbeek, 2006; Whiteside, 2001).</p>
Inter-organizational linkages	Planning, implementing, and monitoring networks and partnerships	SEM planning is grounded within the academic planning context and ethos (Bontrager, 2004a, 2004b; Dolence, 1997; Henderson, 2004), and involves an integrated approach to strategic planning that fosters systems thinking, innovation, and change (Dolence, 1997; Henderson, 2004; Hossler, 1986, Hossler et al., 1990; Massa, 2001) with a view to aligning the organization with its environmental context (Bontrager, 2004a, 2004b; Swanson & Weese, 1997).

Source<sup>(1)</sup>: From Lusthaus et al. (2002, p. 42).

rapidity of required change, but with limited success. Empirical studies conducted in the early 1990s by Cameron and his colleagues (Cameron, 1995, 1998; Cameron, bright, and Caza, 2004; Cameron, Freeman, & Mishra, 1991, cited in Cameron & Quinn, 2006) in more than 100 organizations that had engaged in TQM and downsizing as strategies for enhancing effectiveness, produced unequivocal results.

The successful implementation of TQM and downsizing programs, as well as the resulting effectiveness of the organizations' performance, depended on having the improvement strategies embedded in a culture change. When TQM and downsizing were implemented independent of a culture change, they were unsuccessful. (Cameron & Quinn, 2006, p. 11)

In its earlier conceptualization in the 1960s, organizational culture was considered to be synonymous with organizational climate (Hofstede, 2005). Beginning in the 1980s, organizational scholars such as Ouchi (1981), Pascale and Athos (1981), Peters and Waterman (1982), Deal and Kennedy (1982), (cited in Cameron & Quinn, 2006), began to study factors that impacted organizational effectiveness. Throughout the literature, many definitions of organizational culture were noted. On the strength of the research by Hofstede (2005), several common defining elements of organizational culture were identified, including: (a) holistic in nature, historically determined, (b) related to anthropological studying reference to rituals and symbols, (c) socially constructed, (d) soft or less tangible, and (e) difficult to change. Applying these elements, Hofstede defined organizational culture as "the collective programming of the mind that distinguishes the members of one organization from another" (pp. 282-283). From a more applied perspective, Cameron and Quinn (2006) described organizational culture as "how things are around here," and "the prevailing ideology that people carry inside their heads" that provides "a sense of identity to employees" (p. 16).

Since the 1990s, Cameron and Quinn had conducted extensive research on organizational effectiveness and culture. Based upon their research, the *Competing Values Framework* (CVF) was established, as well as the empirically tested and validated survey instrument based upon the CVF, named the *Organizational Cultural Assessment Instrument* (OCAI). The authors hypothesized that organizational improvement was dependent on culture change, and therefore, the basic tenet underlying their research was that without a change in organizational goals, values, and expectations, change efforts would remain superficial and short-term in duration. This in turn could leave an organization worse off than if no change had been introduced (2006, p. 11).

The OCAI survey assessed culture on six dimensions that had been found to be “equally predictive of an organization’s culture” (Cameron & Quinn, 2006, p. 23). These dimensions as described by Cameron and Quinn included:

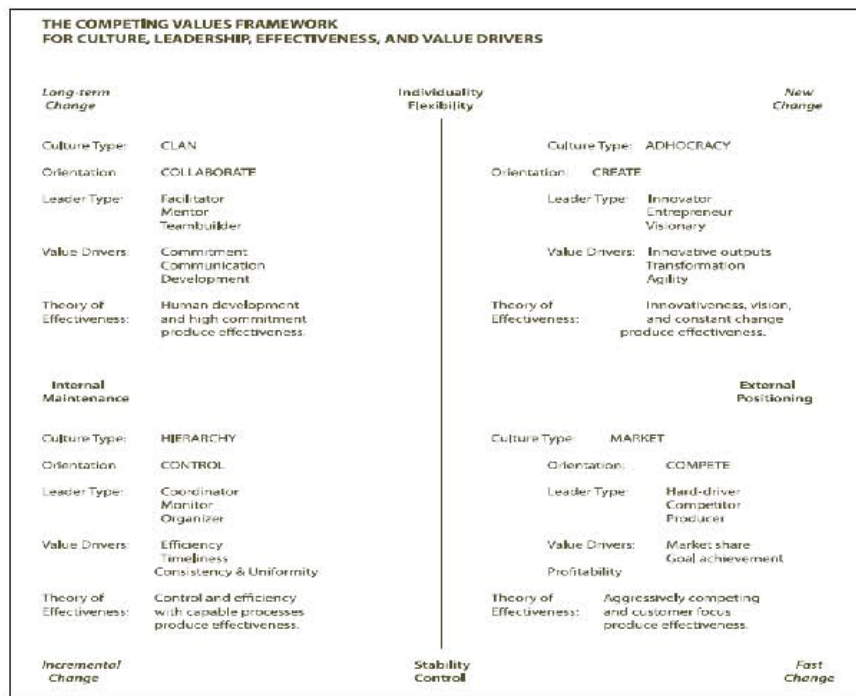
1. the dominant characteristics of the organization, or what the overall organization is like;
2. the leadership style and approach that permeate the organization;
3. the management of employees or the style that characterizes how employees are treated and what the working environment is like;
4. the organizational glue or bonding mechanisms that hold the organization together;
5. the strategic emphases that define what areas of emphasis drive the organization’s strategy; and
6. the criteria of success that determine how victory is defined and what gets rewarded and celebrated. (p. 151)

In combination, these content dimensions were found by the authors to reflect the fundamental culture values and implicit assumptions about how an organization functions. The instrument had been empirically tested for reliability and validity within numerous studies, including within the higher education context (Cameron & Quinn, 2006, pp. 153-161).

“The Competing Values Framework [CVF] was developed initially from research conducted [by the authors] on the major indicators of effective organizations” (Cameron &

Quinn, 2006, p. 33). On the basis of statistical analyses conducted on the results from extensive research, a two dimensional framework associated with four distinct profiles of organizational effectiveness emerged, as illustrated in *Figure 5*. The effectiveness indicators underlying the research reflected the core values associated with what people value about an organization's performance. Each of the four clusters represented competing or opposing assumptions labeled as (1) Clan - a Collaborative Orientation, (2) Adhocracy – a Creative Orientation, (3) Market – a Competitive Orientation, and (4) Hierarchy – a Controlling Orientation. The authors attested that these labels were derived from scholarly literature that explained “how, over time, different organizational values have become associated with different forms of organizations,” and “match key management theories about organizational success, approaches to organizational quality, leadership roles, and management skills” (p. 36). The following reflect the culture profile as defined by the authors for each of the four organizational culture types (p.66).

- **Clan – ‘Collaborative’ Orientation** - This culture type represented a very friendly place to work where people share a lot of themselves. Features of a collaborative culture type included: “The leaders or head of the organization, are considered to be mentors, and maybe even, parent figures. The organization is held together by loyalty and tradition. Commitment is high. The organization emphasizes the long-term benefit of human resource development and attaches great importance to cohesion and morale. Success is defined in terms of sensitivity to customers and concern for people. The organization places a premium on teamwork, participation and consensus.”
- **Adhocracy –‘Creative’ Orientation** – This culture type represented a dynamic, entrepreneurial, and creative place to work. Features of a creative culture type included: “People stick their necks out and take risks. The leaders are considered to be innovators and risk takers. The glue that holds the organization together is commitment to experimentation and innovation. The emphasis is on being on the leading edge. The organization's long-term emphasis is on growth and acquiring new resources. Success means gaining unique and new products or services. Being a product or service leader is important. The organization encourages individual initiative and freedom.”



Source: Cameron & Quinn (2006)

Figure 5. The competing values framework four culture orientations.

- Market – ‘Competitive’ Orientation** - This culture type represented a results-oriented organization. Features of a competitive culture type included: “The major concern is getting the job done. People are competitive and goal-oriented. The leaders are hard drivers, producers, and competitors. They are tough and demanding. The glue that holds the organization together is an emphasis on winning. Reputation and success are common concerns. The long-term focus is on competitive actions and achievement of measurable goals and targets. Success is defined in terms of market share and penetration. Competitive pricing and market leadership are important. The organizational style is hard-driving competitiveness.”
- Hierarchy – Controlling Orientation** - This culture type represented a very formalized and structured place to work. Features of a control culture type included: “Procedures govern what people do. The leaders pride themselves on being good coordinators and organizers, who are efficiency-minded. Maintaining a smooth-running organization functioning is most critical. Formal rules and policy hold the organization together. The long-term concern is on stability and performance with efficient, smooth operations. Success is defined in terms of dependable delivery, smooth scheduling, and low cost. The management of employees is concerned with secure employment and predictability.”



On the strength of their research, Cameron and Quinn (2006) asserted that most organizations (more than 80%) developed a ‘dominant’ culture that was characterized by one or more of the of the culture types identified above. Their research indicated that “matches between the dominant culture of the organization and its leadership styles, management roles, human resources management, quality management, and effectiveness criteria contribute to higher levels of performance than mismatches do” (p. 60). The OCAI instrument was designed as a tool to diagnose the dominant orientation of an organization based upon these core culture types (Cameron & Quinn, 2006, p. 37).

Delobbe, Haccoun, and Vandenberghe (2002) reviewed 20 organizational culture questionnaires to identify the common cultural dimensions tapped and the level of psychometric support for these dimensions. The authors concluded that “values inventories and behavioral patterns questionnaires measure two distinct but articulated levels of a cultural system. Moreover, these two measurement approaches are suitable for different scientific and practical purposes” (p. 6). In their review of the CVF, Delobbe et al. determined that the instrument was developed rationally through an a priori conceptual framework defining relevant dimensions of organizational culture that had been supported by empirical data.

There is controversy within the literature regarding whether a single instrument can provide a valid measure of a sufficiently large set of generic cultural dimensions (Chatman & Jehnm, 1994, in Delobbe et al., 2002). Cameron and Quinn acknowledged that “[N]o one framework is comprehensive . . . nor can one particular framework be argued to be right while others are wrong” (2006, p. 32). Notwithstanding these concerns, the following features of the CVF model and associated OCAI instrument as defined by the authors

(Cameron & Quinn, 2006, pp. 143-161) were relevant for the purposes of the present study:

1. the overall breadth of culture dimensions incorporated within a single instrument,
2. the survey instrument was among the most practical and cost-effective of its type,
3. the survey instrument and theoretical model had been empirically tested and validated,
4. the bifurcated design of the study permitted more depth of analysis on various dimensions of culture within a change context, and
5. the survey instrument and theoretical model had been applied within academic settings.

### ***Taxonomy of Enrollment Performance Analytics and Systems***

A review of the literature was undertaken on recent research conducted in the areas of ‘business intelligence’ systems and in relation to developments in ‘performance analytics’ applied within a higher education context. A number of scholarly studies and refereed journal articles by notable experts were identified that influenced and shaped this study. Among the more notable were the following:

1. the application of SEM concepts to a systems archetype and performance-based management (Black, 2008c; Brown, 2008; Copeland, 2009a, 2009b; Dolence, 1997; Hossler, 1986; Norris, 2008);
2. theoretical underpinnings and causal linkages associated with performance management and change (Burke & Litwin, 1992);
3. the emergence and recent developments in the areas of academic analytics (Campbell et al., 2007; Campbell & Oblinger, 2007, Davenport & Harris, 2007; Goldstein & Katz, 2005; Norris et al., 2008; Norris & Leonard, 2008; Norris et al., 2009);
4. measuring core dimensions of culture (Delobbe et al., 2002); and

5. assessing organizational capacity for change (Judge & Blocker, 2008; Judge & Elenkov, 2005).

Among these noteworthy references, one study in particular offered insights and a platform for further inquiry related to the topic of this dissertation — the 2005 study conducted by Goldstein and Katz on the applications of ‘academic analytics.’ The Goldstein and Katz study was undertaken through the EDUCAUSE Centre for Applied Research — a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology — and included a literature review, a quantitative survey of 380 of the 1,473 member institutions in the United States and Canada, interviews with 25 higher education Information Technology (IT) leaders and 2 corporate leaders, and 2 on-site case studies (p. 6). For purposes of their study, the authors adopted the term ‘academic analytics’ to describe the complex of technologies and techniques to support management and decision-making associated with academic administration, enrollment management, and finance. On the basis of results from the study, a hierarchy of five types of academic applications were defined and included:

1. extraction and reporting of transaction data;
2. analysis and monitoring of operational performance;
3. *what-if* decision support (e.g., scenario building);
4. predictive modeling and simulation; and
5. automatically triggered business process (e.g., early alert systems).

An analysis of the prevalence of these types of applications conducted by Goldstein and Katz (2005) indicated that about 85% of responding institutions’ primary use of their academic analytics applications was at stage one (about 70%) or stage two (about 14%).

## Summary

In *Chapter Two*, a literature review was presented that focused on strategic enrollment management as a concept, a process, and a performance management system as background and rationale for this study. In this chapter, a review of the origin of SEM and its evolution as a maturing field of practice was presented. In its most sophisticated manifestation, SEM became a tool that could bring focus to strategic planning when the process of SEM planning was fused with the academic enterprise, engaged the campus community in an institution-wide dynamic process, and led to performance improvement and future oriented change. The relevance and relationship of SEM to a variety of business concepts were highlighted. From a systems perspective, SEM was discussed in relation to its inherent goal-orientation, and linkage to KPIs, enrollment performance metrics, and associated performance management systems. While the review of literature revealed a wealth of research and commentary on the concept and practice of enrollment management and the theoretical constructs underlying its application, what was absent, was an understanding of how to build organizational capacity for enrollment performance measurement systems in order to support a sustainable program of enrollment performance management.

Given the absence of research related to an organization's capacity conditions for change in this regard, a review of foundational research was also presented that was instrumental to the design of this study. The literature suggested that assessment of organizational capacity for change was considered by some to be a nascent field of research. A high-level review of select literature was presented as illustrative of the current state of the field.

In order for this study to serve the purposes to establish a set of guidelines for application in the self-assessment of an organization's capacity for building an advanced enrollment performance measurement system, it was important to ground the study in empirically tested theoretical constructs and research methods that were valid and reliable. To this end, select theoretical constructs and foundational research on SEM and related areas of performance analytics and systems were presented that informed the design of this study. Commentary was provided on their relevance and appropriateness to the scope and boundaries of the study. A summary of how the results from the literature review were used to inform the research design is presented in *Table 4*.

SEM as a field of practice is not without controversy. As noted by Bontrager (2008), "[S]ome observers have noted negative consequences resulting from specific SEM tactics, leading to criticism of the very concept of SEM" (p. iii). Among the major areas of contention were issues stemming from the use of tuition discounting and a focus on the financial bottom line on equity and access in student admissions (Hossler, 2004). Notwithstanding these criticisms and the tensions associated with an industry that was undergoing unprecedented change, no published research had been found that disputed the need for higher education institutions to develop the organizational capacity to adjust to the rapidly changing environmental context through the use of performance measurement systems. In doing so, responsible enrollment professionals develop the capabilities to understand from a systems perspective the drivers and associated factors impacting student attitudes, behaviors, and decisions, as they relate to the academic and financial well-being of their institutions.

Table 4

*Theoretical and Foundational Research Underlying the Study*

Study Dimensions	Theoretical Constructs	Other Foundational Research
Organizational Capacity Conditions	The Institutional and Organizational Assessment Model (IOA Model) developed by Lusthaus et al., (1999) - an extensively field tested framework for assessing organizational performance improvement, including organizational capacity conditions.	A meta-review of published scholarly literature on SEM principals and best practices were used to frame the questions associated with the IOA model.
Organizational Culture	The Organizational Cultural Assessment Instrument (OCAI) in conjunction with the Competing Values Framework (CVF) developed by Cameron and Quinn (2006) - an empirically tested and validated survey and theoretical framework for assessing organizational culture.	
Defining Features of an “Advanced “ Enrollment Performance Measurement System at a “Leading-edge” Institution		Results of the 2005 study Goldstein and Katz on ‘academic analytics’ provided the terminology and nomenclature that defined a 'leading-edge' institution in applying 'advanced enrollment performance measurement systems.

## **CHAPTER III**

### **RESEARCH DESIGN AND METHODS**

#### **Introduction**

In this chapter, a detailed description is presented of the research procedures used in this study. The chapter begins with the purpose of the study, research questions guiding the study, and a description of the research design and rationale. In the next sections of the chapter, a detailed description is presented of each stage of the research and the research methods used, including: (a) a schematic diagram and explanation of the explanatory sequential mixed methods research design; (b) the research methods and criteria associated with the selection of the purposeful sample, sampling plan, and data collection strategy; (c) pilot study; (d) implementation plan associated with the two-phases of the study; (e) data analysis approach; (f) verification procedures; (g) researcher bias; and (h) ethical considerations.

#### **Statement of Purpose**

Two purposes guided this mixed methods study. The first purpose was to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the development of advanced enrollment performance measurement systems at a purposeful sample of leading-edge public North American colleges. The study was designed to obtain the perspectives of the primary individuals who were involved in the development of the systems. By examining the degree to which various organizational factors contributed to and impeded the initial development stages of the system, the organizational factors that were required for success were identified. Therefore, following from the first purpose, a second purpose of the study was to develop

a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management (SEM) planning.

### **Research Questions**

The **central research** question guiding this two-phase, explanatory mixed methods study was:

How did the primary developers of 'advanced' enrollment performance measurement systems at a purposeful sample of 'leading-edge' public North American colleges describe the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the system development?

The secondary research questions that guided the quantitative and qualitative research phases, respectively, included:

#### *I. Quantitative Phase (Survey Research)*

1. What **culture value orientations** using the OCAI instrument best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system?
2. What level of importance was each of the following **eight areas of organizational capacity** associated with the IOA model to the success of the initial development of the enrollment performance measurement system:
  - a. Strategic leadership?
  - b. Organizational structure?
  - c. Human resources?
  - d. Financial Management?
  - e. Infrastructure?
  - f. Program management?
  - g. Process management?
  - h. Inter-organizational linkages?
3. What were the **defining features of the advanced enrollment performance measurement system**, using the Goldstein and Katz (2005) terminology and relevant survey questions, and profile of primary survey developers in relation to:



- a. The alignment of the system objective(s) to the institution's SEM context?
- b. The primary objectives, scope, and intended users of the system?
- c. The champion(s) for initiating and implementing the system development project?
- d. The role of the survey respondent in the systems development project?
- e. Willingness of the survey respondents to be involved in the in follow-up interview process?

## ***II. Qualitative Phase (Semi-Structured Interviews)***

1. What factors contributed to the "very unbalanced" 'real' culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the *real* and *ideal* culture profiles?
3. What factors contributed to the differences in capacity conditions that were rated as the two *most* important to the success of the initiative at each of the two case study institutions?
4. What factors contributed to the differences in capacity conditions that were rated as the two *least* important to the success of the initiative at each of the two case study institutions?
5. What were the greatest risks to the success of the initiative?
6. In what ways did the differences in drivers for the system development impact the success of the initiative?
7. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
8. How was success defined for the systems development initiative?
9. What was the participant's contribution to the success of the initiative?

### **Research Design and Rationale**

A review of the literature was conducted to guide the research design and methods. In order to address the two purposes of this study, a two-phase, explanatory sequential mixed methods study design was used, and involved collecting quantitative data followed by the collection of qualitative data to explain the quantitative data in more depth. In the first phase of the study, a quantitative survey was constructed and administered at a purposeful sample of small-to-medium size public North American colleges and universities with undergraduate headcount enrollment between 2,000 and

30,000 (referred to as “colleges”). Results from the quantitative survey were used in the selection of institutions for qualitative follow-up through semi-structured interviews with select survey participants in order to gain a more in-depth understanding of the survey results. In this way, the qualitative data built upon the results from the quantitative survey to answer to the central research question guiding this study, as well as to inform the development of guidelines for conducting a self-assessment of an organization’s capacity for developing an advanced enrollment performance measurement system to support effective SEM planning.

### ***Rationale for Mixed Methods Research Design***

The explanatory mixed methods study design consisted of two sequential phases: quantitative followed by qualitative. Quantitative and qualitative methods of data collection included a structured survey and explanatory interviews which were combined to better understand a complex issue of culture value orientations and organizational capacity conditions associated with a change initiative from the perspective of the primary individuals involved in the systems development. This methodology used qualitative data as a secondary source to expand on the results of a quantitative study, thereby adding methodological rigor to the research (Creswell & Plano Clark, 2007; Tashakkori & Teddlie, 1998).

According to Creswell and Plano Clark (2007), mixed methods research involved collecting and analyzing a combination of quantitative and qualitative data, which was a commonly applied approach to research particularly within the social and behavioral sciences. While there were advantages and limitations to all research approaches, mixed methods offered a number of value-adding benefits over the use of quantitative or

qualitative research approaches alone. For purposes of this study, the most significant advantages for adopting a mixed methods research design included:

- a. enhanced understanding of the situational context within which the study was conducted, and therefore informed the interpretation of study results;
- b. provided a mechanism for hearing the voices of the individual study participants through the presentation of their individual comments in response to interview questions;
- c. utilized a variety of data sources for studying a research problem, and therefore could aid in explaining quantitative results, and in exploring qualitative factors that informed quantitative experiments; and
- d. provided a practical approach, in that it allowed for both inductive and deductive thinking in addressing a specific research problem.

#### *Rationale for a Case Study Approach to the Qualitative Phase*

The tradition of case study had a lengthy history in qualitative research throughout which there was ongoing debate about whether the case study was a method or tool to be employed in methodologies such as ethnography (Stake, 2005, in Creswell, 2007), or whether it stood on its own as a separate methodology (Merriam, 1998, in Creswell, 2007). Hatch (2002) defined case study as “a special kind of qualitative work that investigates a contextualized contemporary (as opposed to historical) phenomenon within specific boundaries” (p. 30). Creswell (2007) added more detailed characteristics, stating

[C]ase study research is a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information . . . and reports a case description and case-based themes. (p. 73)

Key characteristics found in all definitions of a case study included boundaries for each case, in-depth data collection, rich description of each case, and reporting of results as themes. According to Creswell (2007), “[A] case study is a good approach when the

inquirer has clearly identifiable cases with boundaries and seeks to provide an in-depth understanding of the cases or a comparison of several cases” (p. 74).

Stake (1995) presented three categories of case studies: *intrinsic, instrumental, and collective*. The first focused on a particular case, the second was instrumental to accomplishing something else, and the third involved learning about effects across multiple cases. The type of case selected would influence the methods used. Of particular importance is the principle that the selection of a case should maximize what can be learned within the time and resources available (p. 4).

Normally, an intrinsic case would be pre-selected, whereas an instrumental case would use a typical or unusual case, and a collective case study would involve multiple cases that best reflected the relevant characteristics of the situation being studied. The interpretation of case studies leads to an in-depth understanding of the uniqueness and complexities associated with a particular case. However, case studies could also lead to generalizations when certain findings come up repeatedly that refine the researcher’s thinking on the subject matter. The researcher served as both an objective recorder of the case situation as well as an interpreter of meaning from what had been learned. Therefore, interpretation was a major part of the data gathering, and required a conceptual structure to guide the qualitative research that was framed around an issue or issues associated with the case study (Stake, 1995, p. 9). Within intrinsic case studies, the case itself was of dominant importance; whereas in an instrumental case study, the issue(s) was dominant.

The use of an **instrumental case study** research method was appropriate to the present study because the research was undertaken at institutions that were purposefully

selected based upon their reputations as ‘leading-edge’ North American colleges and universities in the development of an ‘advanced’ enrollment performance measurement system. The study was designed to understand the complexities associated with the culture value orientations and organizational capacity conditions associated with the initial stages in the development of the enrollment performance measurement system within the **boundary** of purposefully selected institutions from the perspectives of multiple stakeholders. Through a process of interviewing select constituent representatives, common factors associated with the organizational culture and capacity conditions that contributed most and least to the development of the system were identified. Similarly, an understanding was able to be gained from constituent representatives of the factors that most and least contributed to positive change as defined by the objectives of this study. Through the interview process, the participants were able to share not only the facts of their experiences but also the feelings associated with their motivations for change, allowing the researcher to view the situational context through their eyes.

### *Depiction of the Research Design*

A simple depiction of the research design underlying this two-phase explanatory sequential mixed methods study is presented in *Figure 6*.

### **Research Method**

#### *Selection of the Panel of Experts*

A three-person Panel of Experts reviewed and provided advice on the construction of the survey (including its content, flow, and interpretability), in the

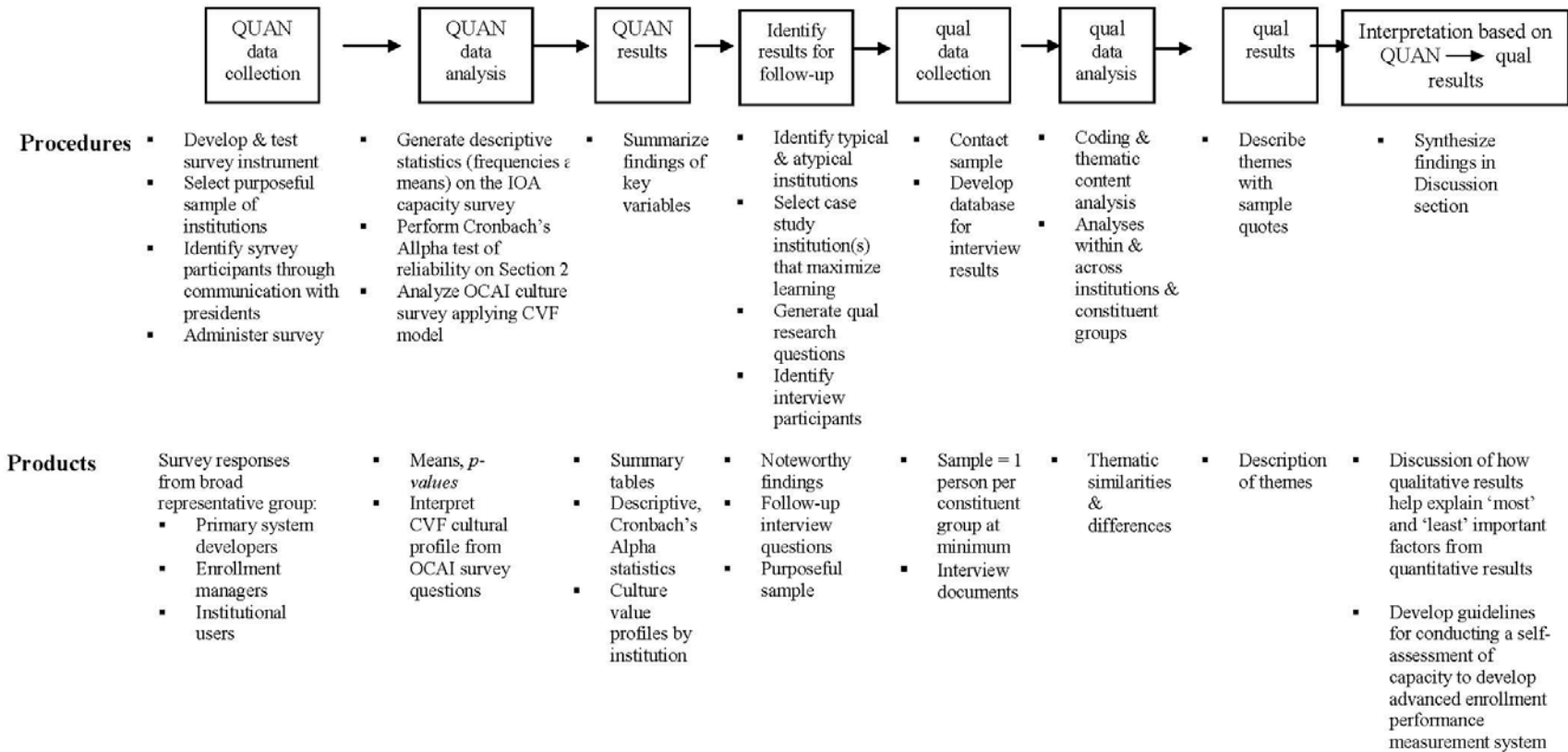


Figure 6. The explanatory sequential mixed methods research design.

selection of the purposeful sample of institutions for inclusion in the study, and in the interpretation of study results as warranted. The panel was comprised of individuals who were reputed for their expertise in SEM, the IOA methodology, and enrollment performance measurement systems (see *Appendix B.1, Panel of Experts* for biographies). The members of the expert panel were identified through professional networks using the following criteria:

1. a minimum of **ten years of experience** in their respective field(s) of expertise
2. **demonstrable achievements** as leaders in their field(s) as evidenced by:
  - a. Authored at least one published book within their field(s) of expertise, and/or several published articles within refereed journals; and
  - b. Active membership (current or recent past) in related professional associations such as the American Association of Collegiate Registrars and Admissions Officers (AACRAO), the Society for College and University Planners (SCUP), EDUCAUSE — a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology; and
  - c. Delivered courses/ workshops at either a recognized or accredited higher education institution within their field(s) of expertise, or through such professional organizations as AACRAO, SCUP, EDUCAUSE, or others.

### ***Sampling Plan***

There was no known repository of public North American colleges and universities that were reputed as being ‘leading-edge’ institutions in the application of ‘advanced’ enrollment performance measurement systems. Therefore, the selection of the institutions included in the study was based upon the identification of a **purposeful sample** that exemplified the features of a ‘leading-edge’ institution in the development of ‘advanced’ enrollment performance measurement systems as defined from a review of recent published literature. The defining institutional features were based upon the

research and writings of several notable contemporary experts in the fields of SEM and enrollment performance measurement systems, including:

1. **Black (1999, 2001, 2003a, 2003b, 2003c, 2003d, 2008a, 2008b, 2008c)** – Black had written extensively on the theory and practice of SEM, its alignment with strategic planning and systems thinking, and the criticality of enrollment performance measurement linked to strategy.
2. **Goldstein and Katz (2005)** – These authors conducted a study at more than 380 of the 1,473 EDUCAUSE member institutions to understand the technology and managerial factors that impacted how higher education institutions gathered, analyzed, and used data in support of reporting, analysis, and decision-making. They used the term ‘academic analytics’ to refer broadly to the numerous activities deployed in the use of data to manage an institution.
3. **Norris (2008), and Norris et al. (2008)** - Research conducted by these authors identified a cadre of colleges and universities that had deployed new practices in performance analytics tied to their enrollment management strategies to influence decision-making, planning, and resource allocation processes.

Black and Norris served as members of the Panel of Experts (see *Appendix B.1, Panel of Experts*). Goldstein and Katz granted permission to use their research questions and definitions as appropriate in the present study (see *Appendix B.2, Letters of Permission*).



## **Selection of Purposeful Sample of Institutions**

The following three primary criteria derived from the literature review were used in the selection of the institutions for inclusion in this study:

1. The institution was a small-to-medium sized **public college or university within North America** with an undergraduate headcount enrollment of between 2,000 to 30,000 students (as documented on institutional websites); and
2. The institution had realized **positive enrollment performance improvement** in student recruitment, retention, and/or success over at least the past **three years** that was attributed largely to the execution of effective enrollment management practices. This information was verified based upon publicly available documents and sources including institutional accountability reports to government, institutional strategic plans, and/or public announcements of exemplary practices by a SEM-related professional organization; and
3. The institution was recognized in the literature or by the Panel of Experts as being **'leading-edge'** in the development of an **'advanced'** enrollment performance measurement system. A 'leading-edge' institution was characterized as having developed — whether in-house or through acquiring a vendor-based application(s) — implemented, and demonstrated within the **past three years** the use of at least **three of the five types** of 'academic analytic' reporting capabilities defined by Goldstein and Katz (2005). These included:
  - extraction and reporting of transaction data
  - analysis and monitoring of operational performance
  - what-if decision support
  - predictive modeling and simulation, and
  - automatically triggered business process.

## **Sampling Procedures**

In applying the aforementioned criteria, the initial sample of institutions for inclusion in this study was comprised of **15** public North American colleges and universities with an undergraduate student headcount enrollment between 10,000 and 25,000. From this initial purposeful sample of 15 institutions, the objective was to obtain presidential consent for participation in the study from a minimum of **7** institutions. However, following numerous follow-up efforts over several weeks, presidential consent

to participate in the study was received from only **4 institutions**. In an effort to increase the purposeful sample to a **minimum of 5 institutions**, the initial sample was expanded to include 3 additional institutions. Therefore, the sample pool and attributes of the purposeful sample of institutions increased to **18** colleges and universities with an undergraduate student headcount between **2,000 and 30,000**.

Of the 18 institutions in the expanded purposeful sample, presidential consent was received from **5**, representing an overall participation rate of **27.8%**. Participation rates varied by institution type, as shown by the data presented in *Table 5*. The presidents of four of the six ‘colleges’ (66.7%) granted consent to participate in the study, whereas only one of the eleven presidents from ‘universities’ (9.1%) granted consent. The president from the one ‘technical’ institution declined the invitation.

Table 5

*Participation Rate of Purposeful sample of Institutions by Type of Institution*

Response to Study	Number of Institutions in Purposeful Sample <sup>b</sup>			
	College	University	Technical Institute	Total
Total Invited Institutions	6	11	1	18
No Responses	1	2	--	3
Declined	1	8	1	10
Consented	4	1	--	5
Participation Rate <sup>a</sup>	66.7%	9.1%	0.0%	27.8%

Note: a. Participation rate (%) - refers to the number of institutions from which presidential consent was received as a percentage of total invited institutions.

b. Purposeful Sample - includes all institutions invited to participate in the study.

Differences in participation rates were also noted by size of institution as defined by undergraduate headcount enrollment. As shown by the data presented in *Table 6*, the enrollment profile of the participating institutions reflected two ends of the spectrum — four of the institutions had an enrollment of 20,000-30,000, and one institution had an enrollment of fewer than 5,000. None of the presidents from the four institutions in the middle enrollment range agreed to participate in the study. The primary reasons given for declining the invitation to participate in the study were time and resources, as illustrated in the following examples of the responses received with written explanations:

Table 6

*Participation Rate of Purposeful Sample of Institutions by Enrollment of Institution*

Undergraduate Headcount Enrollment	Number of Institutions in Purposeful Sample <sup>b</sup>				Participation Rate by Enrollment of Institution <sup>c</sup>	
	College	University	Technical Institute	Total	Consent Received	Participation Rate
25,000 – 30,000	1	3	--	<b>4</b>	<b>2</b>	<b>50.0%</b>
20,000 – 24,999	2	3	--	<b>5</b>	<b>2</b>	<b>40.0%</b>
15,000 – 19,999	--	--	--	--	--	--
10,000 – 14,999	1	2	1	<b>4</b>	<b>0</b>	<b>0.0%</b>
5,000 – 9,999	1	1	--	<b>2</b>	<b>0</b>	<b>0.0%</b>
< 5,000	1	2	--	<b>3</b>	<b>1</b>	<b>33.3%</b>
Total Institutions	<b>6</b>	<b>11</b>	<b>1</b>	<b>18</b>	<b>5</b>	<b>27.8%</b>

Note: a. Source: Institutional web sites  
b. Purposeful Sample - includes all institutions invited to participate in the study  
c. Participation rate (%)- refers to the number of institutions from which presidential consent was received as a percentage of total invited institutions.

- “our resources are being fully deployed in support of our re-accreditation self study, and we simply do not have the time or personnel to assist you.”;
- “Given the limited resources we have and the time required to participate - we will have to graciously decline to participate.”
- “As much as we would like to do so, we do not have time to devote College resources to participate in the study at this time.”

The low participation rate among the purposeful sample of ‘leading- edge’ institutions and disproportionate representation among the institutions that participated in the study were limitations to the study.

### **Selection of Institutional Representatives for Inclusion in the Study**

Presidents granting consent for institutional participation in the study were requested to provide a list of at least **ten institutional representatives** from three primary constituent groups (systems developers, enrollment managers, and institutional users) who were significantly involved in the initial development of the enrollment performance measurement system. Instructions provided in the letter to the president indicated that individuals who had left the institution since the system was implemented could be included in the list of identified institutional representatives. For purposes of clarity and consistency in interpretation of the composition of each constituent group, definitions were provided in the letter to the president as a guideline. The institution-identified list of individuals were contacted via email with an invitation to voluntarily participate in the Phase I survey process.

### **Data Collection Strategy**

Two primary modes of data collection were used in this two-phase study. Phase I involved a structured three-part web-based survey. Phase II study involved 90-minute

semi-structured telephone-based interviews. A detailed description of these two primary modes of data collection follows.

### ***Quantitative Phase (Survey Research)***

The quantitative survey was comprised of three sections:

- *Section One:* Assessment of Organizational Culture Value Orientations
- *Section Two:* Assessment of Organizational Capacity Conditions
- *Section Three:* Features of the Enrollment Performance Measurement System

The construct of each of the three sections of the survey is described here. See *Appendix A2 Questionnaire Abstract and A3 Questionnaire* for the actual multi-part survey questionnaire.

#### **Section One: Assessment of Organizational Culture Value Orientations**

The first section of the survey consisted of the OCAI culture survey instrument developed by Cameron and Quinn (2006). The OCAI was based on the *Competing Values Framework (CVF)* which had been developed by the same authors. The survey consisted of 24 statements that represented 6 dimensions of culture (i.e., dominant organizational characteristics, leadership style, management of employees, organizational glue, strategic emphasis, criteria for success) associated with each of four culture types (Create, Compete, Control, and Collaborate) associated with the CVF. Appropriate permissions were obtained for the use of the OCAI survey instrument from the survey developers (Cameron and Quinn) and publisher (John Wiley & Sons, Inc.) - see *Appendix B.2, Letters of Permission*.

A third party service, BDS Behavioral Data Services, facilitated the administration of the OCAI survey as well as the other component parts of the survey.

This third party service was recommended by the OCAI survey developers because the service agents had extensive experience and expertise in administering the web-based OCAI survey as well as in compiling the data collected for analysis using the CVF model.

The culture survey was structured for completion in two parts. In Part One, survey participants were asked to respond to each of the 24 statements from the perspective of the ‘real’ culture that existed during the initial stage in the development of the enrollment performance measurement system. In Part Two, survey participants were asked to respond to the same statements from the perspective of the ‘ideal’ culture that would have been preferred to support the success of the system development initiative.

For both parts of the culture survey, institutional survey participants were requested to divide 100 points among the 4 alternatives provided for each of the 6 culture dimensions, assigning a higher number of points to the alternative(s) that best reflected the organizational conditions from the perspective shaping their response. For the purposes of this study, the term ‘organization’ was defined to represent the entire organization (see *Appendix A3, Section 1*).

## **Section Two: Assessment of Organizational Capacity Conditions**

The second section of the survey was designed to obtain information on the organizational capacity conditions of importance to the success of the initial stages in the system development. The survey questions were developed in accordance with the theoretical constructs underlying the IOA framework (Lusthaus et al., 2002) and foundational research on SEM. Although the IOA model had been applied at many institutions and organizations around the world for diagnosing organizational

performance, there were no standard data collection instruments associated with the diagnostic process. Therefore, an original survey was developed based upon the broad categories associated with the eight IOA core elements of ‘organizational capacity.’ In order to keep the survey instrument to a manageable size, informed judgments were made based upon the literature review, extensive consultations with the members of the Expert Panel, advice from UNL faculty and graduate supervisors, as well as feedback from the pilot study.

The survey consisted of 64 statements organized around the 8 IOA topical groupings including: (a) strategic leadership, (b) organizational structure, (c) human resources, (d) financial management, (e) infrastructure, (f) program management, (g) process management, and (h) inter-organizational linkages. Survey participants were asked to rate the degree to which each of the 64 statements contributed to the success of the initial stage in the development of the enrollment performance measurement system using a 4-point rating scale (1. Not at all, 2. Very little, 3. Somewhat, 4. To a great degree). A “not applicable” response option was provided as the basis for response if the statement was not a ‘real’ condition that existed at the time of the initial stage in the system development. In addition, survey participants were requested to identify other factors of importance that were not listed in each of the 8 capacity areas. In order to provide a consistent basis of reference in the definition of terms used in the survey, the following terms were defined in the introduction to the survey section:

- **Enrollment performance measurement systems** - For purposes of this study, referred to reporting, modeling, analysis, and decision-support information technologies that provided access to data and analytical tools that supported operational reporting, institutional decision-making, and regulatory compliance associated with the management of enrollment performance.

- **Executive leaders** - Individuals occupying the leadership positions as a Chancellor, Vice-Chancellor, Presidents, Vice-President, Associate Vice-President/Chancellor.
- **Institutional Decision Leaders** - Individuals involved in making decisions related to program/service developments and the allocation of institutional resources (budget, staffing, space allocation).

### **Section Three: Features of the Enrollment Performance Measurement System**

This section of the survey consisted of 15 questions designed to collect information about the defining features of the advanced enrollment performance measurement system, as well as general background information about the survey participant. Survey participants were asked to respond to a series of questions related to each of the following five topical areas:

1. Alignment of the system objective(s) to the institution's SEM context, which consisted of five questions related to:
  - a. the primary driver for initiating the system development,
  - b. year in which the system development was initiated,
  - c. institutional enrollment context during the preceding three-year period,
  - d. whether or not a SEM committee guided the system development, and
  - e. if a SEM committee existed, what involvement the committee had in the system development initiative.
2. Primary objectives, scope, and intended users of the system, which consisted of five questions related to:
  - a. the system reporting capabilities,
  - b. the system analytical capabilities,
  - c. the enrollment management functionality of the system,



- d. affiliated constituent group of the survey participant, and
  - e. intended primary users of the system.
3. Champion(s) for initiating and implementing the system development project, which consisted of two questions related to:
    - a. the initial champion of the system initiative, and
    - b. the decision-making structures associated with the system implementation.
  4. Role of the survey respondent in the systems development project, which consisted of two questions related to:
    - a. whether or not the survey participant was a sponsor or co-sponsor of the system development initiative, and
    - b. whether or not the survey participant was a member of a task team/committee guiding the system development.
  5. Willingness of the survey participant to be involved in a follow-up interview if the institution was selected as a case study site, in response to a single survey question.

Many of the questions drew from the terminology and relevant survey items used in the study on ‘academic analytics’ conducted by Goldstein and Katz (2005) with permission of the authors (see *Appendix B.2, Letters of Permission*).

### **Survey Administration Protocols**

Survey data were collected using an easy-to-use web-based tool that had the feature to track respondents separately from their responses, assuring anonymity while reminding only those who had not responded. The 3-part survey required approximately 50 minutes to complete. In order to mitigate the potential negative effect of the relatively

time-intensive survey on response rates, the survey was segmented for deployment using a sequential 2-step process. *Section One* of the survey, which consisted of the OCAI culture instrument, was deployed first to the survey participants. This part of the survey was expected to take approximately 15 minutes to complete. Upon submission of the completed OCAI survey by the survey participants, *Section Two* (i.e., organizational capacity questions) and *Section Three* (i.e., features of the enrollment performance measurement system) were deployed. The completion of these two sections of the survey was expected to take approximately 35 minutes in total.

### ***Qualitative Phase (Semi-Structured Interviews)***

The explanatory follow-up phase of the research involved an **instrumental case study** at two institutions that were selected on the basis of pre-defined criteria. The interview process involved 90-minute semi-structured telephone interviews with select individuals who had participated in the quantitative research and met pre-defined criteria for inclusion in the interview process. A detailed description of the criteria and qualitative interview protocols applied in this phase of the study are described below.

### **Criteria for Selection of Case Study Institutions**

The principle of “maximizing what we can learn” (Stake, 1995, p. 4) was applied as the basis for selection of the case study institutions. In applying Stake’s principle to this study, selection was based on the **degree of consistency** in survey responses across institutions in relation to:

- the culture value orientations that best characterized the ‘real’ and ‘ideal’ conditions among participating institutions,
- the organizational capacity conditions identified to be of *most* and *least* important in contributing to the success of the systems development initiative, and
- features of the enrollment performance measurement system.

Determination of whether one or more institutions were selected for in-depth case study was based upon the following criteria:

*Criteria for Selection of One Institution:*

- A single institution best represented the ‘typical’ responses to the survey, assuming there was ‘consistency’ in both the culture profile *and* ratings across the eight IOA organizational capacity areas among the institutions participating in the survey; OR
- A single institution best represented an ‘atypical’ institution, whereby the results demonstrated largely extreme differences;

*Criteria for Selection of Two Institutions:*

- One institution best represented the ‘typical’ or ‘atypical’ responses on the culture profile and another institution best represented the ‘typical’ or ‘atypical’ responses across the eight IOA organizational capacity areas; OR
- Two institutions best represents ‘bi-polar extreme splits’ in responses.

In addition, the selected institution(s) had to meet the following criteria:

- there was a minimum of **six institutional survey respondents**,
- there was **representation** in the survey from each of the three constituent groups (i.e., systems developers, enrollment managers, institutional users),
- the majority of respondents were **willing to be interviewed**, including at least one representative from each of the three constituent groups, and
- the president of the institution agreed **to participate** within the parameters of time and cost constraints for the conduct of this study.

### **Criteria for Selection of Interview Participants**

Determination of the number of interview participants was based upon the number of individuals who were willing to participate in the interview process.

### **Construct of the Semi-Structured Interview Questions**

The questions that guided the semi-structured interview process were developed in order to help explain the results from the quantitative survey. Nine primary interview

questions were developed to gain more in-depth understanding of the survey findings, and included:

*Culture Value Orientation*

1. What factors contributed to the "very unbalanced" 'real' culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the *real* and *ideal* culture profiles?

*Organizational Capacity Conditions*

3. What factors contributed to the differences in capacity conditions that were rated as the two *most important* to the success of the initiative at each of the two case study institutions?
4. What factors contributed to the differences in capacity conditions that were rated as the two *least important* to the success of the initiative at each of the two case study institutions?

*Factors Impacting the Success of the Systems Initiative*

5. What were the greatest risks to the success of the initiative?
6. In what ways did the differences in drivers for the system development impact the success of the initiative?

*About the Study Participant*

7. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
8. How was success defined for the systems development initiative?
9. What was the participant's contribution to the success of the initiative?

Institution-specific sub-questions were developed that were appropriate to the survey data. The institution-specific interview questions are presented in *Appendix J*.

Because of the costs and time required for site visits, telephone-based interviews were conducted rather than in-person interviews. WebEx was used as the medium for the telephone-based interview process. This medium permitted the use of Power Point slides to assist in focusing the discussion on the survey findings. The Power Point presentation included a graphical representation of the institution-specific culture survey results (see *Appendix N*), as well as institution-specific summary tables of the computed 'percentage'

scores associated with the level of importance reported for each of the organizational capacity survey question items as compared to the average responses from all five participating institutions. These tables are embedded throughout the presentation of the case study interview findings.

### *Pilot Study*

Prior to the implementation of the research plan, a pilot test was conducted of both the structured survey and the interview questions and protocols at one institution not included in the study population. The pilot test was conducted to ensure that the data collection questions, items, and processes would yield the type of information required, and that the questions were sensitive to the cultural nuances among institutional constituents in relation to SEM concepts. The pilot test was designed to explore the following:

- Were there any typographical errors?
- Were there any misspelled words?
- Did the item numbers make sense?
- Was the type size big enough to be easily read?
- Was the vocabulary appropriate for the respondents?
- Was the survey too long?
- Was the style of the items too monotonous?
- Were there easy questions in with the difficult questions?
- Were the skip patterns too difficult?
- Did the survey format flow well?
- Were the items sensitive to possible cultural barriers?
- Was the survey in the best language for the respondents?
- Were the questions understandable?

Results from the pilot study identified one substantive issue that warranted adjustment in *Section Two* of the quantitative survey. The primary question and response scale for rating the 64 statements on ‘organizational capacity conditions’ posed an issue of interpretation among two of the six pilot study participants. The question and response scale initially defined for use was:

*Please rate each of the following statements in terms of how important it was to the success of the initial stage in the development of the enrollment performance measurement system.*

***Use the following scale in your rating:***

1. *Not at all Important*
2. *Slightly Important*
3. *Important*
4. *Very important*
5. *Critically Important*

The nature of the concern expressed is best reflected in the words of one of the pilot study participants:

I found the section 2 response options confusing. I was not sure if I should be indicating what was important for success of the implementation, or if I should be indicating what should have been important. For instance: **1.3 Our Executive leaders demonstrated commitment to making information widely available.** While I think it is critically important that this should have happened, it did not happen so I was left unsure of what response to indicate. By saying it was "not important," I felt that I was saying it happened in spite of these factors and was therefore a success. I think by asking how important it is to the "success" is tricky, because there is an assumption that 1) it was successful and that 2) it was successful due to the factor defined (unless you are surveying people who would unanimously determine their initial process was a success) I think I would have preferred a measure of "strongly agree," "agree," agree somewhat, "disagree," strongly disagree."

Following consultation with UNL faculty, UNL supervisors guiding this study, and other pilot survey participants, the question and response scale was changed to added clarity as follows:

*Please rate the degree to which each of the following statements contributed to the success of the initial stage in the development of the enrollment performance*

*measurement system. If the statement was not a REAL condition that existed at the time of the initial stage in the system implementation, please indicate “not applicable.”*

***Use the following scale in your rating:***

- 1. Not at all*
- 2. Very little*
- 3. Somewhat*
- 4. To a great degree*
- 5. Not applicable*

Beyond the issue of response scale, the pilot study did not identify any other substantive issues. Only minor editorial and technical adjustments were made to the survey, interview questions, and cover letters to address spelling and grammatical improvements, as well as a few minor technical issues in the use of the web-designed surveys.

### ***Research Implementation Plan***

An overview of the implementation plan and timelines that guided this two-phase study is presented in *Table 7*. A detailed description of the implementation protocols and processes for gaining permission associated with each phase of the study follows.

#### **Quantitative Phase (Survey Research)**

##### ***Gaining Permission***

The president of each institution was emailed a letter of invitation to participate in the two-phase study (see *Appendix C*). The letter indicated that by consenting to participate in the study, the president was agreeing to: (a) identify ten institutional representatives for inclusion in the two-part survey process, and (b) serve as a potential case study institution depending on the outcome of the initial survey phase. The letter also sought clarification regarding the need for institution-specific Institutional Research

Table 7

*Implementation Plan and Timeframe*

Process Steps	Reference Documents	Timeframe
Phase I. Quantitative Survey		
1. <b>Letter of Invitation</b> -Formal letter sent to the president requesting institutional participation in the study.	<b>Appendix C</b> - Letter of Invitation to the President	<b>Week One</b>
2. <b>Follow-up telephone call to the president</b> - The purpose of the call was to provide clarity on the study.	<b>Appendix D</b> - Follow-up Telephone Script	<b>Week One</b>
3. <b>President signs letter of consent</b> - Upon agreement to participate, the president forwards a signed letter including a list of at least 10 nominated institutional representatives to be included in the research process. Each signed letter is submitted to the UNL Institutional Review Board for approval.	<b>Appendix C</b> - Letter of Invitation to the President (included consent form) <b>Appendix A1</b> - UNL IRB Approval Letter	<b>Week Two</b>
4. <b>Introductory e-mail to institutional participants</b> - Each identified survey participant was contacted via email with information about the study to invite their participation. A link to Section One (Culture Survey) was deployed under separate email by the third party web service. The second component of the survey was administered within one or two days following receipt of the completed Culture survey.	<b>Appendix E</b> - Introductory e-mail to Survey Participant <b>Appendix A3</b> -Survey Questionnaire	<b>Week Three</b> Within 7 days after receipt of UNL approval
5. <b>Follow-up e-mail</b> - A second e-mail was sent as a reminder to participants who had not responded to the first component of the survey after a one week period. This same email was used as a reminder for the second component of the survey and sent to non-respondents one week after initial deployment.	<b>Appendix F</b> - Follow-up email to Survey Participant	<b>Week Four</b> One week after the first e-mail
6. <b>Final contact</b> - A third and final communication was made by email and telephone to non-respondents one week later. A two-week extension was subsequently added given conflicts with summer vacation period.	<b>Appendix G</b> - Final Communication with Survey Participant- Telephone Script	<b>Week Five</b> One week after the follow-up e-mail

Table 7 continues



Process Steps	Reference Documents	Timeframe
Phase I. Quantitative Survey (cont'd)		
<p>7. <b>Select and Confirm Case Study Institution</b>            - An interim status report was emailed to the presidents of all participating institutions indicating Phase I of the study was complete, and that selection of case study site(s) was pending data analysis. Consent from the president of each selected case study institution was subsequently requested. All other institutions were notified by email accordingly, with thanks, confirming that a summary of the research findings would be sent following approval of the research by UNL dissertation committee.</p>	<p><b>Appendix H1-H3</b> -Interim status report to President; Confirmed Consent by Case Study Institutions; Letter of Thanks to Other Institutions</p>	<p><b>Week Eight</b>            Within 3 weeks after completion of Phase I</p>
Phase II. Qualitative Case Study		
<p>8. <b>Invitation to Participate in Follow-up Interview</b> - Each institution was requested to designate a contact person to assist in scheduling interviews. All individuals who participated in the survey and indicated “willingness to participate in the interview process” in answer to a survey question were invited via e-mail to participate in the interview process. If they agreed, an interview date and time was scheduled with the assistance of the institutional contact person. Participants were required to sign Letters of Consent <i>prior to</i> the interview process. WebEx was used as the medium to conduct the interview, as it allowed for cost free long-distance calls and use of Power Point visual aids.</p>	<p><b>Appendix I</b> -Invitation to Participate in Follow-up Interview   <b>Appendix J</b> - Interview Questions, Protocols, Visual Aid</p>	<p><b>Weeks Twelve to Fourteen</b> Within 4 weeks of selection of host institution(s) (Depending on IRB approval process)</p>
<p>9. <b>Validation of Interview Transcript</b>- A third party transcription service was used to facilitate rapid turn-around of the interview transcripts, which were subsequently sent for validation to the interview participant.</p>	<p><b>Appendix K</b> -email Confirmation of Interview Transcript</p>	<p><b>Week Sixteen</b>            Within two weeks of the interview</p>
<p>10. <b>Final Communication to the President</b> - The president of each of the participating institutions was notified of the conclusion of the interview process, with thanks, confirming that a summary of the research findings would be sent following approval of the research by UNL dissertation committee.</p>		

Board (IRB) approval, with the condition that such approval must be received within a period of one month from receipt of the letter. None of the institutions required institution-specific IRB approval.

A follow-up telephone call was made within one week of the e-mail for purposes of providing clarity on the study, as well as assurance that the name of the institution would not be revealed, and that information provided by institutional constituents included in the survey process and follow-up interviews would be confidential (see *Appendix D* for telephone script). Given recurring spam email issues, numerous follow-up telephone and email communications with the staff in presidential offices were required to confirm receipt of documents. The two-week timeline proved problematic for a few institutions to respond with the appropriate signed documents and list of institution representatives. Provision was made to accommodate the timelines that were most realistic for the institution.

In compliance with the University of Nebraska at Lincoln (UNL) research approval protocols, each signed letter of presidential consent was submitted to the UNL Institutional Review Board for review and approval on a case by case basis (see *Appendix A1*).

### ***Research Implementation Protocols***

Within seven days following approval by the UNL Institutional Review Board, each institution-identified individual was contacted via email with an invitation to participate in the study (see *Appendix E*). The email was personalized to the individual in an effort to establish a basis of trust in the research process. The email included the following information:

- the president had consented to have the institution included in the study;
- the voluntary nature of participation;
- assurance that the identity of participants as well as the institutions with which they were affiliated would not be revealed in the final research report;
- assurance that survey and interview responses would be confidential, as no identifying information would be connected to the participant;
- assurance that identifier codes in the survey and in the collection of participant information in the interview process would be used solely for data analysis purposes; and would not be connected to an individual or to an institution in the reporting or presentation of the research results;
- benefits of the research;
- necessary IRB contact information;
- expected time to complete the survey (50-minutes);
- potential of a follow-up 90-minute interview, if selected as a case study institution;
- that participants may withdraw at any time in the process without consequence or required explanation and without harming their relationship with the researchers, the University of Nebraska-Lincoln, or their respective institution;
- that if a participant chose to withdraw, he/she would be given the option of having collected information to that point excluded from the analysis;
- there were no known risks for participating in this research; and
- notification that a link would be sent under separate email to Section One of the survey questionnaire.

A second e-mail was sent as a reminder to individuals who had not responded to *Section One* of the survey after a one week period. The same email was used as a reminder for the second component of the survey, which was similarly sent after a one week period after being deployed. The follow-up letter focused on the benefits of

participation. The survey link to the first or second component of the survey (as appropriate) was subsequently sent by the third party web service (see *Appendix F*).

A third and final communication was made by telephone (and/or email in some instances) to non-respondents one week later. The non-respondents were offered more time to complete the survey, and were reminded of the importance of their participation for the institution to be included in the study. Individuals who did not agree to participate were requested to provide feedback regarding any concerns with the research or process (see *Appendix G*). Given delays in receiving presidential consent letters, the timelines associated with the survey process overlapped with summer vacation period. Numerous requests were received for an extension to the timeline for completing the survey. Therefore, in consultation with institutional contact persons and the third party web service provider, the timeline for survey the completion of the survey at each institution was extended by two weeks.

Following completion of the Phase I quantitative research, survey results were compiled with the assistance of the third party web service that deployed the survey and the technical analyst who was familiar with interpreting the OCAI culture survey data. Upon receipt of the survey results, an analysis of the survey data was undertaken.

### **Qualitative Phase (Semi-Structured Interviews)**

#### ***Gaining Permission***

For the qualitative phase of the study, a two-part process was employed to gain permissions. The first level of permission was sought from the president of the institution. Each president was sent an email requesting formal consent to serve as a case study institution. The email provided information about the follow-up interview process

and requested clarification of required Institutional Research Board (IRB) approval at the selected institution(s). If the institution was unable to commit to a response within a one-month period, another institution would have been selected (see *Appendix H*). The presidents from both of the selected institutions provided formal consent to participate in the study by returning the email along with the signed and dated letter of consent (by fax or scanned). Neither institution required institution-specific IRB approval.

Following UNL Institutional Review Board approval of the two institutions, the second level of permission was sought from the individuals selected to participate in the interview process. Upon receipt of the signed and dated letter of consent from each institution's president, the selected institutional interview participants were sent an email inviting their participation in the interview process along with a request to sign and date the UNL approved Participant Letter of Consent which was attached to the email. This process was facilitated by an institutional contact person who was designated by the president of each institution to assist in contacting interview participants and scheduling the 90-minute telephone-based interviews. The email that was sent to selected institutional interview participants confirmed that the president of the institution had consented to having the institution participate in the case study process. The email reminded individuals that participation in the interview process was voluntary, and referred them for further details about the research and interview process to the Letter of Participant Consent. The Participant Letter of Consent provided additional information about the case study component of the research, the interview process and protocols including the audio-taping of the interview, the subsequent transcript verification process, and a reminder that the institution and participants would not be identified in the final

research report. All individuals who were invited to participate in the interview process accepted the invitation and submitted the signed and dated Letter of Participant Consent (by fax or scanned documents) to the Principal Investigator *before* the appointed interview time, in compliance with the UNL approved research ethics protocols (see *Appendix I*).

### ***Research Implementation Protocols***

Institution-specific interview questions focused on developing an in-depth understanding of the quantitative survey responses (see *Appendix J*). Telephone-based interviews were conducted with each selected institutional interview participant using a semi-structured interview format. The telephone interview protocols that were used included:

- A review of the purpose of the research and processes associated with the two-phase study. Each individual was reminded of the terms for participating in the interview process (as per the Letter of Participant Consent), and advised of their right to terminate the interview at any point in time.
- Each interview participant was informed that the interview would be tape recorded, and that transcriptions from the audio-taped interview would be prepared and e-mailed within two weeks of the interview for their review. Confirmation of the accuracy of the information would be requested by return e-mail (see *Appendix K*).
- Each interview participant was invited to ask questions in advance of the interview regarding the purpose of the interview process.
- A description was provided of how the WebEx system would be used in the telephone-based interview process to view Power Point slides to assist in focusing the discussion on the survey findings.
- At the conclusion of the formal interview process, participants were invited to offer other information that they deemed relevant to the study and to contact the Principal Investigator directly should they have further reflective thoughts or information that they would like to share.

Following each interview, verbatim transcripts of the interview recordings were made using a reputable third party transcription service, *Points West Transcription Services*, from which a written confidentiality agreement was received in advance to ensure compliance with jurisdictional Freedom of Information and Protection of Personal Privacy regulations (see *Appendix M*). The use of the third party service permitted rapid turn-around of the interview transcripts for review by the interview participants, and expedited the research implementation process. Each interview participant was requested to review his or her interview transcript for accuracy.

The final step in the research process involved sending a communication to the president of each institution to convey appreciation for their interest and participation in the study. The presidents were advised that a copy of the summary findings would be forwarded following approval of the dissertation research by the University of Nebraska (see *Appendix L*).

## **Data Analysis**

### ***Quantitative Phase (Survey Research)***

Given the limited empirical research related to this study, no formal predictions or hypotheses were established regarding the degree of consistency of responses across institutions on culture value orientations and organizational capacity conditions. Data from each of the three components to the survey were analyzed separately. Since the culture and capacity sections of the survey used differing response scales, no statistical correlation analyses were conducted to explore potential relationships between the ‘culture’ and ‘capacity’ survey results. The data analysis plan for each section of the survey follows.

### **Section One: Assessment of Organizational Culture Value Orientations**

Data from the OCAI survey were compiled with the assistance of the technical analyst who provided computer programming and advice on the interpretation of the proprietary OCAI culture survey. In consultation with the technical analyst, criteria were established for interpretation of the OCAI survey data for the purposes of this study. That is, to determine the culture value orientations that best characterized the ‘real’ versus ‘ideal’ cultures across institutions as defined by:

1. whether or not there was consistency in a **predominant** ‘real’ culture type,
2. the degree of **balance** in the ‘real’ culture among the four culture types, and
3. **discrepancies** between the ‘real’ and ‘ideal’ culture profiles .

Two techniques were used to analyze the results from the OCAI survey:

1. **An analysis of standard deviations** — Computed standard deviations were used to measure the variability of each of the four ‘culture type’ mean (or average) scores (i.e., Create, Compete, Control, Collaborate) by institution from the expected mean score. The computed standard deviations (SD) were used as the basis to determine whether or not: (a) each institution had a ‘dominant’ culture type (i.e., the strength of an organization’s culture score where the higher the score, the stronger or more dominant the culture type), and/or (b) a ‘balanced’ culture (i.e., when similar emphasis was placed on each of the four culture types). These two organizational culture conditions are inter-related. Therefore, criteria were adopted as thresholds for differentiating when these cultural attributes existed. The criteria were based



upon thresholds commonly applied by the survey developers, Cameron and Quinn, in analyses of OCAI survey results.

2. **Analysis of the Competing Values Framework (CVF) graphical representation of computed scores** – The interpretation of the OCAI computed ‘culture type’ mean scores and standard deviations was informed by graphically plotting the scores using the computer-generated CVF graphical ‘radar’ map. The visual analysis of the plotted scores along with the descriptive profiles associated with the four quadrants of the CVF informed the interpretation of the survey results.

A more detailed description of both of these techniques follows.

### *Analysis of Standard Deviations*

A standard deviation (SD) is a commonly used measure of variability or dispersion from the expected value (or mean) of a dataset. The ‘expected’ score represents the sum of the values divided by the number of values ( $N$ ), where  $\{x_1, x_2, \dots, x_N\}$  represent the observed values of the survey items and  $\bar{x}$  represents the ‘expected’ (i.e., mean) value. In application to the OCAI culture survey, mean scores were computed across the responses from individual respondents at each institution to obtain an institutional score for each of the 24 statements. A ‘culture type’ mean score was calculated by averaging the statements associated with each of the four culture types by institution. These averages were compared to the ‘expected’ mean for each culture type, which was always ‘25,’ since each statement associated with the four culture types was rated out of 100 points (i.e., 100 points divided by four culture types = expected score of 25). Therefore, the probability associated with each culture type was a score of ‘25.’ The

standard deviation, which is statistically represented as ‘ $\sigma$ ,’ was calculated by finding the square root of the average squared deviations from the mean, as represented by the following statistical formula:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2},$$

where  $\bar{x}$  is the ‘expected’ (or mean) of the values  $x_i$ , defined as:

$$\bar{x} = \frac{1}{N}(x_1 + x_2 + \dots + x_N) = \frac{1}{N} \sum_{i=1}^N x_i.$$

Standard deviations were computed in relation to the aggregated responses from individual respondents at each institution. A low standard deviation indicated that the data points were very close to the ‘expected’ value, whereas a high standard deviation indicated that the data was spread out over a large range of values. Typically, an organization with a ‘dominant’ culture type would have a culture type score that was at least one standard deviation above the expected value of ‘25.’ However, under this criterion, given a small standard deviation, an organization could have both a ‘balanced’ culture and a ‘dominant’ culture type. In order to avoid the ‘balanced’ and ‘dominant’ interpretive problem, the following criteria were adopted as thresholds for interpreting whether or not there was a ‘dominant’ culture type and whether or not there was a ‘balanced’ culture, as follows:

- **‘Dominant’ Culture Type** – The strength of an organization’s culture (i.e., Create, Compete, Control, and Collaborate) was determined by the number of points awarded to the culture type score. The higher the score, the stronger or more dominant the culture type (Cameron & Quinn, 2006, p. 72).

*Criteria:* The criteria adopted to define when a ‘dominant’ culture existed were based on the presence of two conditions: (a) an SD greater than 10, *and* (b) a culture type score greater than 25 plus the SD. Essentially, an SD below 10 indicated a culture that was too balanced to have a dominant culture type.

- **‘Balanced’ Culture** - This refers to when similar emphasis was placed on each of the four ‘culture types’ (i.e., Create, Compete, Control, and Collaborate).

*Criteria:* A standard deviation (SD) less than 5 was established as the criteria for defining a ‘balanced’ culture.

- **‘Culture Type Leaning’**- While a dominant culture type may not be evidenced by the computed scores, a tendency toward a particular culture type may be observed based upon a visual analysis of the strength of each ‘culture type’ score on the CVF graphical ‘radar’ map within predefined statistical boundaries.

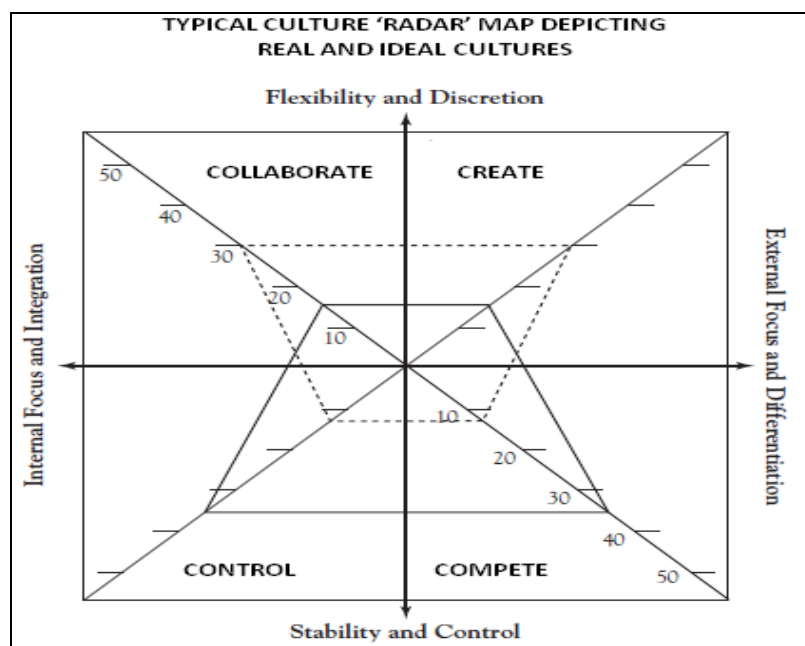
*Criteria:* A ‘leaning’ toward a particular culture type was determined when the culture scores fell within the ranges where there was an ‘unbalanced’ culture, but no ‘dominant’ culture type. That is, when the culture type score was greater than 25 plus the SD, but the SD was less than 10, OR when the SD was greater than 10, but the culture type score was less than 25 plus SD.

An interpretation of the statistical data was made in combination with the plotted mean ‘culture type’ scores on the CVF graphical maps in order to create a characterization of the culture profile for each of the five institutions.

### ***Analysis of CVF Graphical Representation of Computed Scores***

Cameron and Quinn (2006) subscribed to the insights drawn from Tukey (1977), the developer of the most frequently used statistical tests for assessing significant differences among sets of numbers, that the most effective way to interpret numbers was to plot them using diagrams. Cameron and Quinn asserted that organizational culture attributes were best demonstrated using visual maps. For purposes of this study, a graphical map was generated based upon the survey results for each institution by the third party OCAI technical analyst. The graphical maps were created using a standard software utility that plotted the computed mean scores associated with the four culture types (i.e., Create, Compete, Control, Collaborate) underlying the theory-based CVF model developed by Cameron and Quinn. An illustration of the graphical map and

associated culture dimensions is provided in *Figure 7*. Each map presented two representations of the culture survey results: (a) the ‘real’ culture value orientations that existed during the initial stage in the development of the enrollment performance measurement system (solid line); and (b) the ‘ideal’ culture value orientations that would have been preferred to support the success of the system development initiative (dotted line).



Source: Cameron & Quinn (2006).

*Figure 7*. Illustration of competing values framework.

The value of the graphical representation of the survey scores was that it allowed for the visualization of how similar or different the ‘real’ culture was relative to the ‘ideal’ culture. The culture map was used in the qualitative interview process as a tool to focus the discussion with the interview participants on the institution-specific culture survey results. The culture profiles were subsequently verified in consultation with the technical

analyst to ensure accuracy in interpretation of the statistical thresholds and graphical maps.

## **Section Two: Assessment of Organizational Capacity**

The second section of the survey was designed to obtain perceptions from survey participants on the degree to which each of the eight areas of organizational capacity associated with the IOA model contributed to the success of the initial development of the enrollment performance measurement system.

Survey results were compiled with the assistance of the third party technical analyst who supported the analysis of the OCAI survey data. Basic frequencies, computed means, and standard deviations were generated based on the valid responses (i.e., a rating of 1 to 4) to each of the 64 question items. See *Appendix O* for the frequency distribution of survey responses by question item and composite results across question items for each of the eight capacity areas. For purposes of determining what level of importance were each of the eight capacity areas to the success of the initial development of the enrollment performance measurement system, a 'composite percentage score' was computed for each of the eight topical question groupings associated with the IOA organizational capacity areas. The composite percentage score represented survey response ratings associated with a '3' and '4' response on the four-point scale. This composite score represented the percentage of total responses to question items that received a rating of 'at least somewhat' or 'a great degree' in the degree of contribution to the success of the systems development initiative. The composite percentage score was calculated by compiling the response ratings across question items within each grouping associated with the relative frequency of '3' and '4'

responses on the four-point scale to the survey items. That is, the number of '3' and '4' responses divided by the number of respondents with valid responses (i.e., 1, 2, 3, or 4).

Given the small number of respondents within and across institutions, the composite percentage scores were subsequently used as the basis for 'ranking' the eight organizational capacity areas to determine the relative priority of each of the eight capacity areas to the success of the systems development initiative. A ranking was then assigned across organizational capacity areas beginning with a rank of '1' assigned to the highest composite score. In the event of a tie, a standard ranking approach was used to assign the same rank to the tied scores, followed by a gap in the rank order sequence equivalent to the number of repeated rank scores. Results from the rankings were compared across institutions in order to identify whether or not there were patterns in the ranked organizational capacity areas based upon the composite scores.

### **Section Three: Features of the Enrollment Performance Measurement System**

The third section of the survey was designed to obtain information on the defining features of the advanced enrollment performance measurement system. Basic frequencies, computed means, and standard deviations were generated based on the valid responses to each of the question items. Given the numbers of survey respondents among the participating institutions ranged from 6 to 12 individuals, the following criteria were applied in establishing a 'valid' survey finding:

1. a survey item received at least **25%** of the 'total' responses across all five institutions,
2. at least **2 institutions** were represented in the 'total' responses to the survey item, and

3. **2 or more respondents** represented each of the above-referenced institutions.

A ‘defining feature’ was determined when a survey item received at least 25% of the ‘total’ responses across all institutions, and was consistently reported by two or more survey respondents from at least four of the five institutions.

### **Selection of Case Study Institutions**

The purpose of the qualitative case studies was to develop a more detailed understanding of the quantitative survey results. To inform the selection process, comparative analyses of the quantitative survey results from each of the three sections of the survey were conducted to determine the ‘consistency’ of responses across institutions. The criteria used in interpreting ‘consistency’ with respect to each section of the survey follows.

- **Consistency in Culture Value Orientation** - In relation to *Section One* of the survey (Assessment of Organizational Culture Value Orientations), ‘consistency’ across institutions was determined based upon a comparison of the ‘real’ versus ‘ideal’ culture value orientations across institutions as evidenced by:
  - whether or not there was consistency in a **predominant** ‘real’ culture type,
  - the degree of **balance** in the ‘real’ culture among the four culture value types, and
  - **discrepancies** between the ‘real’ and ‘ideal’ culture profiles.
- **Consistency in Organizational Capacity Conditions**- In relation to *Section Two* of the survey (i.e., Assessment of Organizational Capacity), ‘consistency’ across institutions was determined on the basis of a comparative analysis of

the ranked composite percentage scores associated with the eight IOA organizational capacity areas.

- **Consistency in the Features of the System-** For *Section Three* of the survey (i.e., Features of the Enrollment Performance Measurement System), the criteria used for determining ‘consistency’ in survey findings across institutions was based upon the aforementioned criteria associated with valid survey responses. That is: (1) a survey item received at least **25%** of the ‘total’ responses across all five institutions, (2) at least **2 institutions** were represented in the ‘total’ responses to the survey item, and (3) **more than one respondent** represented each of the represented institutions.

#### ***Qualitative Phase (Semi-Structured Interviews)***

In qualitative case studies, researchers analyze data in order to develop an in-depth description of the case to discover what is happening. Creswell (2007, p. 163) presented four forms of data analysis for case studies drawn from Stake (1995):

- categorical aggregation, seeking meaning from multiple related instances in a case or cases;
- direct interpretation, drawing meaning by delving into a single instance in a case;
- pattern-making, placing data from either of the above strategies into tables or matrices to discern relationships; and
- naturalistic generalizations, making statements about what can be learned from the particular case or cases.

Basic to all of these forms of data analysis is the process of coding data to extract meaning from texts, such as observation protocols, interview transcripts, and document evidence. Morse and Richards (2002) emphasized that all coding is a way to bring order and meaning out of seemingly disorganized and “messy” qualitative data. Coding may be



used to describe content, sort content (topical coding), and develop categories of meaning that emerge from the text (analytic coding). Hatch (2002) made a distinction between topical analysis that began with pre-established categories, such as a set of interview questions, and inductive analysis that builds entirely from the text and establishes categories as they emerge during coding. In all methods, code lists resulted that were one step of abstraction beyond the text. These were consolidated and regrouped in the pattern-making stage, and emergent themes were identified. These themes were larger ideas based on multiple codes. Through this process of labeling, sorting, and grouping ideas, the researcher discovered what was going on in the case.

For this study, all of the interviews were conducted by the Principal Investigator. Results stemming from the interview process were analyzed using an open-coding approach. Lists of codes, using the informants' words wherever possible, were made to label the content of their answers. After reviewing and combining similar codes, a table of codes and themes was created from what appeared in the data from multiple informants within each institution, and subsequently across institutions. The thematic outcomes were represented in tables that aligned the themes emerging from the explanatory qualitative interview process with the primary interview questions.

### *Mixed Methods*

The recurring themes derived from a cross-case analysis of interview findings from the two case studies were combined with the findings from the quantitative survey, thereby providing triangulation to validate the research results. Any finding supported by a valid survey result as defined below, and recurring themes from two or more interview participants at both case study institutions were considered valid for purposes of

drawing generalizations associated with the development of guidelines. Quantitative survey results were considered to be valid for this purpose when the following conditions were met:

- *Culture Value Orientation* – A survey result based on computed mean scores and standard deviations was consistent across at least four of the five participating institutions;
- *Organizational Capacity Conditions* – A survey sub-question item was rated by 75% or more of the total survey respondents from across the five institutions as contributing at least somewhat to the success of the systems initiative; and
- *Defining Features of the Systems Initiative* – A survey item received at least 25% of the ‘total’ responses across all institutions, and was consistently reported by two or more survey respondents from at least four of the five institutions.

Observations drawn from the analysis were compiled in such a manner as to protect the identity of individual participants and the associated institution.

Data were secured at the Principal Investigator’s home, and detailed transcripts were destroyed once the dissertation was accepted by the Faculty of Graduate Studies at UNL. An executive summary of the results from the study was made available to the president at each participating institution, the UNL graduate supervisor, and the supervisory review committee. The data analysis protocols indicated that the results may be used as the basis of conference presentations, published articles, or professional workshops/seminars at some future point in time.

## Verification Procedures

*Validity* is an assessment of the accuracy of the information obtained based on how well survey questions measure what is intended. *Reliability* is a statistical measure that addresses the reproducibility of the survey instrument's data. Reliability testing of items and scales provides a quantitative measurement of how well a survey instrument performs in a given population.

Two primary modes of data collection were used in this two-phase study. Phase I involved a structured three-part web-based survey; and Phase II study involved 90-minute semi-structured telephone-based interviews. The approaches employed for validity and reliability testing associated with each of the two data collection methods are detailed below.

### *Quantitative Phase (Survey Research)*

#### **Validity Testing**

Two types of validity checking were used for the quantitative survey: (a) content validity, and (b) face validity.

1. *Content Validity*- This type of validity checking of the survey was based upon non-quantifiable judgments from two sources:
  - A meta-review of published literature that was authored by recognized authorities on the IOA self-assessment tool, the OCAI culture questionnaire, and SEM literature was conducted to inform the research design of this study.
  - A review by the 'Panel of Experts' who had extensive experience in applying the IOA and OCAI assessment tools and SEM theories in

practice. The panel was requested to comment on the relevance of the survey content, as well as on its flow and the interpretability of questions.

2. *Face Validity*- This type of validity checking was a non-scientific form by non-experts. For purposes of this study it involved a pilot test of the survey instrument with individuals who shared similar attributes to those who were included in the study. The entire survey instrument (all three sections) was pilot tested with one institution. In this process, participants who represented all three constituent groups included in the study were asked to comment on the appropriateness of terminology used particularly in Sections Two and Three of the survey instrument, as well as the relevance of questions, response scales, and administration protocols associated with the entire multi-part survey.

### **Reliability Testing**

The multi-part survey consisted of three sections:

- *Section One* - the OCAI culture survey instrument developed by Cameron and Quinn (2006). The OCAI instrument was empirically tested and validated by the developers and had been in use over many years;
- *Section Two* – an original survey consisting of 64 statements that were based upon foundational research on SEM and organized around the eight IOA core elements of ‘organizational capacity’;
- *Section Three* – an original survey consisting of 15 questions many of which were adapted from the Goldstein and Katz (2005) study on academic analytics.

Because *Section Two* of the multi-part survey was an original survey developed for this study, a statistical test was conducted to determine the degree of reliability of the 64 survey associated with each of the eight IOA organizational capacity areas. Cronbach's alpha, which is a statistical measure that is a commonly used estimate of reliability in social science research, was used for this purpose. This statistical measure is used to test the 'internal consistency' (i.e., degree of homogeneity) among the items in a survey instrument in which the rating scale contains a range of possible answers for each item (McMillan, 2004, p. 143). A Cronbach's alpha test score was generated for each cluster of survey items associated with the eight IOA organizational capacity areas. Because of the few numbers of individuals included in the pilot study, meaningful results could not be obtained to test reliability in the piloting of the survey. Therefore, the statistical test was performed only on the actual survey data.

### ***Qualitative Phase (Semi-Structured Interviews)***

#### **Validity Testing**

In qualitative research, verification procedures seek to ensure validity in relation to the accuracy of the researchers' representation of the informants' experiences (Creswell, 2003). McMillan (2004) defined validity as "a judgment of the appropriateness of a measure for the specific inferences or decisions that result from the scores generated by the measure. It is the inference that is valid or invalid, not the measure" (pp. 136-137). The validity of a study should be established before the data are collected, which is why a pilot test of the instrument and procedures is often conducted prior to administration of a study. For purposes of the qualitative case study, the following forms of validity checking of the qualitative interviews were employed:

- *Face Validity*- A pilot test of the interview questions and protocols was conducted at one institution not included in the research with individuals who shared similar attributes to those included in the interview process. In this process, participants who represented all three constituent groups included in this study were asked to comment on the appropriateness of terminology used in the interview questions, the relevance of questions, and administration protocols associated with the interview process.
- *Member Checking*- This strategy involved showing interview participants the transcripts from their respective interview to confirm the accuracy of interpretation of what had been said. The telephone-based interview proceedings were audio-taped using a digital recorder. The digital voice files were then uploaded through a secure web site to a reputable transcription service compliant with Canadian and provincial privacy regulations (see *Appendix M*). The resultant transcripts were sent to the interview participants for verification of accuracy in interpretation and transcription, and were subsequently approved by all interview participants. The transcriptions were subsequently stored in the researcher's password protected computer for analysis.
- *Rich Description*- This strategy involved the use of the informants' own words where appropriate in the description of the research findings to capture their sentiments. According to Creswell and Miller (2000), providing the most complete picture possible of the informants' experience adds to the credibility of the study.

- *Triangulation*- This strategy involved using “multiple and different sources, methods, investigators and theories to provide corroborating evidence” (Creswell, 2007, p. 208). The combination of quantitative survey results with qualitative interview at two case study institutions provided triangulation of the results of this study.
- *Review of Literature*- Conclusions drawn from best practice studies discovered through the literature and scholarly research.

### **Researcher Bias**

“Qualitative approaches are characterized by the assumption that the researcher’s biases and perspectives must be understood and used in interpreting findings, whereas in a quantitative study researcher bias is a threat to internal validity” (McMillan, 2004, p. 258). In this study, the researcher occupied a SEM-consultant position with a leading North American enrollment management consulting firm. In order to mitigate potential bias in the research process, several strategies were employed:

- the study was designed to utilize a mixed methods approach, thereby mitigating potential bias through the use of triangulation of research findings;
- interview participants were afforded the opportunity to verify interview transcripts for accuracy;
- the third party Panel of Experts was engaged to provide objective insights into the design of the study and interpretation of results as required; and
- the third party OCAI technical analyst provided advice on the interpretation of proprietary culture survey results.

### **Ethical Considerations**

A detailed project proposal was submitted to the UNL Project Advisors, Professor Ron Joekel and Professor Emeritus Alan Seagren, and to the Project Supervisory Committee. Following the approval of the project proposal, the UNL IRB form was completed in detail, and submitted to the UNL Institutional Review Board (IRB) for the Protection of Human Subjects. Documentation accompanying the completed IRB form was included in the appendices contained herein.

As required by the UNL IRB Board, the researcher completed the CITI Course in The Protection of Human Research Subjects. The study was initiated upon receipt of the letter of compliance from the IRB Board under UNL's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46). The IRB approval number was affixed to the Letter of Participant Consent that was used to obtain informed consent from study participants (see *Appendix A. 1, IRB Approval, and I, Letter of Participant Consent* ).



## CHAPTER IV

### RESEARCH RESULTS

#### Introduction

This mixed methods study was guided by two purposes. The first purpose was to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the development of advanced enrollment performance measurement systems at a purposeful sample of leading-edge public North American colleges. Based upon understandings developed from an examination of the degree to which various organizational factors contributed to and impeded the initial development stages of the system, a second purpose of the study was to develop a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management (SEM) planning. A two-phase, explanatory sequential mixed methods study design was used, and involved collecting quantitative data followed by the collection of qualitative data to explain the quantitative data in more depth.

Results from each of the two-phases of the study are presented in this chapter. The chapter concludes with a synthesis of the combined 'mixed methods' findings. The results of the research are organized around the research questions guiding each of the two phases of the study.

#### **Research Findings—Quantitative Phase (Survey Research)**

##### *Survey Participation Rates*

The quantitative component of the research was conducted with representatives from the five participating institutions over a ten week period from May 4, 2010 to July

15, 2010. Participation rates among the institutionally identified participants from across the five institutions are presented in *Table 8*. Fictitious names were assigned to the institutions to protect their identities. For ease of reference, the five participating institutions are referred to using the following identifiers: Fabulous Small College (FSC), Visionary University (VU), Skillful College (SC), Celebrated College (CC), and Distinguished College (DC).

Table 8

*Number of Survey Participants and Participation Rates (%)<sup>a</sup> by Institution*

Survey Participation	Number of Institutionally Identified Individuals by Institution					Total Individuals
	FSC	VU	SC	CC	DC	
Total Invited Survey Participants	8	12	11	13	9	<b>53</b>
Actual Survey Participants	6	12	8	10	7	43
Actual Survey Participants (Sections II and III)	6 (75%)	12 (100%)	8 (73%)	10 (77%)	7 (77%)	<b>43 (81%)</b>

*Note.* a. Participation Rate (%) – refers to the actual number of survey participants as a percentage of the total number of institutionally identified individuals who were invited to voluntarily participate in the survey.

A total of **53** individuals were identified by the presidents of the 5 institutions and subsequently invited for voluntary participation in this study. Of these, **43** individuals (or **81%**) participated in all sections of the survey, and an additional two individuals participated in only the culture survey. The data from the 2 respondents who only completed the culture survey were included in the culture survey analysis since neither

individual exercised the option in follow-up communications to have their responses excluded from the analysis. The analysis for the other 2 sections of the survey was based upon the responses of the 43 individuals. Only one institution (Visionary University) had full participation by all invited survey participants. Participation rates to all sections of the multi-part survey ranged from 73% to 77% among the other four institutions. At least 3 attempts were made to follow-up with non-respondents to determine the reasons for not participating. Most invited participants indicated a willingness to respond, but several encountered time constraints due to business travel and/or vacation schedules.

The representation of the 3 constituent groups included in this study (i.e., systems developers, enrollment managers, institutional users) is presented in *Table 9*. As can be seen from the data, the 53 identified individuals who were ‘invited’ to participate in the survey were comprised of a fairly balanced representation from among the three constituent groups, including systems developers (30%), enrollment managers (38%), and institutional users (32%).

The representation of the 3 constituent groups among the 43 ‘actual’ survey respondents (33%, 35%, 30%, respectively) mirrored closely the ‘invited’ survey participant population. However, of importance to note was that **3** survey participants from one institution, Skillful College (SC), self-identified their affiliated group differently from the affiliated group they were associated with on the list of institutionally identified participants. For purposes of the analysis of the survey responses, the responding individuals were included in the affiliated group with which they self-identified. Given the uncertainty regarding whether all three constituents were actually

Table 9

*Numbers of Survey Participants by Constituent Group and Participation Rates by Survey Section*

Constituent Group	'Invited' and 'Actual' Survey Participants by Survey Section	Institution					Participation Rate <sup>a</sup> as a % of Total by Survey Section
		FSC	VU	SC <sup>b</sup>	CC	DC	
Systems Developers	Invited	2	4	4	4	2	<b>16 (30%)</b>
	Actual	2	4	3	3	2	<b>14 (33%)</b>
Enrollment Managers	Invited	4	4	4	4	4	<b>20 (38%)</b>
	Actual	2	4	3	3	3	<b>15 (35%)</b>
Institutional users	Invited	2	4	3	5	3	<b>17 (32%)</b>
	Actual	1	4	2	4	2	<b>13 (30%)</b>
<b>Total</b>	<b>Invited</b>	<b>8</b>	<b>12</b>	<b>11</b>	<b>13</b>	<b>9</b>	<b>53 (100%)</b>
	<b>Actual</b>	<b>6</b>	<b>12</b>	<b>8</b>	<b>10</b>	<b>7</b>	<b>43 (100%)</b>

- Note.*
- Participation Rate (%) – refers to the actual number of survey participants as a percentage of the total number of 'invited' and 'actual' survey participants.
  - Three individuals self-identified their affiliated constituency differently from that which was submitted on the original list of institutionally identified individuals. Therefore, it was not known whether all three constituent groups were represented among actual survey respondents.

represented in the survey participant group, Skillful College was excluded from consideration in the selection of the institutions for the qualitative case study component of the research.

### **Reliability Testing of the 'Organizational Capacity' Survey Items**

*Section Two* of the survey consisted of 64 originally developed survey question items organized around the IOA construct. In order to determine the internal consistency of the survey items associated with each of the eight IOA areas, Cronbach's Alpha

statistical coefficients were computed. The coefficients ranged from .723 to .943, as shown below:

**Cronbach's Alpha**

- 0.852 Strategic Leadership
- 0.845 Organizational Structure & Governance
- 0.905 Human Resources
- 0.874 Financial Management
- 0.723 Infrastructure
- 0.808 Program Management
- 0.874 Process Management
- 0.943 Inter-Organizational Linkages

These results were based on the survey responses of the 43 individuals who completed *Section Two* of the survey. Generally an alpha coefficient ranges in value from a '0' to '1.' An alpha value of 0.7 or higher is considered a reasonable level of reliability for use in an instrument. Based upon the above noted Cronbach's Alpha test results, a reasonably high level of internal consistency was demonstrated among the survey items related to each of the eight organizational capacity areas.

***Survey Findings—Research Question 1: Organizational Culture***

1. What **culture value orientations** using the OCAI instrument best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system?

The first section of the survey consisted of the OCAI culture survey instrument developed by Cameron and Quinn (2006). This survey was used to address research question one – that is, to determine what culture value orientations best characterized the 'real' versus 'ideal' conditions among participating institutions as defined by:

- whether or not there was consistency in a **predominant** 'real' culture type,
- the degree of **balance** in the 'real' culture among the four culture value types, and
- **discrepancies** between the 'real' and 'ideal' culture profiles.

In order to determine whether or not each institution had a ‘dominant’ culture type and/or a ‘balanced’ culture among the four culture types, two statistical measures were used: (a) computed ‘culture type’ mean scores, and (b) standard deviations (SD). The criteria established for interpretation of the ‘culture type’ mean scores and SD scores are presented below. The computed ‘culture type’ mean scores for each institution were plotted and graphically represented using the computer generated CVF graphical ‘radar’ map developed by Cameron and Quinn (see *Appendix N*). By combining the statistical data and observations from the graphical representation of the data, an interpretation of the culture profiles at each institution was developed. For purposes of this study, several descriptive terms were used in characterizing the ‘real’ versus ‘ideal’ culture value orientations across institutions. The terms and associated criteria used in the interpretation of the statistical data to distinguish them were as follows:

- **‘Dominant’ Culture Type** – The strength of an organization’s culture (i.e., Create, Compete, Control, and Collaborate) was determined by the number of points awarded to the culture type score. The higher the score, the stronger or more dominant the culture type (Cameron & Quinn, 2006, p. 72).

*Criteria:* The criteria adopted to define when a ‘dominant’ culture existed were based on the presence of two conditions: (a) an SD greater than 10, *and* (b) a culture type score greater than 25 plus the SD. Essentially, an SD below 10 indicated a culture that was too balanced to have a dominant culture type.

- **‘Balanced’ Culture** - This refers to when similar emphasis was placed on each of the four ‘culture types’ (i.e., Create, Compete, Control, and Collaborate).

*Criteria:* A standard deviation (SD) less than 5 was established as the criteria for defining a ‘balanced’ culture.

- **‘Culture Type Leaning’**- While a dominant culture type may not be evidenced by the computed scores, a tendency toward a particular culture type may be observed based upon a visual analysis of the strength of each ‘culture type’ score on the CVF ‘radar’ map within predefined statistical boundaries.

*Criteria:* A ‘leaning’ toward a particular culture type was determined when the culture scores fell within the ranges where there was an ‘unbalanced’ culture, but no ‘dominant’ culture type. That is, when the culture type score was greater than 25 plus the SD, but the SD was less than 10, OR when the SD was greater than 10, but the culture type score was less than 25 plus SD.

The resultant descriptive culture profiles derived from the survey results for each of the five institutions is presented below.

### **OCAI Survey Findings**

A comparative summary of the OCAI scores and associated culture profiles (i.e., culture type, degree of balance, and differences between the ‘real’ and ‘ideal’ scores) by institution are presented in *Table 10*. Notable findings and patterns were identified from the comparative analysis of the OCAI survey results across institutions. These findings are organized around the three criteria adopted in this study to define the culture value orientations that best characterized the ‘real’ versus ‘ideal’ conditions at the time of the initial development of the enrollment performance measurement system. That is:

- whether or not there was consistency in a **predominant** ‘real’ culture type,
- the degree of **balance** in the ‘real’ culture among the four culture value types, and
- **discrepancies** between the ‘real’ and ‘ideal’ culture profiles.

#### ***Consistency in a Predominant ‘Real’ Culture Type***

An organization was determined to have a ‘dominant’ culture type when two conditions existed: (a) an SD score greater than 10, and (b) a ‘culture type’ score greater than 25 plus the SD score. Based upon a comparative analysis of the computed scores across institutions presented in *Table 10*, the OCAI survey data indicated that there was **no consistent** dominant ‘real’ culture type across the five institutions during the initial stages in the system development, which is discussed in more detail below.

Table 10

*Comparison of Institutional Culture Profiles Based Upon Computed Mean Scores and Standard Deviations*

Culture Types and Orientations	FSC		VU		SC		CC		DC	
	Real	Ideal	Real	Ideal	Real	Ideal	Real	Ideal	Real	Ideal
Computed Mean Scores by Culture Type										
Create	18	26	22	25	24	24	22	26	17	25
Compete	38	14	14	20	27	21	27	20	33	23
Control	10	27	25	20	22	19	25	22	29	21
Collaborate	35	33	39	35	27	37	26	33	21	30
Computed Standard Deviation										
Computed SD Scores	SD = 13	SD = 8	SD = 11	SD = 7	SD = 2	SD = 8	SD = 2	SD = 6	SD = 7	SD = 4
Culture Profile Applying SD Score Criteria										
<u>Balanced</u> = SD < 5 <u>Unbalanced</u> = SD ≥ 5	Unbal	Ubal	Ubal	Ubal	Bal	Ubal	Bal	Ubal	Ubal	Bal
Dominant Culture Type Yes = SD > 10 and Culture Type Score > 25 + SD	Borderline Compete  SD > 10 and Culture Type Score Equal to but not > 38	No  SD < 10	Yes – Collaborate  SD > 10 and Culture Type Score > 36	No  SD < 10	No  SD < 10	No  SD < 10	No  SD < 10	No  SD < 10	No  SD < 10	No  SD < 10
Culture Type Leaning: 'Culture Type Score >25+ SD but SD < 10 OR SD > 10, but Culture Type Score < 2 SD	Collaborate  Score between 25 and 38	Collaborate  Borderline Score of 33		Collaborate  Score > 32		Collaborate  Score 33		Collaborate  Score 31	Collaborate  Score > 32	Collaborate  Score of > 29

*Note.* See Appendix N for the graphical representation of computed culture scores by institution. All computed scores were rounded to the nearest whole number.



- The data associated with **Fabulous Small College** (FSC) indicated the real culture type at the time of the initial stages in the systems development was *paradoxical* in nature. That is, there was a *borderline* ‘dominant’ culture of ‘Compete’ (i.e.,  $SD > 10$  and Culture Type score equal to *but not*  $> 38$ ), as well as a ‘culture type leaning’ toward ‘Collaborate’ ( $SD > 10$ , but Culture Type score between 25 and 38), which are two opposing culture type orientations on the CVF. The strength of these two culture types was almost to the diminution of the other two culture types of ‘Control’ (Culture Type score = 10) and ‘Create’ (Culture Type score = 18). These scores suggested that during the initial stages in the systems development, FSC had culture values that emphasized both a collaborative culture along with a competitive culture.
- Among the five institutions, the data associated with only one institution, **Visionary University** (VU), indicated that a single dominant ‘real’ culture existed at the time of the initial stages in the systems development. The single dominant culture type was notably ‘Collaborate’ ( $SD > 10$  and Culture Type score of 39, which is greater than the threshold of 36).
- The data associated with **Skillful College** (SC) indicated that no ‘dominant’ ‘real’ culture type existed during the initial stage in the systems development. The SD score was less than five (i.e.,  $SD = 2$ ), which indicated that the ‘real’ culture during the initial stages in the systems development was relatively balanced.

- The data associated with **Celebrated College (CC)** indicated that no ‘dominant’ ‘real’ culture type existed during the initial stage in the systems development. The SD score was less than five (i.e.,  $SD = 2$ ), which indicated that the ‘real’ culture during the initial stages in the systems development was relatively balanced.
- In the case of **Distinguished College (DC)**, the data indicated that there was no dominant ‘real’ culture. However, there was a ‘culture type leaning’ toward ‘Compete’ (Culture Type score = 33), which fell within the threshold of a Culture Type score greater than 32 with SD score  $< 10$ .

#### ***Degree of Balance in the ‘Real’ Culture***

A ‘balanced’ culture was defined as one in which there was similar emphasis on all four culture types, as evidenced by an SD score that was less than five. Based upon the computed SD scores, two institutions had SD scores in the range of a ‘balanced’ culture, including Skillful College ( $SD = 2$ ) and Celebrated College ( $SD = 2$ ); and three of the five institutions had scores in the range associated with an ‘unbalanced’ culture, including Fabulous Small College ( $SD = 13$ ), Visionary University ( $SD = 11$ ) and Distinguished College ( $SD = 7$ ). Therefore, there was an **overall lack of consistency** across institutions in the degree of ‘balance’ in the ‘real’ culture at the time of the initial stages in the system development.

#### ***Discrepancies Between the ‘Real’ and ‘Ideal’ Culture Profiles***

In order to compare the ‘real’ and ‘ideal’ culture profiles across the institutions, an understanding was first required of the survey findings related to the ‘ideal’ culture.

- *'Ideal' Culture-* While the data indicated considerable variability across the five institutions in the 'real' culture profiles (i.e., SD scores ranging from 2 to 13), more consistency was evidenced by the data associated with the 'ideal' culture that would have been preferred to support the success of the system development initiative (i.e., SD scores ranging from 4 to 8) as follows:
  - At all five institutions, the culture scores associated with the 'ideal' culture indicated a 'culture type leaning' toward '**Collaborate.**' The 'culture type' scores associated with 'Collaborate' were markedly higher than for any of the other culture types at each of the five institutions, with the associated mean scores ranging from 30 to 37. In each case, the culture type score fell within the threshold criteria for a 'culture type leaning' (i.e., Culture Type score  $> 25 + SD$  but  $SD < 10$ ). That is, a minimum culture type score of 33 for FSC, 32 for VU, 33 for SC, 31 for CC, and 29 for DC.
  - With the exception of Distinguished College (DC), the SD scores associated with the 'ideal' culture at the other four institutions indicated that there was a preference for an '**unbalanced**' culture, whereby one or more culture value types predominated. This finding is consistent with the aforementioned finding of a preference toward a 'culture type leaning' of 'Collaborate' (i.e., a markedly higher score associated with one culture type than any of the other three culture types).

### ***Discrepancies Between the 'Real' and 'Ideal' Culture Scores***

A comparison of the 'real' and 'ideal' culture scores by institution indicated that in the case of four of the five institutions, the 'real' culture was substantively at variance

with the 'ideal' culture. The one exception was **Visionary University**, which was the only institution for which the data indicated a 'real' culture that was closely aligned with the 'ideal' culture. A comparison between the 'real' versus 'ideal' culture type score by institution follows:

- The 'real' culture type at **Fabulous Small College** was paradoxical in nature with the highest scores associated with the opposing culture types of 'Compete' (38) and 'Collaborate' (35); whereas the highest 'ideal' culture type score was associated with only 'Collaborate' (33). The differences between the 'real' and 'ideal' scores among the four culture types ranged from two to twenty-three points. This was particularly evident in comparing the 'real' versus 'ideal' culture type scores associated with Compete (38 versus 14, respectively) and Control (10 versus 27, respectively). FSC had a highly unbalanced 'real' and 'ideal' culture profile ( $SD > 5$ ), indicating a preference for a significant shift in culture value emphasis.
- The highest 'real' culture type score at **Visionary University** was associated with 'Collaborate' (39), which also was the culture type associated with the highest 'ideal' score (35). The differences between the 'real' and 'ideal' scores among the four culture types ranged from three to six points. Therefore, there was considerable alignment between the 'real' and 'ideal' culture profiles. VU had a highly unbalanced 'real' and 'ideal' culture profile ( $SD > 5$ ).
- The highest 'real' culture type score at **Skillful College** was tied between 'Collaborate' and 'Compete' (both scores = 27); whereas the highest 'ideal'

culture type score was associated with only 'Collaborate' (37). The differences between the 'real' and 'ideal' scores among the four culture types ranged from one to ten points, with the greatest discrepancy between the 'real' and 'ideal' scores associated with the culture type of 'Collaborate' (27 versus 37, respectively). SC had a highly balanced 'real' culture profile ( $SD < 5$ ), but an unbalanced 'ideal' culture profile ( $SD > 5$ ), indicating a preference for a shift toward a culture orientation of 'Collaborate.'

- The highest 'real' culture type score at **Celebrated College** was associated with 'Compete' (27); whereas the highest 'ideal' culture type score was associated with 'Collaborate' (33). The differences between the 'real' and 'ideal' scores among the four culture types ranged from three to seven points, with the greatest discrepancy between the 'real' and 'ideal' scores associated with the culture type of 'Collaborate' (26 versus 33, respectively). CC had a highly balanced 'real' culture profile ( $SD < 5$ ), but an unbalanced 'ideal' culture profile ( $SD > 5$ ), indicating a preference for a shift toward a culture orientation of 'Collaborate.'
- The highest 'real' culture type score at **Distinguished College** was associated with 'Compete' (33); whereas the highest 'ideal' culture type score was associated with 'Collaborate' (30). The differences between the 'real' and 'ideal' scores among the four culture types ranged from eight to ten points, with the greatest discrepancies between the 'real' and 'ideal' scores associated with the two culture types of 'Compete' (33 versus 23, respectively) and

‘Collaborate’ (21 versus 30, respectively). DC had an unbalanced ‘real’ culture profile ( $SD > 5$ ), but a balanced ‘ideal’ culture profile ( $SD < 5$ ).

Given the nature of the discrepancies between the ‘real’ versus ‘ideal’ culture profiles presented above, a deeper understanding was needed regarding the strategies that were employed in order to address the gaps. This was an issue of relevance to the qualitative component of the research.

### Summary

Results from the OCAI survey based on an analysis of computed culture scores and standard deviations across institutions are presented in *Table 11*. The defining features presented in the table reflected attributes that were based on consistent survey results across at least four of the five institutions.

Table 11

#### *Defining Cultural Attributes*

Culture Attributes	Defining Features
Consistency in a <b>predominant</b> ‘real’ culture type	None
Consistency in <b>degree of balance</b> in the ‘real’ culture	None
Consistency in a <b>predominant</b> ‘ideal’ culture type	Preference for an ‘ideal culture’ that had a ‘leaning’ toward <b>‘Collaborate’</b>
Consistency in <b>degree of balance</b> in the ‘ideal’ culture	Preference for an ‘ideal’ culture that was <b>‘unbalanced,’</b> where one or more culture value types predominated
<b>Discrepancies</b> between the ‘real’ and ‘ideal’ culture profiles	‘Real’ and ‘ideal’ culture types were <b>substantively at variance</b>

*Note.* The defining features reflect attributes that were based on consistent survey results among at least four of the five institutions.

As indicated by the data in *Table 11*, there was no consistent ‘predominant’ ‘real’ culture type across institutions during the initial stages in the systems development initiative. Similarly, there was no consistency in the ‘degree of balance’ among the four culture types across institutions. Therefore, the survey results indicated that there was **no culture value orientation that best characterized the ‘real’ culture at the time of the initial development of the enrollment performance measurement system.**

While the data indicated considerable variability across the five institutions in the ‘real’ culture profiles, more consistency was evidenced by the data associated with the ‘ideal’ culture that would have been preferred to support the success of the system development initiative. In relation to the ‘ideal’ culture, there was a **preference for an ‘unbalanced’ culture** where one or more culture value types predominated, and a **‘leaning’ toward a collaborative culture**, as demonstrated by markedly higher scores associated with this culture type than for any of the other ‘ideal’ culture types. A collaborative culture type represented a very friendly place to work where people shared a lot of themselves. Features of a collaborative culture type included:

The leaders or head of the organization, are considered to be mentors, and maybe even, parent figures. The organization is held together by loyalty and tradition. Commitment is high. The organization emphasizes the long-term benefit of human resource development and attaches great importance to cohesion and morale. Success is defined in terms of sensitivity to customers and concern for people. The organization places a premium on teamwork, participation and consensus. (Cameron & Quinn, 2006, p. 66)

In terms of discrepancies between the ‘real’ and ‘ideal’ culture profiles across institutions, in the case of four of the five institutions, **the ‘ideal’ culture was substantively at variance with the ‘real’ culture.** The one exception was **Visionary University.** This was the only institution for which the data indicated a ‘real’ culture that

was closely aligned with the ‘ideal’ culture. Therefore, on the strength of the culture survey results, two issues warranted more in-depth exploration in the qualitative component of the research. These included a determination of:

1. what factors contributed to the very ‘unbalanced’ ‘real’ culture type at the time of the initial systems development, and
2. what strategies needed to be employed in order to address the ‘gap’ between the ‘real’ and ‘ideal’ culture profiles.

***Survey Findings—Research Question 2: Organizational Capacity***

2. What level of importance was each of the following **eight areas of organizational capacity** associated with the IOA model to the success of the initial development of the enrollment performance measurement system:
  - a. Strategic leadership?
  - b. Organizational structure?
  - c. Human resources?
  - d. Financial Management?
  - e. Infrastructure?
  - f. Program management?
  - g. Process management?
  - h. Inter-organizational linkages?

The second section of the survey was designed to address the second research question – that is, to obtain perceptions from survey participants on the degree to which each of the eight IOA areas of organizational capacity contributed to the success of the initial stages in the development of the enrollment performance measurement system. The IOA framework for reviewing an organization’s capacity was comprised of eight interrelated areas that underlie organizational performance, including: (a) strategic leadership, (b) organizational structure, (c) human resources, (d) financial management, (e) infrastructure, (f) program management, (g) process management, and (h) inter-



organizational linkages. For the purposes of this study, 64 question items were based upon a review of the literature on SEM principles that were aligned with the eight IOA capacity areas. The topical question items derived from this process that framed the development of the survey is presented in *Table 12*. The specific question items that comprised this section of the survey are presented in *Appendix A3, Section 2 of the Survey Questionnaire (Questions 2.1A-2.8A)*.

Table 12

*Sub-Component Question Topics Associated with the Eight IOA Organizational Capacity*

Organizational Capacity in Rank Order	Attributes
Strategic Leadership	<ul style="list-style-type: none"> <li>• Knowledge, commitment, and role of executive leaders</li> <li>• Importance of enrollment to the academic and financial well-being of the institution was articulated in strategic plans</li> <li>• Importance of enrollment planning and a formal enrollment plan</li> </ul>
Organizational Structure and Governance	<ul style="list-style-type: none"> <li>• Role of a designated enrollment management leader and enrollment analyst</li> <li>• Role of an institutional committee with broad representation</li> <li>• Commitment of academic leaders at the level of the dean and higher</li> <li>• Commitment of other institutional leaders (President, governing board, Chief Information Officer, data owners, Chief Financial Officer)</li> <li>• Alignment of the initiative with the institution's strategic plan</li> </ul>
Human Resources	<ul style="list-style-type: none"> <li>• Staff skills to support the implementation</li> <li>• Training of staff and managers as an institutional priority</li> <li>• Staff incentives</li> <li>• Skills required of new staff hires (analytical and technical)</li> <li>• Training in change management</li> <li>• Staff accountability for their performance with consequences</li> </ul>

Table 12 continues

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Organizational Capacity in Rank Order	Attributes
Financial Management	<ul style="list-style-type: none"> <li>• Accountability and empowerment of managers of enrollment/student services</li> <li>• Budgetary consequences associated with missing or exceeding enrollment goals</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Data/technology infrastructure and enrollment performance measurement capabilities</li> <li>• Needs of institutional users, operational departments, and faculty</li> <li>• Trust in the integrity of enrollment related data</li> <li>• Data quality as a priority of the data owners</li> <li>• Adequacy of funding</li> <li>• Use of external consultants</li> </ul>
Program Management	<ul style="list-style-type: none"> <li>• Use of quantitative benchmarking in planning and decision-making</li> <li>• Support of data managers (e.g., Registrar, Admissions Director) in making the data widely available inform decisions</li> <li>• Commitment by managers in enrollment/student services operations to use data</li> <li>• Broader access to data was viewed by institutional decision leaders as a means to improve decisions</li> </ul>
Process Management	<ul style="list-style-type: none"> <li>• Existence of a shared vision and goals for the system development</li> <li>• Importance of communicating with campus community and decision leaders</li> <li>• Assessment of return on investment was tied to the implementation</li> <li>• Drivers underlying the system development</li> <li>• Willingness of operational units to accept change</li> <li>• Involvement of faculty and data managers in defining the functional specifications</li> </ul>
Inter-Organizational Linkages	<ul style="list-style-type: none"> <li>• The system was designed in consideration of the needs of external agencies (compliance with regulatory reporting requirements, research granting bodies, accrediting bodies, educational partners)</li> </ul>

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## Capacity Survey Findings

Survey participants were asked to rate the degree to which each of the 64 statements associated with the eight capacity areas contributed to the success of the initial stages in the development of the enrollment performance measurement system using a four-point response scale: *1. Not at all, 2. Very little, 3. Somewhat, 4. To a great degree.* If the statement was not a ‘real’ condition that existed at the time of the initial stage in the system development, then respondents were asked to assign a response of ‘*Not applicable.*’

For purposes of determining what level of importance each of the eight capacity areas was to the success of the initial stages in the development of the enrollment performance measurement system, a composite ‘percentage’ score was calculated for each of the eight IOA capacity areas. The composite ‘percentage’ score was calculated by compiling the response ratings across question items within each grouping associated with the relative frequency of ‘3’ and ‘4’ responses as a percentage of the valid responses to the survey question item (i.e., a rating of 1 to 4). See *Appendix O* for the frequency distribution of survey responses by question item and composite results across question items for each of the eight capacity areas. This score was then used as the basis for ranking the eight organizational capacity areas in order of highest contribution to the success of the systems development initiative. Results from the rankings were compared across institutions in order to identify whether or not there were patterns in the ranked organizational capacity areas based upon the composite scores.

The data shown in *Table 13* presents a comparison across institutions of the ranked organizational capacity areas based upon the computed ‘percentage’ scores. In

Table 13

*Ranking of the Eight IOA Organizational Capacity Areas by Institution in Order of Highest Contribution Based upon the Computed Composite 'Percentage' Score of a '3' and '4' Response on the Four-Point Response Scale<sup>a</sup>*

Organizational Capacity Areas	Institutions					Overall Response
	FSC	VU	SC	CC	DC	
Rank Associated with Computed 'Percentage' Scores by Institution						
Strategic Leadership	4 65%	<b>2</b> <b>86%</b>	<b>1</b> <b>92%</b>	<b>2</b> <b>91%</b>	<b>2</b> <b>82%</b>	<b>1</b> <b>84%</b>
Organizational Structure & Governance	5 58%	<b>1</b> <b>89%</b>	4 80%	<b>1</b> <b>96%</b>	3 81%	<b>2</b> <b>83%</b>
Human Resources	<b>8</b> <b>27%</b>	<b>7</b> <b>63%</b>	<b>7</b> <b>53%</b>	<b>7</b> <b>56%</b>	<b>8</b> <b>48%</b>	<b>7</b> <b>52%</b>
Financial Management	<b>7</b> <b>33%</b>	<b>8</b> <b>46%</b>	<b>8</b> <b>48%</b>	<b>8</b> <b>36%</b>	<b>7</b> <b>58%</b>	<b>8</b> <b>44%</b>
Infrastructure	<b>1</b> <b>75%</b>	5 76%	6 61%	5 80%	6 65%	6 72%
Program Management	<b>2</b> <b>73%</b>	4 81%	5 78%	4 81%	<b>1</b> <b>93%</b>	3 81%
Process Management	3 70%	6 76%	3 81%	6 68%	5 66%	5 73%
Inter-organizational Linkages	6 47%	3 84%	<b>2</b> <b>82%</b>	3 88%	4 69%	4 77%

Note. a. Four-point response scale: 1. Not at all, 2. Very little, 3. Somewhat, 4. To a great degree

order to visually denote the patterns demonstrated by the data, the two highest ranked organizational capacity areas and the two lowest ranked areas are denoted in bold.

Using the computed 'percentage' scores as the basis for identifying the level of importance of the eight organizational capacity conditions to the success of the systems development initiative, the following results were notable:

- Overall, the organizational capacity areas in order of ranked importance were:
  1. Strategic Leadership
  2. Organizational Structure and Governance
  3. Program Management
  4. Inter-Organizational Linkages
  5. Process Management
  6. Infrastructure
  7. Human Resources
  8. Financial Management
- When comparing the ranked scores across institutions, **‘Strategic Leadership’** consistently ranked among the top two capacity areas at four of the five institutions; and **‘Human Resources’** and **‘Financial Management’** consistently ranked among the two lowest at all five institutions. **Fabulous Small College** was the only institution in which ‘Strategic Leadership’ was not ranked among the top two capacity areas. There was considerable variability in the ranked position of each of the other five capacity areas.

### **Summary**

The relative importance of each of the eight IOA capacity areas based upon the ranked scores associated with the overall responses across all five institutions is presented in *Table 4.6*.

Overall, **‘Strategic Leadership’** ranked highest in contributing to the success of the initial stages in the systems development, and consistently ranked among the top two capacity areas among four of the five institutions. **‘Human Resources’** and **‘Financial Management,’** respectively, ranked lowest overall, and consistently ranked among the two lowest among all five institutions. There was considerable variability in the ranked

Table 14

*Level of Importance of the Eight IOA Organizational Capacity Areas Based on Overall Ranked Composite 'Percentage' Scores*

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IOA Organizational Capacity Areas in Rank Order
1. <b>Strategic Leadership</b>
2. Organizational Structure and Governance
3. Program Management
4. Inter-organizational Linkages
5. Process Management
6. Infrastructure
7. <b>Human Resources</b>
8. <b>Financial Management</b>

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*Note:* Items denoted in bold reflect capacity areas that consistently ranked among the top two or among the lowest two across at least four of the five institutions.

position of the other capacity areas across institutions, which suggested that the relative importance of these capacity areas was situational to the environmental context at each institution. **Fabulous Small College** was the only institution in which 'Strategic Leadership' was not ranked among the top two capacity areas.

On the basis of these results, more in-depth understanding was warranted in the qualitative component of the research in relation to:

1. the factors that contributed to the relative ranking of the top two and lowest two capacity areas; and
2. which sub-question items associated with each of the eight IOA capacity areas contributed 'most' and 'least' to the success of the systems initiative.

***Survey Findings--Research Question 3:***

***Features of the Enrollment Performance Measurement System***

2. What were the defining features of the advanced enrollment performance measurement system, using the Goldstein and Katz (2005) terminology and relevant survey questions, and profile of primary survey developers in relation to:
- The alignment of the system objective(s) to the institution's SEM context?
  - The primary objectives, scope, and intended users of the system?
  - The champion(s) for initiating and implementing the system development project?
  - The role of the survey respondent in the systems development project?
  - Willingness of the survey respondent to be involved in the follow-up interview process?

The third section of the survey was designed to obtain information to address the third research question – that is, to determine what were the defining features of the advanced enrollment performance measurement system. In addition, information was collected about the survey participant. More specifically, survey participants were asked to respond to a series of questions related to each of the following five topical areas:

1. Alignment of the system objective(s) to the institution's SEM context, which consisted of five questions related to:
  - a. the primary driver for initiating the system development,
  - b. year in which the system development was initiated,
  - c. institutional enrollment context during the preceding three-year period,
  - d. whether or not a SEM committee guided the system development, and
  - e. if a SEM committee existed, what involvement the committee had in the system development initiative.
2. Primary objectives, scope, and intended users of the system, which consisted of five questions related to:
  - a. the system reporting capabilities,
  - b. the system analytical capabilities,
  - c. the enrollment management functionality of the system,
  - d. affiliated constituent group of the survey participant, and
  - e. intended primary users of the system.

3. Champion(s) for initiating and implementing the system development project, which consisted of two questions related to:
  - a. the initial champion of the system initiative, and
  - b. the decision-making structures associated with the system implementation.
4. Role of the survey respondent in the systems development project, which consisted of two questions related to:
  - a. whether or not the survey participant was a sponsor or co-sponsor of the system development initiative, and
  - b. whether or not the survey participant was a member of a task team/committee guiding the system development.
5. Willingness of the survey participant to be involved in a follow-up interview if the institution was selected as a case study site, in response to a single survey question.

Findings from the survey follow, and are keyed to each of the aforementioned five topical areas. Because the numbers of survey respondents among the five participating institutions varied from six to twelve individuals, the following criteria were applied in establishing a ‘valid’ survey finding:

- a survey item received at least **25%** of the ‘total’ responses across all institutions,
- at least **two institutions** were represented in the ‘total’ responses to the survey item, and
- **two or more respondents** represented each of the above-referenced institutions.

A ‘defining feature’ was determined when a survey item received at least 25% of the ‘total’ responses across all institutions, and was consistently reported by two or more survey respondents from at least four of the five institutions.



Survey findings are presented first on the total responses across institutions, followed by institution-specific findings that fell within the conditions of a valid response.

### **Alignment of the System Objective(s) to the Institution's SEM Context**

#### ***Primary Driver for Initiating the System Development***

Survey participants were requested to identify from a list of six response options, what was the 'primary driver' for initiating the development of the enrollment performance measurement system. Survey responses to this question are presented in *Table 15*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 15*, overall, two of the six survey items met the criteria for a valid response. These included:

**Item D-** To improve the institution's ability to proactively support student success (e.g., early alert of at-risk students); and

**Item B-** To improve operational efficiency/effectiveness of enrollment/student service operations.

Of these two survey items, Item D was most frequently identified as the primary driver in initiating the systems development by 30% of total survey respondents; and Item B was the second most frequently identified driver by 25% of total survey respondents.

When comparing responses across institutions, Item D was the most frequently identified primary driver, or tied as one of two most frequently identified drivers, by respondents at three of the five institutions (Skillful College-50%, Visionary University-42%, and Celebrated College-30%); whereas Item B was identified as the primary driver most frequently by respondents at the other two institutions (Fabulous Small College-67% and Distinguished College-67%).

Table 15

*Primary Driver for Initiating the System Development Frequency Distribution of Responses to Capacity Survey Question 3.01*

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Improving the institution's ability to compete for qualified students.	1 17%	5 42%	--	--	--	6 15%
B. Improving the operational efficiency/effectiveness of enrollment/student service operations.	<b>4</b> <b>67%</b>	--	1 17%	1 10%	<b>4</b> <b>67%</b>	<b>10</b> <b>25%</b>
C. Improving the sophistication of decision-support information to inform resource allocations (e.g., space allocation, course scheduling, faculty workload, net revenues).	--	--	--	3 30%	--	3 8%
D. Improving the institution's ability to proactively support student success (e.g., early alert of at-risk students).	--	<b>5</b> <b>42%</b>	<b>3</b> <b>50%</b>	<b>3</b> <b>30%</b>	1 17%	<b>12</b> <b>30%</b>
E. Improving accountability reporting on the institution's enrollment goals.	1 17%	2 17%	1 17%	1 10%	1 17%	6 15%
F. Don't know	--	--	1 17%	2 20%	--	3 8%
Total Survey Respondents	6 100%	12 100%	6 100%	10 100%	6 100%	40 100%

Note. N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option.

### ***Year System Development Initiated***

Survey participants were requested to identify in what year the enrollment performance measurement systems development project was initiated. Survey responses to this question are presented in *Table 16*.

**Survey findings.** As shown by the data in *Table 16*, survey results to this question did not fall within the criteria set for a valid response. Survey responses both across and within institutions varied considerably in relation to the year in which the five institutions initiated the development of the enrollment performance measurement system. The years identified ranged from 2004 to 2010, with 57% of total survey respondents indicating the system was initiated between 2006 and 2008 inclusive. In addition, there was a relatively high non-response rate to this question (18%), which suggested that some respondents may not have been involved in the system development from its inception, or had become involved at differing points in time in its development. No clarifications associated with the non-responses were provided in the open-ended comments. Therefore, results to this question were inconclusive. Further understanding of the factors contributing to varied perspectives on the year of project initiation was warranted in the qualitative research.

### ***Institutional Enrollment Context***

Survey participants were requested to identify from a list of five response options, what was the institutional enrollment context during the three-year period preceding the initial development of the enrollment performance measurement system. Survey responses to this question are presented in *Table 17*. Bolded items represent those that fell within the criteria established for a valid response.

Table 16

*Year System Development Initiated Frequency Distribution of Responses to Capacity**Survey Question 3.02*

1.02 In what year was the enrollment performance measurement system development project initiated?						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
2004	--	2 17%	1 17%	1 10%	--	4 10%
2005	--	--	--	--	2 33%	2 5%
2006	--	4 33%	--	1 10%	1 17%	6 15%
2007	--	--	3 50%	5 50%	1 17%	9 22%
2008	5 83%	2 17%	--	1 10%	--	8 20%
2009	1 17%	2 17%	--	--	--	3 8%
2010	--	--	--	1 10%	--	1 2%
No Response	--	2 17%	2 33%	1 10%	2 33%	7 18%
Total Survey Respondents	6 100%	12 100%	6 100%	10 100%	6 100%	40 100%

Note. N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option

Table 17

*Institutional Enrollment Context Frequency Distribution of Responses to Capacity Survey**Question 3.03*

Q3.03 The institutional enrollment context during the three year period preceding the initial development of the enrollment performance measurement system could be best described as: (Select one only)

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Health	--	4 33%	1 17%	1 10%	1 17%	7 18%
B. Stable	1 17%	3 25%	2 33%	3 30%	3 50%	12 30%
C. Unstable	2 33%	3 25%	2 33%	3 30%	--	10 25%
D. Crisis	2 33%	--	--	--	--	2 5%
E. Don't know	1 17%	2 17%	1 17%	3 30%	2 33%	9 22%
Total Survey Respondents	6 100%	12 100%	6 100%	10 100%	6 100%	40 100%

Note. N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option

**Survey findings.** As shown by the data in *Table 17*, overall, two of the five survey items met the criteria for a valid response. These included:

**Item B-** 'Stable' enrollment context

**Item C-** 'Unstable' enrollment context

Of these two survey items, Item B – a 'Stable' enrollment context - was most frequently identified by 30% of the total survey respondents; whereas Item C– an

'Unstable' enrollment context - was most frequently identified by 25% of the total survey respondents.

When comparing responses across institutions, survey responses were equally divided between a 'stable,' 'unstable' or 'crisis' enrollment context *within* four of the five institutions (Fabulous Small College, Visionary University, Skillful College, Celebrated College). These results suggested that perceptions of the enrollment context varied among respondents- a matter warranting further exploration in the qualitative interview process. Two respondents at only one institution (**Fabulous Small College**) indicated that an enrollment 'crisis' preceded the systems development initiative.

### ***Strategic Leadership of an Enrollment Management Committee***

Survey participants were requested to identify whether or not at the time of the initial development of the enrollment performance measurement system, there an enrollment management committee that provided strategic leadership to the development and implementation of a SEM plan. Survey responses to this question are presented in *Table 18*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 18*, overall, all three of the survey items met the criteria for a valid response. However, there was significant variability in relation to whether or not an enrollment management committee provided strategic leadership to the development and implementation of a SEM plan. Among the total survey respondents across institutions, **40% responded 'Don't know,' 32% responded 'Yes,' and 28% responded 'No.'** Similarly, there was significant variability in the responses *within* each of the five institutions. Two individuals reported in the open-ended comments that they

Table 18

*Strategic Leadership of an Enrollment Management Committee Frequency Distribution of Responses to Capacity Survey Question 3.04*

Q3.04 At the time of the initial development of the enrollment performance measurement system, was there an enrollment management committee that provided strategic leadership to the development and implementation of a Strategic Enrollment Management plan? (Select one only)						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Yes (go to Question 3.5)	<b>2</b> <b>33%</b>	<b>6</b> <b>50%</b>	<b>2</b> <b>33%</b>	<b>3</b> <b>30%</b>	--	<b>13</b> <b>32%</b>
B. No (skip to Question 3.6)	<b>3</b> <b>50%</b>	<b>4</b> <b>33%</b>	<b>2</b> <b>33%</b>	--	<b>2</b> <b>33%</b>	<b>11</b> <b>28%</b>
C. Don't know	1 17%	<b>2</b> <b>17%</b>	<b>2</b> <b>33%</b>	<b>7</b> <b>70%</b>	<b>4</b> <b>67%</b>	<b>16</b> <b>40%</b>
Total Survey Respondents	6 100%	12 100%	6 100%	10 100%	6 100%	40 100%

Note. N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option

were not involved in the broader institutional planning committees and, therefore, were unsure of the nature of the SEM planning structure(s). These comments may help explain, at least in part, the relatively high number of 'don't know' responses to this question, as well as to the preceding question regarding the enrollment context during the prior three-year period to the initial development of the enrollment performance measurement system.

### *Involvement of the Committee in the Systems Development Initiative*

The survey respondents who indicated that an enrollment management committee provided strategic leadership to the systems development initiative were requested to indicate what involvement, if any, the committee had in the initial stages of the development and implementation of the enrollment performance measurement system. Survey responses to this question are presented in *Table 19*.

Table 19

### *Involvement of the Enrollment Committee in the System Development Frequency*

#### *Distribution of Responses to Capacity Survey Question 3.05*

If yes to Question 3.04, what involvement, if any, did the committee have in the initial stages of the development and implementation of the enrollment performance measurement system (Select one only)						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Sponsored the system development	1	4	--	--	--	5 38%
B. Informed the development of the system requirements as a user group	1	--	1	3	--	5 38%
C. None	--	--	1	--	--	1
D. Don't know	--	2	--	--	--	2 15%
E. Other	--	--	--	--	--	--
Total Survey Respondents	2 100%	6 100%	2 100%	3 100%	0	13 100%

Note. N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option



**Survey findings.** As shown by the data in *Table 19*, overall, of the 13 respondents for who this question applied, responses received from 10 respondents were divided between:

**Item A-**The committee sponsored the system development, and

**Item B-** The committee informed the development of the system requirements as a user group.

When comparing responses across as well as within institutions, survey responses were somewhat varied as to the role of the committee.

### **Primary Objectives, Scope, and Intended Users of the System.**

#### ***System Reporting Capabilities***

Survey participants were requested to indicate from a list of 11 options, what reporting capabilities was the system designed to provide at the completion of the initial stage in its development. Survey responses to this question are presented in *Table 4.20*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 4.12*, overall, 8 of the 11 survey items met the criteria for a valid response. These included (in order of most frequent response):

**Item B-** On-demand reports (e.g., generated when the user requires it)- 74%

**Item A-** Scheduled periodic reports (e.g., monthly) – 67%

**Item D-** Drill-down reports (e.g., users receive summary information that can be disaggregated to lower levels of detail) -59%

**Item H -** Data extracts to off-line tools (e.g., Excel, Access) – 56%

**Item E-** Ad hoc reports – 54%

**Item C-** User-defined reports (e.g., user can build their own reports) – 46%

Table 20

*System Reporting Capabilities Frequency Distribution of Responses to Capacity Survey**Question 3.06*

3.06 What reporting capabilities was the enrollment performance measurement system designed to provide at the completion of the initial stage in its development? (Select all that apply)

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Scheduled periodic reports (e.g., monthly)	<b>4</b> <b>80%</b>	<b>9</b> <b>75%</b>	<b>4</b> <b>67%</b>	<b>4</b> <b>40%</b>	<b>5</b> <b>83%</b>	<b>26</b> <b>67%</b>
B. On-demand reports (e.g., generated when the user requires it)	<b>4</b> <b>80%</b>	<b>8</b> <b>67%</b>	<b>4</b> <b>67%</b>	<b>7</b> <b>70%</b>	<b>6</b> <b>100%</b>	<b>29</b> <b>74%</b>
C. User-defined reports (e.g., user can build their own reports)	<b>3</b> <b>60%</b>	<b>6</b> <b>50%</b>	<b>3</b> <b>50%</b>	<b>1</b> 10%	<b>5</b> <b>83%</b>	<b>18</b> <b>46%</b>
D. Drill-down reports (e.g., users receive summary information that can be disaggregated to lower levels of detail)	<b>4</b> <b>80%</b>	<b>6</b> <b>50%</b>	<b>4</b> <b>66%</b>	<b>5</b> <b>50%</b>	<b>4</b> <b>67%</b>	<b>23</b> <b>59%</b>
E. Ad hoc reports	<b>4</b> <b>80%</b>	<b>6</b> <b>50%</b>	<b>3</b> <b>50%</b>	<b>5</b> <b>50%</b>	<b>3</b> <b>50%</b>	<b>21</b> <b>54%</b>
F. Performance management 'dashboard'(a management tool to track 'real-time' operational activity using key performance indicators e.g., admissions yields)	<b>3</b> <b>60%</b>	<b>4</b> <b>33%</b>	<b>4</b> <b>67%</b>	<b>3</b> <b>30%</b>	<b>3</b> <b>50%</b>	<b>17</b> <b>44%</b>
G. Executive-style 'balanced scorecard' (e.g., a reporting system that demonstrates performance progress on the institution's strategic plan using key performance indicators)	<b>3</b> <b>60%</b>	<b>2</b> <b>17%</b>	<b>2</b> <b>33%</b>	--	<b>3</b> <b>50%</b>	<b>11</b> <b>28%</b>
H. Data extracts to off-line tools (e.g., Excel, Access)	<b>2</b> <b>40%</b>	<b>6</b> <b>50%</b>	<b>3</b> <b>50%</b>	<b>6</b> <b>60%</b>	<b>3</b> <b>50%</b>	<b>20</b> <b>56%</b>

Table 20 continues

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
I. On-line Analytical Processing (OLAP) tools	3 60%	3 25%	1 17%	1 10%	--	8 20%
J. Alerts generated by monitoring tools	--	5 42%	--	1 10%	--	6 15%
K. Other (please specify)	--	--	--	--	--	--
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

Note. \* One respondent from FSC abandoned the survey at this stage. Valid responses were adjusted from '40' to '39' respondents.

N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option

**Item F** -Performance management 'dashboard' (a management tool to track 'real-time' operational activity using key performance indicators e.g., admissions yields) – 44%

**Item G**- Executive-style 'balanced scorecard' (e.g., a reporting system that demonstrates performance progress on the institution's strategic plan using key performance indicators) – 28%

When comparing responses across institutions, the aforementioned eight reporting capabilities (**Items A through F**) were consistently identified at all but one of the five institutions (i.e., Celebrated College).

Also of interest to this study were the reporting capabilities that were *not* frequently identified as design elements of the system. These included: Item I- 'On-line Analytical Processing (OLAP) tools,' and Item J- 'Alerts generated by monitoring tools.' Two or more respondents at only one institution (**Visionary University**) indicated to have reporting capabilities that spanned all ten of the areas listed.

### ***Analytical Capabilities***

Survey participants were requested to indicate from a list of six options, what analytical capabilities was the enrollment performance measurement system designed to provide. Survey responses to this question are presented in *Table 21*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 21*, overall, four of the six survey items met the criteria for a valid response. These included (in order of most frequent response):

**Item A** - Extracting and reporting of transaction-level data (77%)

**Item B** - Analysis and monitoring of operational performance (e.g., dashboard) (69%)

**Item D** - Predictive modeling and simulations (31%)

**Item C**- What-if decision support (e.g., scenario planning) (26%)

When comparing responses across institutions, three of the four aforementioned analytical capabilities were consistently identified among at least four of the five institutions. These included: **Items A, B, and D.**

The present study was designed to focus on institutions that had developed more advanced reporting capabilities associated with response item ‘C’ and higher. Two or more survey respondents from all but one institution (Fabulous Small College) identified the application of more advanced analytical reporting capabilities.

Also of interest to this study were the analytical capabilities that were *not* frequently identified as design elements of the system. These included: Item E- ‘Automatic alert notification (e.g., at-risk students),’ and F – ‘Automatic alert business response (e.g., at-risk students automatically scheduled an appointment with an advisor).’ Two or more

Table 21

*System Analytical Capabilities Frequency Distribution of Responses to Capacity Survey**Question 3.07*

3.07 What analytical capabilities was the enrollment performance measurement system designed to provide? (Select all that apply)						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Extracting and reporting of transaction-level data	<b>3</b> <b>60%</b>	<b>10</b> <b>83%</b>	<b>4</b> <b>67%</b>	<b>8</b> <b>80%</b>	<b>5</b> <b>83%</b>	<b>30</b> <b>77%</b>
B. Analysis and monitoring of operational performance (e.g., dashboard)	<b>5</b> <b>100%</b>	<b>6</b> <b>50%</b>	<b>4</b> <b>67%</b>	<b>8</b> <b>80%</b>	<b>4</b> <b>67%</b>	<b>27</b> <b>69%</b>
C. What-if decision support (e.g., scenario planning)	1 20%	<b>3</b> <b>25%</b>	<b>2</b> <b>33%</b>	<b>3</b> <b>30%</b>	1 17%	<b>10</b> <b>26%</b>
D. Predictive modeling and simulations	1 20%	<b>3</b> <b>25%</b>	<b>3</b> <b>50%</b>	<b>2</b> <b>20%</b>	<b>3</b> <b>50%</b>	<b>12</b> <b>31%</b>
E. Automatic alert notification (e.g., at-risk students)	--	6 50%	2 33%	--	--	8 20%
F. Automatic alert business response (e.g., at-risk students automatically scheduled an appointment with an advisor)	--	4 33%	1 17%	1 10%	--	6 15%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

*Note.* N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option.

respondents from only **two institutions** identified one or both of these higher order capabilities (i.e., **Visionary University** and **Skillful College**).

### ***Enrollment Management Functionality***

Survey participants were requested to indicate from a list of ten options, what enrollment management functionality was the enrollment performance measurement system designed to provide. Survey responses to this question are presented in *Table 22*. Bolded items represent those that fell within the criteria established for a valid response.

Table 22

#### *Enrollment Management Functionality Frequency Distribution of Responses to Capacity*

##### *Survey Question 3.08*

3.08 What enrollment management functionality was the enrollment performance measurement system designed to provide? (Select all that apply)						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Automatic alert when an enrollment performance metric falls outside of a desired range	<b>2</b> <b>40%</b>	<b>5</b> <b>42%</b>	<b>2</b> <b>33%</b>	<b>2</b> <b>20%</b>	<b>2</b> <b>33%</b>	<b>13</b> <b>33%</b>
B. Automatic alert when a revenue metric falls outside of a desired range	1 20%	3 25%	--	1 10%	1 17%	6 15%
C. Early identification of students academically at-risk	--	6 50%	2 33%	2 20%	--	10 26%
D. Automatic alert to an appropriate official that an academic intervention with a student is warranted	1 20%	6 50%	1 17%	--	--	8 20%
E. Forecast future enrollment	<b>2</b> <b>40%</b>	<b>6</b> <b>50%</b>	<b>2</b> <b>33%</b>	<b>4</b> <b>40%</b>	<b>3</b> <b>50%</b>	<b>18</b> <b>46%</b>
F. Forecast demand for courses	<b>3</b> <b>60%</b>	<b>6</b> <b>50%</b>	<b>3</b> <b>50%</b>	<b>5</b> <b>50%</b>	<b>3</b> <b>50%</b>	<b>20</b> <b>51%</b>

Table 22 continues

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
G. Identify potential students who are the strongest	<b>4</b> <b>80%</b>	<b>5</b> <b>42%</b>	--	1 10%	1 17%	<b>11</b> <b>28%</b>
H. Tailor recruitment strategy for an individual prospective student	<b>3</b> <b>60%</b>	<b>5</b> <b>42%</b>	1 17%	<b>2</b> <b>20%</b>	--	<b>11</b> <b>28%</b>
I. Identify optimum resource allocation (e.g., course timetabling)	--	3 25%	--	--	2 33%	5 13%
J. Other (Please specify)	--	1 8%	--	--	1 17%	2 22%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

*Note.* N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option.

**Survey findings.** As shown by the data in *Table 22*, overall, six of the ten survey items met the criteria for a valid response. These included (in order of most frequent response):

**Item F** - Forecast demand for courses (51%)

**Item E**- Forecast future enrollment (46%)

**Item A**- Automatic alert when an enrollment performance metric falls outside of a desired range (33%)

**Item G**- Identify potential students who are the strongest (28%)

**Item H**- Tailor recruitment strategy for an individual prospective student (28%)

**Item C**- Early identification of students academically at-risk (26%)

When comparing valid responses across institutions, three of the six aforementioned areas of enrollment management functionality were consistently identified among all five institutions. These included: **Items F, E, and A.**

Two or more respondents at only one institution (**Visionary University**) indicated to have enrollment management functionality that spanned all items listed.

Also of interest to this study were the areas of enrollment management functionality that were *not* frequently identified as design elements of the system. These included: Item B- ‘Automatic alert when an enrollment metric falls outside a desired range,’ Item D- ‘Automatic alert to an appropriate official that an academic intervention with a student is warranted,’ and Item I – ‘Identify optimum resource allocation (e.g., course timetabling).’ This suggested that the participating institutions placed initial emphasis on admissions related functionality rather than to support the broader aspects of student academic performance management and resource optimization.

### ***Intended Primary Users of the Enrollment Performance Measurement System***

Survey participants were requested to indicate from a list of ten options, who were the intended primary users of the enrollment performance measurement system. Survey responses to this question are presented in *Table 23*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 23*, overall, six of the ten survey items met the criteria for a valid response. These included (in order of most frequent response):

**Item A-** Enrollment management/student affairs units (92%)

**Item D-** Institutional research (64%)



Table 23

*Intended Primary Users Frequency Distribution of Responses to Capacity Survey**Question 3.10*

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Enrollment management/student services staff as defined in Question 3.9*	<b>5</b> <b>100%</b>	<b>11</b> <b>92%</b>	<b>6</b> <b>100%</b>	<b>9</b> <b>90%</b>	<b>5</b> <b>83%</b>	<b>36</b> <b>92%</b>
B. Business/finance/administrative staff - central office and/or school-based	<b>2</b> <b>40%</b>	<b>3</b> <b>25%</b>	<b>2</b> <b>33%</b>	<b>4</b> <b>40%</b>	<b>2</b> <b>33%</b>	<b>13</b> <b>33%</b>
C. Human resources staff - central office and/or school-based	--	1 8%	1 17%	1 10%	--	3 8%
D. Institutional research	<b>3</b> <b>60%</b>	<b>7</b> <b>58%</b>	<b>3</b> <b>50%</b>	<b>7</b> <b>70%</b>	<b>5</b> <b>83%</b>	<b>25</b> <b>64%</b>
E. Fund-raising/advancement staff- central office and/or school-based	--	1 8%	1 17%	--	--	2 5%
F. Research/grants administration staff - central office and/or school-based	--	2 17%	2 33%	2 20%	--	6 15%
G. Deans and Deans' staff	<b>3</b> <b>60%</b>	<b>3</b> <b>25%</b>	<b>2</b> <b>33%</b>	<b>8</b> <b>80%</b>	<b>5</b> <b>83%</b>	<b>21</b> <b>54%</b>
H. Department Chairs and Chairs' staff	<b>3</b> <b>60%</b>	<b>4</b> <b>33%</b>	<b>2</b> <b>33%</b>	<b>6</b> <b>60%</b>	1 17%	<b>16</b> <b>41%</b>
I. Executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher)	<b>3</b> <b>60%</b>	<b>6</b> <b>50%</b>	<b>4</b> <b>67%</b>	<b>6</b> <b>60%</b>	<b>5</b> <b>83%</b>	<b>24</b> <b>62%</b>

Table 23 continues

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
J. Other (please specify)	--	1 8%	--	--	--	1 2%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

*Note.* \* Enrollment management/student services staff defined in Question 3.9 included individuals who occupied professional roles in enrollment management or student affairs administration (e.g., recruitment, admissions, marketing, registrar, financial aid, bursar, academic advising, and related student or enrollment management functions).

N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash ‘-’ denotes no response to the question response option.

**Item I-** Executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher) (62%)

**Item G-** Deans and deans’ staff (54%)

**Item H-** Department chairs and chairs staff’ (41%)

**Item B-** Business/finance/administrative staff - central office and/or school-based (33%)

When comparing responses across institutions, all six of the aforementioned user groups were consistently identified across four or more of the institutions.

Also of interest to this study were the user groups which were *not* frequently identified as intended primary users. These included: Item F- ‘Research/grants Administration,’ Item E- ‘Fund-raising/advancement,’ and Item C- ‘Human Resources.’ This finding may be associated with the previous finding that Human Resources and Financial Management were the two lowest ranked organizational capacity areas to the success of the initial stages in the systems development across all five institutions.

## Champion(s) for Initiating and Implementing the System Development Project

### *Initial Champion*

Survey participants were requested to indicate from a list of seven options, who was the initial champion of the institution's efforts to develop the enrollment performance measurement system. Survey responses to this question are presented in *Table 4.16*.

Bolded items represent those that fell within the criteria established for a valid response.

Table 24

### *Initial Champion Frequency Distribution of Responses to Capacity Survey Question 3.11*

3.11 Who was the initial champion of the institution's efforts to develop the enrollment performance measurement system? (Select one only)						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. Enrollment Management/ Student Affairs leader (as defined in Question 3.9)	--	<b>10</b> <b>83%</b>	<b>5</b> <b>83%</b>	<b>5</b> <b>50%</b>	--	<b>20</b> <b>51%</b>
B. Information Technology leader (as defined in Question 3.9)	5 100%	--	--	--	--	5 13%
C. President	--	1 8%	1 17%	2 20%	2 33%	6 15%
D. Divisional Leader from Academic Affairs	--	--	--	--	--	0 0%
E. Divisional Leader from Finance/ Business Administration	--	--	--	--	--	0 0%
F. Institutional Research	--	--	--	1 10%	3 50%	4 10%

Table 24 continues

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
G. Other (please specify)	--	--	--	1 10%	1 17%	2 5%
No Response	--	1 8%	--	1 10%	--	2 5%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

*Note.* N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash ‘-’ denotes no response to the question response option.

**Question 3.09 definitions of constituent groups included:**

A. Systems developers - individuals who occupied professional information technology related positions within a central systems group, institutional research, or an administrative/school-based department

B. Enrollment managers - individuals who occupied professional roles in enrollment management or student affairs administration (e.g., recruitment, admissions, marketing, registrar, financial aid, bursar, academic advising, and related student or enrollment management functions)

C. Institutional users - individuals who were an intended primary user of the enrollment performance measurement system from outside of an enrollment/student affairs operation (e.g., Executive leaders, faculty, deans, academic chairs, administrative staff)

**Survey findings.** As shown by the data in *Table 24*, overall, one of the seven survey items met the criteria for a valid response:

**Item A-** Enrollment Management/ Student Affairs leader (51%)

When comparing responses across institutions, Item A- ‘**Enrollment management/student affairs**’ was identified as the initial champion of the enrollment performance measurement system by 51% of the total survey respondents, representing three of the five institutions.

Among the remaining two institutions, the following findings were notable:

1. All respondents from Fabulous Small College reported that the initial champion was Item B- Information Technology leader. This was anomalous of the responses from all other institutions.
2. Responses from Distinguished College were divided primarily between the 'Institutional Research' and 'President.'

### ***Decision-making Structures***

Further clarity regarding who was the initial champion of the system development initiative was gained from the responses to a subsequent question regarding what decision-making structures were associated with the initial development of the enrollment performance measurement system. Survey responses to this question are presented in *Table 25*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 25*, overall, one of the four survey items met the criteria for a valid response:

**Item A-** One or more department(s) working in partnership with IT (41%)

When comparing responses across institutions, **Item A- 'One or more department(s) working in partnership with IT'** was identified as the decision-making structure associated with the initial stages in the systems development by 41% of the total survey respondents, representing four of the five institutions.

Some variability in the survey responses *within* all but one institution was noted. All respondents from **Fabulous Small College** indicated that Item B- 'Task team of institutional users and systems developers led by IT' best described the decision-making structure.

Table 25

*Decision-making Structure Frequency Distribution of Responses to Capacity Survey**Question 3.12*

3.12 The decision-making structures associated with the initial development of the enrollment performance measurement system could be best described as (Select one only):

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
A. One or more department(s) working in partnership with IT	--	<b>4</b> <b>33%</b>	<b>4</b> <b>67%</b>	<b>6</b> <b>60%</b>	<b>2</b> <b>33%</b>	<b>16</b> <b>41%</b>
B. Task team of institutional users and systems developers led by IT	5 100%	--	1 17%	2 20%	1 17%	9 23%
C. Steering committee involving institutional decision leader(s) and IT	--	5 42%	1 17%	1 10%	2 33%	9 23%
D. Other (please specify)	--	2 17%	--	--	--	2 5%
No response	--	1 8%	--	1 10%	1 17%	3 8%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

*Note.* N= number of responses to the question response option.

% = computed percentage based upon the number of responses to each question response option divided by the total number of valid responses to the question.

Dash '-' denotes no response to the question response option.

*Role of the Survey Respondent in the Systems Development Initiative*

Survey participants were requested to indicate in two separate questions: (a) whether or not they were a sponsoring or co-sponsoring leader of the systems initiative, and (b) whether or not they were a member of a task team or committee guiding the

system development and/or its implementation. Survey responses to these two questions are presented in *Table 26*.

Table 26

*Sponsorship Role of Survey Respondents Frequency Distribution of Responses to Capacity Survey Question 3.13*

3.13 Were you a sponsoring or co-sponsoring leader of this systems initiative?						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
Yes	<b>4</b> <b>80%</b>	<b>5</b> <b>42%</b>	<b>2</b> <b>33%</b>	<b>2</b> <b>20%</b>	<b>2</b> <b>33%</b>	<b>15</b> <b>38%</b>
No	1 20%	7 58%	4 67%	8 80%	4 67%	24 62%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

**Survey findings.** As shown by the data in *Tables 26 and 27*, overall, in all but one institution, the survey respondents were comprised of a mix of individuals who (a) had *and* had not been a sponsor/co-sponsor of the systems initiative, as well as (b) had *and* had not been a member of a task team or committee guiding the system development. Only at one institution were all survey respondents members of the task team guiding the system development – namely **Fabulous Small College**. Most respondents (80%) from this institution self-identified as a sponsor/co-sponsor of the system initiative.

Table 27

*Task Team Member Role of Survey Respondents Frequency Distribution of Responses to Capacity Survey Question 3.14*

3.14 Were you a member of a task team or committee guiding the system development and/or implementation?						
Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
Yes	<b>5</b> <b>100%</b>	<b>6</b> <b>50%</b>	<b>1</b> <b>17%</b>	<b>5</b> <b>50%</b>	<b>2</b> <b>33%</b>	<b>19</b> <b>48%</b>
No	--	6 50%	5 83%	5 50%	4 67%	20 51%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

***Willingness to be Involved in Follow-up Interviews***

The final survey question requested survey participants to indicate whether or not they would be willing to be involved in a follow-up 90-minute interview if their institution is selected as an institution for an in-depth case study. Survey responses to this question is presented in *Table 28*. Bolded items represent those that fell within the criteria established for a valid response.

**Survey findings.** As shown by the data in *Table 28*, overall, **51%** of the survey respondents were willing to participate in the qualitative interview process. Three-quarters or more of the survey participants from two of the five participating institutions indicated a willingness to participate in the interview process (i.e., **Fabulous Small College and Visionary University**). However, only about one-third of the respondents from the other three institutions indicated a willingness to be interviewed. Fourteen of



Table 28

*Willingness to be Involved in Follow-up Interviews Frequency Distribution of Responses to Capacity Survey Question 3.15*

Response Options	Number (N) and Percentage (%) Responses by Institution					All Institutions
	FSC	VU	SC	CC	DC	
Yes	<b>4</b> <b>80%</b>	<b>9</b> <b>75%</b>	<b>2</b> <b>33%</b>	<b>3</b> <b>30%</b>	<b>2</b> <b>33%</b>	<b>20</b> <b>51%</b>
No	1 20%	3 25%	4 67%	7 70%	4 67%	19 50%
Total Survey Respondents	5 100%	12 100%	6 100%	10 100%	6 100%	39 100%

the 19 individuals who indicated that they would *not* be willing to participate in the interview process provided clarifying comments. The primary reasons provided were threefold:

1. lack of in-depth knowledge about the system development (N=11),
2. relative newness to the institution and/or position (N=2), and
3. lack of availability (N=1).

The comments that were provided did not suggest a lack of ‘willingness’ to participate in the interview process due to reasons associated with the study design. Rather, those who responded ‘no’ to the question, commented most frequently that they perceived their level of knowledge about the system development to be less than that of others who were more involved in the process. The following comments are illustrative of the clarifications provided in relation to a ‘No’ response.

Others at the institution are more appropriate interview subjects on this topic. (Survey Participant from CC)

I was not in my current position of [title removed] when the system was implemented. (Survey Participant from CC)

If selected, the [title removed] Director should respond. (Survey Participant from DC)

I am not sure what I could contribute . . . I had no involvement in design but I do use the data for decision-making. (Survey Participant from DC)

I have only been at the institution for 1.5 years and was not involved in the development of this project. (Survey Participant from SC)

A more detailed analysis of the 19 survey respondents who indicated that they were not willing to be interviewed indicated the following:

- nine respondents (47%) self-identified as being a ‘sponsor’ of the system and/or a ‘systems development team member,’
- six respondents (32%) represented ‘enrollment managers’ not involved as a sponsor or systems development team member, and
- four respondents (21%) represented other ‘institutional users’ not involved as a sponsor or systems development team member.

This study was designed to obtain the perspectives from individuals who had indepth involvement in the systems development, as well as from those who were key users of the functionality of the system. Therefore, it is not surprising that some respondents held the perspective that others may have had more detailed knowledge about the systems initiative. Survey responses suggested that participants had an informed opinion, as few there were few survey items with responses of ‘don’t know’ and ‘no response.’ The selection of survey representatives was left to the discretion of the institution through communication with the president. The process of selection may have

some inherent bias within each institutional context. In addition, given the timing of the study and the significant employment churn that typically occurs in higher education, it is possible that some of the survey participants assumed their roles after the initial inception of the systems initiative and perceived that others would be more knowledgeable.

Another contributing factor may have been the time commitment of 1.5 hours to participate in the interview process following the investment of time that had already been committed to completion of the survey.

### **Summary**

A summary of the features of the advanced enrollment performance measurement systems that met the criteria as a valid survey finding is presented in *Table 29*. Valid findings included survey items that received at least 25% of the total responses, and represented at least two respondents from two or more institutions. Items in bold reflect the ‘key defining features’ that were consistently reported by two or more survey respondents from at least **four** of the **five** institutions.

### ***Alignment of the System Objective(s) to the Institution’s SEM Context***

Results from the survey research indicated that **two primary drivers** for initiating the enrollment performance measurement system were most frequently identified across the five institutions. These included: (a) to improve ‘the institution's ability to proactively support student success’; and (b) to improve ‘operational efficiency/effectiveness of enrollment/student service operations.’ Similarly, survey responses varied within and across institutions on the **enrollment context** (i.e., healthy, stable, unstable, crisis) during the prior three-year period. The institutional enrollment context during the three-year

Table 29

*Summary of Key Defining Features of the Advanced Enrollment Performance**Measurement Systems*

Type of Feature	Key Defining Features (Quantitative Findings)
<p>1. Alignment of the system objective(s) to the institution's SEM context</p> <ul style="list-style-type: none"> <li>• Primary driver</li> <li>• Year in which the system development was initiated</li> <li>• Institutional enrollment context (prior 3 years)</li> <li>• SEM committee to guide the system development</li> </ul>	<ul style="list-style-type: none"> <li>• To improve 'the institution's ability to proactively support student success,' or</li> <li>• To improve 'operational efficiency/effectiveness of enrollment/student service operations.'</li> <li>• Inconclusive</li> <li>• <b>Stable or Unstable</b></li> <li>• Inconclusive</li> </ul>
<p>2. Primary objectives, scope, and intended users of the system</p> <ul style="list-style-type: none"> <li>• System reporting capabilities</li> <li>• System analytical capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• <b>On-demand reports</b></li> <li>• <b>Scheduled periodic reports</b></li> <li>• <b>Drill-down reports</b></li> <li>• <b>Data extracts to off-line tools</b></li> <li>• <b>Ad hoc reports</b></li> <li>• <b>User-defined reports</b></li> <li>• <b>Performance management 'dashboard'</b></li> <li>• <b>Executive-style 'balanced scorecard'</b></li> <li>• <b>Extracting and reporting of transaction-level data</b></li> <li>• <b>Analysis and monitoring of operational performance</b></li> <li>• <b>Predictive modeling and simulations</b></li> <li>• What-if decision support</li> </ul>

Table 29 continues

Type of Feature	Key Defining Features (Quantitative Findings)
<ul style="list-style-type: none"> <li>• Enrollment management functionality</li>   <li>• Intended primary users of the system.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Forecast demand for courses</b></li> <li>• <b>Forecast future enrollment</b></li> <li>• <b>Automatic alert when an enrollment performance metric falls outside of a desired range</b></li> <li>• Identify potential students who are the strongest</li> <li>• Tailor recruitment strategy for an individual prospective student</li> <li>• Early identification of students academically at-risk</li>   <li>• <b>Enrollment management/student affairs units</b></li> <li>• <b>Institutional research</b></li> <li>• <b>Executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher)</b></li> <li>• <b>Deans and deans' staff</b></li> <li>• <b>Department chairs and chairs staff</b></li> <li>• <b>Business/finance/administrative staff - central office and/or school-based</b></li> </ul>
<p>3. Champion(s) for initiating and implementing the system development project</p> <ul style="list-style-type: none"> <li>• Initial champion</li> <li>• Decision-making structures</li> </ul>	<ul style="list-style-type: none"> <li>• Enrollment management/student affairs</li> <li>• <b>One or more department(s) working in partnership with IT</b></li> </ul>

*Note:* Items in bold reflect attributes reported by two or more survey respondents from at least four of the five institutions

period that preceded the systems development was most frequently identified to be either a 'stable' enrollment context or 'unstable' context. Moreover, survey responses varied considerably across and within institutions in relation to the **year** in which the five institutions initiated development of the systems, whether or not there was an enrollment management committee, as well as in relation to the role of the committee if it existed.

Therefore, survey results associated with these contextual factors were inconclusive. These findings suggested that the survey respondents may have had variable levels of involvement in the system development initiative and/or perceived the environmental context from different viewpoints. Further exploration of these factors was warranted in the qualitative component of the research.

### ***Primary Objectives, Scope, and Intended Users of the System***

As shown by the information presented in the summary *Table 29*, there was considerably more consistency among survey responses in relation to the system reporting capabilities, analytical capabilities, enrollment management functionality, and intended primary users of the enrollment performance measurement systems. The defining features that were identified were as follows.

**Reporting capabilities.** Survey responses from at least four of the five institutions indicated that the reporting capabilities the systems were designed to provide were broad in nature and spanned all but two of the ten listed features in the survey, including: on-demand reports, scheduled periodic reports, drill-down reports, data extracts to off-line tools, ad hoc reports, user-defined reports, performance management 'dashboard,' and executive-style 'balanced scorecard.'

**Analytical reporting capabilities.** Survey responses from at least four of the five institutions indicated that the analytical capabilities the systems were designed to provide included: 'extracting and reporting of transaction-level data,' 'analysis and monitoring of operational performance (e.g., dashboard),' and 'predictive modeling and simulations.'

**Enrollment management functionality.** Survey responses from at least four of the five institutions indicated that the enrollment management functionality the systems were

designed to provide included: ‘forecast demand for courses,’ ‘forecast future enrollment,’ and ‘automatic alert when an enrollment performance metric falls outside of a desired range.’ These results suggested that the participating institutions placed initial emphasis on admissions related functionality rather than on the broader aspects of student academic performance management and resource optimization.

**Intended primary users.** Survey responses from at least four of the five institutions indicated that the intended users of the enrollment performance measurement system included ‘enrollment management/student affairs units,’ ‘Institutional Research,’ ‘executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher),’ ‘deans and deans’ staff,’ ‘department chairs and chairs staff,’ and ‘business/finance/administrative staff.’

Taken collectively, the breadth of reporting, analytical, and enrollment management functionality as well as of the intended primary users that were identified among the participating institutions confirmed the ‘advanced’ level of the systems initiatives and ‘leading-edge’ nature of the participating institutions. That is, responses from all five participating institutions indicated that the features of the systems reflected at least three of the five levels of reporting capabilities defined by Goldstein and Katz (2005), which included: (a) extraction and reporting of transaction data, (b) analysis and monitoring of operational performance, (c) *what-if* decision support (e.g., scenario building), (d) predictive modeling and simulation, and (e) automatically triggered business process (e.g., early alert systems).

### ***Champion(s) for Initiating and Implementing the System Development Project***

There was some variability across institutions regarding the **initial champion** of the enrollment performance measurement system. Overall, ‘enrollment management/student affairs’ was identified most frequently by more than 50% of the survey respondents representing three of the five institutions. However, at one institution, Information Technology (IT) was the initial champion, and at another the president/IR were identified as the champions. Similarly, there was some variability regarding the decision-making structure associated with the initial development of the enrollment performance measurement system. While ‘one or more department(s) working in partnership with IT’ was identified more frequently than others, there was considerable variability both within and across institutions in the responses. This suggested that the champion and decision-making structures may have been situational to the environmental context.

Finally, information about the survey participants indicated that in all but one institution, they were comprised of a mix of individuals who (a) had *and* had not been a sponsor/co-sponsor of the systems initiative, as well as (b) had *and* had not been a member of a task team or committee guiding the system development. At one institution, the survey participants were all members of the task team guiding the system development (Fabulous Small College).

Fifty-one percent of the total survey respondents were willing to participate in the qualitative interview process. Three-quarters or more of the survey participants from two of the five participating institutions indicated a willingness to participate in the interview process, as compared to only about one-third of the respondents from the other three



institutions. The reasons cited in the open-ended comments did not suggest a lack of willingness to participate in the interview process due to reasons associated with the study design. Rather, those who responded ‘no’ to the question, commented most frequently that they perceived their level of knowledge about the system development to be less than that of others who were more involved in the process. Almost half of those not willing to participate in the interview process self-identified as being a ‘sponsor’ of the system and/or a ‘systems development team member.’ Contributing factors to the lack of willingness to participate may have been the breadth of constituents included in this study (systems developers, enrollment managers, institutional users), potential churn in employment since the inception of the systems, and time commitment associated with the interview process.

### *Selection of Case Study Institutions*

The principle of “maximizing what we can learn” (Stake, 1995, p. 4) was applied as the basis for selection of the case study institutions. In applying Stake’s principle to this study, selection was based on the **degree of consistency** in survey responses across institutions in relation to (a) the culture value orientations that best characterized the ‘real’ and ‘ideal’ conditions among participating institutions, (b) the organizational capacity conditions identified to be of *most* and *least* important in contributing to the success of the systems development initiative, and (c) features of the enrollment performance measurement system.

Based upon the analysis of survey results, a determination was made that the conduct of case studies at **two institutions, Visionary University and Fabulous Small College**, would yield the greatest insights to the survey responses. These two institutions

presented distinctively different culture and capacity profiles that appeared to be either **bipolar extremes** or demonstrated **comparative differences**. The rationale for the selection of the two institutions is presented below.

### **Institutional Attributes**

The two selected institutions were among the four institutions (out of the five) that met all criteria for inclusion in the Phase II qualitative component of the research, including:

- there was a minimum of **six institutional survey respondents**,
- there was **representation** in the survey from each of the three constituent groups (i.e., systems developers, enrollment managers, institutional users),
- the majority of respondents were **willing to be interviewed** including at least one representative from each of the three constituent group, and
- the president of the institution agreed **to participate** within the parameters of time and cost constraints for the conduct of this study.

### **Culture Profile**

#### ***Culture Type***

Fabulous Small College had a somewhat *paradoxical* ‘real’ culture profile that emphasized the competing values of ‘Collaborate’ and ‘Compete’; whereas Visionary University had a ‘dominant’ culture type of ‘Collaborate.’

#### ***Alignment of the ‘Real’ and ‘Ideal’ Cultures***

The data indicated that the ‘real’ culture at Fabulous Small College was substantially different from the ‘ideal’ culture on several dimensions; whereas Visionary

University was the *only* institution to present a ‘real’ culture that was closely aligned with the ‘ideal’ culture.

## **Capacity Profile**

### ***Fabulous Small College***

**Fabulous Small College** appeared somewhat ‘atypical’ from the other institutions in that the two most highly ranked organizational capacity areas in contributing to the success of the systems initiative were ‘Infrastructure’ and ‘Program Management’; whereas **Visionary University** was typical of the other three institutions where ‘Strategic Leadership’ was indicated to be among the two most highly ranked organizational capacity areas.

## **Features of the Enrollment Performance Measurement System**

### ***Primary Driver***

**The primary drivers underlying the initiation of the systems development initiative.** At Fabulous Small College, the systems development initiative was driven by a focus on improving ‘efficiency’ and ‘effectiveness’; whereas at Visionary University the systems development was driven by ‘enrollment management’ and a focus on ‘student success.’

### ***Enrollment Context Preceding the System Development Initiative***

Fabulous Small College was the only institution where survey respondents reported a ‘Crisis’ as the enrollment context which preceded the system development initiative.

### ***Initial Champion for the System Initiative***

Fabulous Small College was the only institution where survey respondents reported the initial champion to be the ‘information technology leader’; whereas Visionary University identified ‘enrollment management/student affairs’ as the initial champion.

### ***Analytical Reporting Capabilities and Enrollment Management Functionality***

Visionary University was among only two institutions where survey respondents reported the most comprehensive array of analytical reporting and enrollment management functionality.

Given the relatively small numbers of survey participants at each of the two institutions, all ‘willing’ participants were invited to participate in the interview process. At a minimum, one individual from each of the three constituency groups at each institution was required to consent to participate in the qualitative phase of the research.

### **Research Findings—Qualitative Phase (Semi-Structured Interviews)**

Results from the qualitative case study were used to help explain the results from the quantitative survey with a view to understanding what culture value orientations and organizational capacity conditions contributed ‘most’ and ‘least’ to the success of the initial development of advanced enrollment performance measurement systems at leading-edge public North American colleges. In addition, the interview process presented an opportunity to gain more detailed information about the interview participant and the institutional context.

After receiving UNL Institutional Review Board approval and obtaining permission from the president at each of the two selected case study institutions,

Visionary University and Fabulous Small College, all individuals who indicated in the quantitative survey willingness to participate in the interview process were subsequently contacted by email to invite their voluntary participation and obtain consent. With the assistance of the institutional contact person at each institution, interviews were scheduled and participant consent was received prior to each scheduled telephone-based interview. A total of **13 individuals** were invited to participate in the interview process, and all 13 agreed, including 9 at Visionary University and 4 at Fabulous Small College. The interviews were conducted over a two week period from September 13, 2010 through to September 29, 2010.

Nine primary interview questions were developed based upon the results from the quantitative survey. Institution-specific sub-questions were developed appropriate to the survey data from each of the two institutions. The primary interview questions included:

***Primary Interview Questions***

1. What factors contributed to the "very unbalanced" 'real' culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the real and ideal culture profiles?
3. What factors contributed to the differences in capacity conditions that were rated as the two most important to the success of the initiative at each of the two case study institutions?
4. What factors contributed to the differences in capacity conditions that were rated as the two least important to the success of the initiative at each of the two case study institutions?

5. What were the greatest risks to the success of the initiative?
6. In what ways did the differences in drivers for the system development impact the success of the initiative?
7. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
8. How was success defined for the systems development initiative?
9. What was the participant's contribution to the success of the initiative?

The alignment between the interview questions and the primary research questions guiding this study is shown in *Table 30*.

WebEx was used as the medium for the telephone-based interview process. This medium permitted the use of Power Point slides to assist in focusing the discussion on the survey findings. Interview participants were shown their respective institution's OCAI culture survey findings using the graphical culture map associated with the Competing Values Framework developed by Cameron and Quinn (2006) (see *Appendix N*), as well as summary tables of the 'percentage' importance scores for each of the organizational capacity survey question items as compared to the total responses from across all five institutions. These tables are embedded throughout the presentation of the interview findings presented herein.

The individual interviews began with questions related to the 'real' versus 'ideal' culture profiles, followed by questions associated with the organizational capacity areas of 'most' and 'least' contribution to the success of the systems development initiative, and finally the remaining questions associated with information about the participant and

Table 30

*Alignment of Interview Questions with the Study Research Questions*

Research Questions	Interview Questions
<p>Central Research Question:            How do the primary developers of ‘advanced’ enrollment performance measurement systems at a purposeful sample of ‘leading-edge’ public North American colleges describe the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the system development?</p>	
<p>1. What <b>culture value orientations</b> using the OCAI instrument best characterized the ‘real’ versus ‘ideal’ conditions at the time of the initial development of the enrollment performance measurement system?</p>	1,2
<p>2. What level of importance was each of the following <b>eight areas of organizational capacity</b> associated with the IOA model to the success of the initial development of the enrollment performance measurement system:</p> <ol style="list-style-type: none"> <li>a. Strategic leadership?</li> <li>b. Organizational structure?</li> <li>c. Human resources?</li> <li>d. Financial Management?</li> <li>e. Infrastructure?</li> <li>f. Program management?</li> <li>g. Process management?</li> <li>h. Inter-organizational linkages?</li> </ol>	3, 4
<p>3. What were the <b>defining features of the advanced enrollment performance measurement system</b>, using the Katz and Goldstein (2005) terminology and relevant survey questions, and profile of primary developers in relation to:</p> <ul style="list-style-type: none"> <li>• The alignment of the system objective(s) to the institution’s SEM context?</li> <li>• The primary objectives, scope, and intended users of the system?</li> <li>• The champion(s) for initiating and implementing the system development project?</li> <li>• The role of the survey respondent in the systems development project?</li> <li>• Willingness of survey respondent to be involved in the follow-up interview process?</li> </ul>	5-9

institutional context. Transcripts from the audio-taped telephone interviews were reviewed and approved for accuracy by all 13 interview participants.

Data analysis involved initial open coding of responses to individual questions and institution-specific sub-questions, followed by a categorical aggregation of codes to establish themes or response patterns. The first level of analysis involved coding the responses for each case study institution. The second level of analysis involved a cross-case comparison of categorical themes across the two institutions. Summary tables of thematic categories and associated codes are presented along with the description of findings.

The research findings from the qualitative interviews are presented below and begin with the interview findings from Visionary University followed by Fabulous Small College. Each case study begins with a general description of the research setting and interview participants, followed by key themes that were derived from the interview process in response to the institution-specific interview questions. Consistent with the tenets of open coding, direct quotations from the interview transcripts are provided to support the data analysis associated with emergent themes. In keeping with interview protocols, the interview participants were assured anonymity. Therefore, to protect the identity of the respondents, direct quotations are presented without attribution to specific individuals. In the concluding section of this chapter, a summary of the mixed methods findings is presented that brings together the salient results from the cross-case analysis of the qualitative research with the findings from the quantitative research..



### *Case Study Analysis #1. Visionary University*

#### **Overview of Research Setting and Interview Participants**

Visionary University is as a progressive multi-campus institution located within the western region of the United States. The university had a history of transformative change as it evolved over a period of a decade from a technical college to a community college, to a four-year state college, and most recently to a university. During this period of growth and change, the institution remained committed to its historical roots and values as a teaching institution with a community focus. Between 2000 and 2009, undergraduate headcount enrollment grew from about 17,000 to over 25,000 students. With the advent of new programs at the four-year level, total enrollment appeared to be stable and in keeping with institutional goals. However, the signs of an impending enrollment problem became increasingly evident to enrollment managers and institutional research officers. Enrollment in the freshmen class was declining. Regardless of concerns communicated by the managers of enrollment operations to the senior leaders of the day, there was no sense of urgency to address the problem, until the inevitable occurred. A major drop in enrollment was experienced which warranted unprecedented action that resonated throughout the entire institution which resulted in staff layoffs.

The enrollment urgency coincided with the arrival of a new president. Within the first month of the new president's tenure, senior leaders responsible for enrollment operations were empowered to: (a) create a SEM plan and implementation strategy, (b) secure the expertise of third party SEM experts to inform the process, and (c) allocate resources to operationalize the implementation of the SEM plan. Student success became

mission-centric, performance improvement became the focus, and data became the life-blood in decision-making.

Many initiatives were advanced to re-engineer the student experience with a view to improving student success and to creating a “viable organization that is growing” (VU interview participant). In keeping with the institution’s culture and values, change initiatives were based upon highly collaborative, inclusive, and consultative planning and budgeting processes. Over a six-year period, institutional resources were re-appropriated to support improved services for students, such as (but not limited to) the development of a ‘one-stop service centre’ and an improved model for the delivery of academic advising services. The implementation of these types of re-engineered services were enabled through the acquisition of enrollment management software and the development of advanced enrollment performance measurement reporting systems that provided the information required to proactively identify and address student needs, and to inform the strategic management of enrollment. These systems included automated ‘early-alert’ notification on students who were academically at risk, student relationship management systems to support student recruitment and retention, and advanced analytics such as executive dashboard reports for senior and executive leaders to inform strategic decision-making. The success of these initiatives was demonstrated by significant improvements in student retention and overall enrollment growth in subsequent years. The findings from the qualitative interview process provided insights on the organizational culture and capacity conditions that were foundational to the successful implementation of these advanced enrollment performance measurement systems.

## Interview Participants

Nine of the 12 survey respondents participated in the interview process. Their positions, affiliated constituent group, and years of tenure at the institution are presented in *Table 31*. As shown by the data in the table, the constituent representation of the nine interview participants included four ‘systems developers,’ three ‘enrollment managers’ and two ‘institutional users.’ The majority of the interview participants were longstanding employees with 5 of the 9 having been employed at the university for more than 10 years, 3 for between 5 and 10 years, and only 1 for less than 5 years.

Table 31

### *Interview Participant Attributes at VU*

Participant	Gender	Position or Title	Constituent Affiliation	Years at Institution
Interview 1	Female	Director Prospective Student Services	Enrollment Manager	10 or more years
Interview 2	Male	AVP, IT/CIO	Systems Developers	10 or more years
Interview 3	Male	Senior Oracle Developer	Systems Developers	5-10 Years
Interview 4	Female	Database Manager	Systems Developers	5-10 Years
Interview 5	Female	Sr. Director Enrollment Management	Enrollment Manager	10 or more years
Interview 6	Female	Student Leave Coordinator	Institutional User	5-10 years
Interview 7	Female	AVP, Enrollment Management	Enrollment Manager	10 or more years
Interview 8	Male	Director Institutional Research	Systems Developers	10 or more years
Interview 9	Female	Graphic Designer	Institutional User	Less than 5 years

## Explanatory Findings from Qualitative Interviews

### *Organizational Culture*

1. What factors contributed to the ‘very unbalanced’ ‘real’ culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the ‘real’ and ‘ideal’ culture profiles?

**Culture profile.** Based upon the OCAI survey responses, Visionary University had a culture profile depicted as ‘very unbalanced,’ with a dominant culture type that was highly collaborative — which was characterized in the CVF as a very friendly place to work where a premium is placed on teamwork, participation and consensus. Visionary University was the *only* institution that was depicted with a ‘real’ culture closely aligned with the preferred ‘ideal’ culture. The interview process focused on obtaining more in-depth understanding of two aspects of the culture orientation of Visionary University stemming from the OCAI survey results:

1. What factors contributed to the ‘very unbalanced’ ‘real’ culture at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the ‘real’ and ‘ideal’ culture profiles?

Key themes emerging from the analysis of interview data are presented below. The themes are aligned with each of the institution-specific sub-questions that guided the interview process.

***What were the factors that contributed most and least to the collaborative culture?*** In answer to the question on what factors contributed most and least to a collaborative culture, responses focused on five thematic areas shown in *Table 32*.

Table 32

*Coding on Contributors to a Collaborative Culture at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Contributed <i>Most</i> to Collaborative Culture	Historical Roots (N = 7)	<ul style="list-style-type: none"> <li>• historical roots as a small institution</li> <li>• friendly culture</li> <li>• trusting relationships between faculty and staff</li> </ul>
	Sense of Urgency (N = 3)	<ul style="list-style-type: none"> <li>• Crisis, pain, layoffs</li> </ul>
	Top-down Leadership (N = 5)	<ul style="list-style-type: none"> <li>• new president</li> <li>• top-down support</li> <li>• empowered managers and staff</li> <li>• will to act-retribution of resources</li> </ul>
	Approach to Planning (N = 6)	<ul style="list-style-type: none"> <li>• inclusive planning and budgeting process</li> <li>• transparent decision-making</li> <li>• cross-divisional committees</li> <li>• inclusion of academic community</li> </ul>
Contributed <i>Least</i> to Collaborative Culture	Delayed Decisions (N = 5)	<ul style="list-style-type: none"> <li>• inhibited timely decisions</li> <li>• inhibited strategic change</li> </ul>

Factors contributing most to a collaborative culture. Four factors were identified most frequently as contributing *most* to the highly collaborative culture. These included:

Historical roots. Seven of the nine interview participants reflected on how the institution's roots as a small institution contributed to their values in collaborating. These individuals referred to the "friendly culture" and "social environment" that evolved from its historic roots as a small technical college. For example, two individuals commented:

I think there's a lot of emphasis from upper management to collaborate, and I believe that we just have a culture that's a friendly culture, that we've grown from a technical college to a community college to a state college and now to a

university fairly quickly, in the last ten years or so. And that carried forward with it the friendly, small university or small institution feel.

I would say it's because of the social environment and a lot of people tend to understand more and trust more, because of the social environment.

Another individual commented on the “trusting relationships” between faculty and staff and the “safe” workplace feel that was attributed largely to the longevity of employees who had a passion for the success of the institution, “the employees stay here and the longer that people do stay here, the more they get to know someone and then the more they trust and so the more they collaborate.”

Other interview participants described the historical roots of the collaborative cultural as follows:

I believe that we just have a culture that's a friendly culture, that we've grown from a technical college to a community college to a state college and now to a university fairly quickly, in the last ten years or so. And that carried forward with it the friendly, small university or small institution feel.

Well, I think it [the collaborative culture] has been established over the period of 25 years that I've been in the institution, by the leadership. . .

We grew up as a small college, so in some ways we're like a university that's very large, at the same time has a culture of being very small where individual people sometimes have a large effect on the institution as a whole. So you know, one person who says, “I don't want to do it,” kind of really has a lot more power than probably they ought to. That's driven us toward that collaborative environment.

my thoughts went back to when we very first started some collaboration, which probably would have been a good ten years ago, . . . there was a lot of brainstorming about what we thought should happen and the ideas were taken and implemented as well as possible.

*Sense of urgency.* Survey results associated with the ‘institutional enrollment context’ during the three year period prior to the initiation of the system development were highly variable among VU survey respondents. Interestingly, none of the survey

respondents indicated that a ‘crisis’ preceded the initiation of the system. However, in the interview process, three individuals spoke to the “crisis situation” that was both a catalyst to the initiation of the system development and a contributor to the collaborative culture. What was learned from the interviews was that there was a prevailing perception within the institution of a ‘stable’ or ‘healthy’ enrollment environment that was not grounded in an understanding of the factual evidence. All three interview participants who commented on the ‘crisis’ held positions responsible for monitoring enrollment and understood the reality of the enrollment context. As one individual commented, “[A]t that time it didn’t matter who I told, it wasn’t being heard. . . . We’re showing increase in continuing students, but once those programs mature, we’re going to take a real hit on enrollment.”

Other individuals described how the ‘enrollment crisis’ contributed to the collaborative culture as follows:

for five years I tried to collaborate and nothing, just nothing; and then you get a new president and your numbers drop enough that some pain really happens to the campus, and all of a sudden everything happened . . . we had top-down support, immediately everyone was ready to find solutions and the way we found solutions was through collaborating.

Because we were all in crisis. All of us had to lay off people in each division. I mean, just in my little division I had to cut almost \$200,000, and it was just so painful, incredibly painful.

*Top-down leadership.* The role of executive leaders at the level of a vice-president and president in contributing to a collaborative culture was noted by five interview participants. One individual reflected that “there’s a lot of emphasis from upper management to collaborate.” Another individual stated:

From where I sit, it comes from the strong leadership. . . . My direct report is the Associate Vice President, and that is her style, is to collaborate, get people together and gather ideas, and that, I think she has then let that filter down through the different departments.

A third individual commented on the importance of top-down leadership as follows:

We had to get the support directly from the president, and then once that happened, of course everyone's ready to collaborate. And so it created an atmosphere of, "Yeah, we're all in this together." And the fact that we had to lay off people really got people's attention, and yeah, they were really ready to make some changes.

Several individuals noted that support from executive leadership was demonstrated through the "will to act" through the "retribution of resources," as well as through the "empowerment" of others to find solutions to the critical enrollment situation at hand. "All of a sudden we had total presidential support of saying, "We will re-look at enrollment management from the top to bottom. We'll create a plan. We'll give you some staff." . . . the president said, "We will do this, but I'm going to allow you guys to come up with the solutions."

*Approach to planning.* The most frequently referenced factor that contributed to the highly collaborative culture noted by six of the nine interview participants related to the institution's model for planning, budgeting, and collaborative approach to decision-making. The model was described as being "inclusive" and "consultative."

[T]wo presidents ago, there was several initiatives that took place on campus that essentially said, I, as a leader, want to have the feedback of faculty staff and support personnel, into what you're seeing as needs, threats and strengths of our institution. And then the budgeting process was a part of that when we initiated what was called our PBA process or Program Planning, Budgeting and Accountability model. It made that process completely transparent.

I don't think we are competing internally against each other. . . . Maybe that comes from the top down. . . . I think we have a really great budget director who's very open about what money there is . . .



Others spoke about the prevalence of institutional committees with broad representation of institutional constituents, including faculty, staff, administration, and students.

[T]hey created, like, a strategic direction advisory committee, which involved a broad representation across the campus. It had faculty members, it had deans, it had vice-presidents, it had department chairs, it had people from the custodial force. . . . It had a variety of people all across the institution in varying levels, not just directors, but all the way down to people who were actually providing the service directly to the students and to the other units on campus.

The collaborative approach to planning extended to the enrollment planning process, which was also noted as being “highly participatory,” “inclusive of the academic community,” and “collaborative” in decision-making “almost to an extreme.” As noted by two interview participants, “our enrollment management system works closely with all of the academic deans, with college marketing.”

it’s probably gone to the extreme of trying to figure out how to get everybody sitting at the table and everybody collaborating on this so that there’s buy-in especially in the faculty area, to the point where we can be very successful.

Factors contributing least to a collaborative culture. In relation to the factors that contributed *least* to a collaborative culture, the ‘down-side’ to collaboration was noted by five interview participants. The negative aspects of collaboration included: “some things were debated too long” (N = 2), “delayed decision-making” (N = 2), and it “inhibited strategic change” (N = 1) if everyone could not agree. Illustrations of the comments made included, “Some things were debated too long, and then some things were decided not to do because we couldn’t agree upon them, even though they should have been done.”

.” . . . a lot of times committee work doesn’t lend itself to quickness.”

The negative would be when you'd have a committee or a group of just too many people. You get too many and you just can't get anything accomplished, and so even though we had a larger committee seeing things, really a smaller committee was what became necessary to really move it forward. So the negative impact was just through the sheer numbers of people at times.

***What were the factors that contributed most and least to a competitive culture?***

In answer to the question on what factors contributed most and least to a 'Competitive' culture, responses focused on the six thematic areas shown in *Table 33*. Two factors were identified that contributed *most* toward a competitive culture: (a) differences in perspectives between faculty and staff, and (b) differences attributed mostly to the generational divide between older and younger employees. In terms of the factors that contributed *least* toward a competitive culture, the same four factors identified previously that contributed *most* to the highly 'collaborative' culture were identified as contributing *least* to an emphasis on 'competitiveness.'

Factors contributing most to a competitive culture. In relation to culture value differences between faculty and staff, the examples cited related mostly to differing perspectives on resource allocation decisions and to the role of faculty in enrollment management. The following comments from four interview participants articulated the situation well.

we all agree with the outcome but we don't agree on how to get there. And the way faculty approach things, the way Student Services approach things, are often very different. So yeah, we have lots of tensions. Right now we have record enrollment because of the economy, and we don't have the space to put people. So we have faculty saying. . . . We can't handle anymore, so therefore, let's cut all of recruitment and put it into faculty." And so it's just a different perspective.

However, there's still a disconnect between some faculty on campus, that don't quite understand that that's what needs to be done through [student] retention. They don't see that. And so that's one of the biggest challenges that we are having to deal with right now. . . .

Table 33

*Coding on Contributors to a Competitive Culture at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Contributed <i>Most</i> to Competitive Culture	Differing Perspectives Between Faculty and Staff (N = 4)	<ul style="list-style-type: none"> <li>• values related to resource allocation</li> <li>• role of faculty in enrollment management</li> </ul>
	Generational Divide (N = 3)	<ul style="list-style-type: none"> <li>• values related to individual creativity</li> </ul>
Contributed <i>Least</i> to Competitive Culture	Historical Roots (N = 4)	<ul style="list-style-type: none"> <li>• people hold onto tradition</li> </ul>
	Sense of Urgency (N = 2)	<ul style="list-style-type: none"> <li>• a matter of survival</li> </ul>
	Top-down Leadership (N = 3)	<ul style="list-style-type: none"> <li>• promoted collaborative approach to visioning and idea generation</li> </ul>
	Approach to Planning (N = 3)	<ul style="list-style-type: none"> <li>• inclusive planning and budgeting process</li> <li>• transparent decision-making</li> <li>• cross-divisional committees</li> <li>• inclusion of academic community</li> </ul>

So we have faculty saying, “We shouldn’t be doing recruiting at all. And why are we even out there recruiting? . . . And so we’re consistently having to tell our story is that even the most highly selective universities in the world recruit constantly. . . . But in their mind, their minds are, “Well, we’re full. We can’t handle anymore, so therefore, let’s cut all of recruitment and put it into faculty.” And so it’s just a different perspective. Anyway, we have lots of tensions.

But one group says, “No, we can’t agree upon doing that because that’s work for us as faculty, therefore we’re not going to do that, not include that in the project.”

In terms of the ‘generational divide,’ the younger generation of employees was characterized as being more competitive in nature and seeking greater opportunities to contribute creative ideas. Three interview participants recounted examples of the

“pushback” experienced when the culture values of ‘creativity’ collided with ‘collaboration’:

I was able to be creative and competitive, but now I’m at that point where, since it’s more of a campus wide communication database, the people who are older are stepping in and telling me to kind of, whoa, back off, we need to slow down, we need to do committees for this now.

[T]here’s the people who have been here so long, and it’s always been “Well, we’ve always done it this way and we’d like to continue doing it this way,” and then there’s those of us who are coming in new and who are saying, “Hey, let’s try this, let’s do this.”

. . . they’re just trying to keep the status quo because that’s what’s always worked and now there’s some of us who are coming in and saying, “That worked for a community school. Let’s be a university.

Factors contributing least to a competitive culture. However, in answer to what factors contributed *least* to a competitive culture, six of the nine interview participants indicated that while the institution was competitive for state funds and in student recruitment efforts, *within* the institution there was a strong emphasis on collaboration based largely on the same factors cited for contributing to the collaborative culture: that is, historical roots, sense of urgency, top-down leadership, and approach to planning.

Illustrations of the comments made included:

*Historical roots.*

Although we have our schools and we have our colleges within the university, at the same time it’s like we still need to do things consistently across the university. There’s still that small campus feel of, “If it makes sense for one area, let’s make it make sense for all areas.” And so the competitiveness.

A lot of people are kind of stuck in the ways that they are. . . They hold onto tradition.

*Sense of urgency.*

And the fact that we had to lay off people really got people’s attention, and yeah, they were really ready to make some changes.

And so everyone was feeling so much pain that you're not competing, you're all surviving.

Top-down leadership.

I don't think we are competing internally against each other. I mean, . . . that comes from the top down.

Our President's Council understands the relationship between getting the students here, giving them a good education, and all the things that are a part of that.

I think we were held accountable for achieving the enrollment goals, . . . and we were empowered to make those decisions.

Approach to planning.

Well, I think part of that would be in that process that was the PBA – the planning, the budgeting, and the accountability. I think that's really made a lot of people saying, "We support another area because we can see how that's going to help across the board." I think that was one of the . . . big things that kind of helped everything be more transparent.

So I think that's been helpful [the budget planning process] in making us less competitive from department to department and just working together for the best good. . . . You know, during that process, many times one area will say, "We support the request by another area," and I think that's been good for collaboration in that way.

***In what ways did culture value differences among key stakeholders positively and negatively impact the success of the initiative?*** When questioned about the positive and negative impacts that culture value difference had on the success of the systems initiative, three themes were identified from the responses of interview participants as shown in *Table 34*.

Positive impacts. Examples cited on the positive impacts related largely to the collective will to take action. More specifically, several interview participants indicated that by bringing different perspectives to bear on addressing the enrollment problem,

Table 34

*Coding on Impact of Culture Value Differences at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
<i>Positive</i> Impact of Culture Value Differences	Collective Will to Act (N = 4)	<ul style="list-style-type: none"> <li>• openness to new ideas</li> <li>• willingness to change</li> </ul>
<i>Negative</i> Impact of Culture Value Differences	Protracted Decision-making (N = 5)	<ul style="list-style-type: none"> <li>• delays in decision-making</li> <li>• fractured committee decision-making</li> </ul>
	Stifling of Innovation and Creativity (N = 2)	<ul style="list-style-type: none"> <li>• dampening of individual's creativity</li> <li>• complacency</li> </ul>

there was an “openness to new ideas,” and “willingness to change” in order to find solutions to problems and to better support student success.

there's lots of different perspectives. And so having cultural differences, actually, I think the impact was positive, in that different people could bring different things to the table – different experiences . . . both on the educational forefront and life experiences, to better help them serve our students.

There were differing opinions and I think they did positively affect it. . . . It does jar everyone to thinking, oh, yes, we need to look at that point of view. And so in that way, it's been positive all the way along.

Well, there's always differences of opinion, but I think the basic premise here on our campus is students are the centre – that's why we're here, that's why we do what we do – and so I think there's a pretty general conception across campus that the students are at the centre and what can we do to make it better and give the student a better education?

Everybody just was looking for ways to make improvements . . . just really good people that were willing to say, “Okay, this is what we can do, this is how we can help, . . .” and I think it was just the people that were dedicated.

Negative impacts. Five interview participants noted the negative impacts of culture value differences in relation to “protracted” (N = 3) or “fractured” (N = 2)

decision-making resulting from “too many committees” needing involvement in decisions. As stated by one interview participant.

Sometimes the individual committees felt empowered to make decisions . . . so they’d start off in a direction, and then it would be reported that, “Hey, we’re headed in this direction.” It was like, “Whoa, time out. Stop, because we’ve got another group over here that’s headed in a different direction. . . .” And so you know, we had to waste time in some ways bringing those sub-committees back into kind of alignment, if you will, with the master group.

In addition, two interview participants commented on the potential to stifle creativity and innovation within an overly collaborative culture, as noted in the comments below:

As much as competitiveness is important, to me the creativeness is even more, where instead of trying to do everything by committee, you try to use the creativity of people who are very large and good thinkers, if you will, and you use their creativity as a driver in moving forward rather than just moving. . . . I saw things that were very creative that could have worked really well that were removed from the table because again, it wasn’t agreed upon by one group or another group.

it is good to be very collaborative, but if you are so much, which I think that [name of institution] is a little too much, it takes away the competitive side. And so instead of people’s creativeness and competitiveness coming out, people just kind of work together and they don’t push each other.

*What strategies needed to be employed to mitigate the negative impacts?* When queried about what strategies needed to be employed to mitigate the negative impacts of culture value differences, interview participants most frequently cited strategies related to the role of executive leadership in communicating a one-voice message, in using research and data to develop buy-in to change, and in empowering individuals.

Six of the nine interview participants commented on the importance of executive leadership in mitigating the negative impacts of culture value differences as follows:

Table 35

*Coding on Successful Strategies at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Successful Strategies to Mitigate Protracted Decision-making	Role of Executive Leadership (N = 6)	<ul style="list-style-type: none"> <li>• communicating one-voice message on the importance of enrollment to institutional vitality</li> <li>• empowering individuals</li> <li>• use of research and data in demonstrating the need for change</li> </ul>

Communicating a consistent “one-voice” message. Comments on the importance of executive leaders in communicating a unified message of the importance of enrollment to the vitality of the institution included:

We continued to try to communicate with one voice. That doesn't mean we always agree, because we don't. But what we do agree is that we have to be aligned ..

I really think a lot of it is having administration in line with each other. Are we all giving the same message? Is the president and the vice president and associate vice president, are we all in line with the same message?.

I really see that having a president who's willing to constantly support both sides, not just Student Affairs but Academics and constantly find that balance is critical. . . . He's [the president] very willing to step forward and say, “Recruitment is important, even when your classes are all full.” And then also the same thing with our vice president and myself, we continue to all give the same message that recruitment is very important.

there's the different vice presidents, . . . they're all focussed on making things better for the students and using this new whatever you want to call it, mantra of the president, but it seems like it's a pretty collaborative group.

Using research and data. The importance of using research and data in developing buy-in and understanding was highlighted. Strategies involved presenting update reports on the system initiative in the president's reports to the campus community, to the



council of deans, and to “influencing” committees involved in strategic planning and decision-making. One interview participant spoke to this as a process of “walking around the elephant” to view issues from the lenses of others.

And the task is to get people to walk around the elephant, to make sure that they see that there are other points of view and I think we’ve tried to do that, so that we just don’t let people stay on the same side of the elephant. We make sure that they have a chance to walk around and see all portions. . . we would present data.

Finding the right balance between consensus-building and taking action. One interview participant indicated that one strategy that would have mitigated lengthy debates or abandonment of some new ideas on which agreement was not reached within committees would have been to pilot creative ideas, test the potential, and use data to inform decision-making.

Certain groups need to bend more and allow for some creativeness and some, maybe some test and pilot programs in the creative area if nothing else, to gather and prove the data if you will compete where you have areas that are saying, “We believe that this is right. This is a creative idea and we want to try it, so let’s try it, gather the data, and let the competition of one area’s idea versus another area’s idea actually kind of drive to better and new creative things and prove them right or wrong.

Another individual suggested that more empowerment of individuals rather than committees would have mitigated protracted decision-making and advanced more creative problem-solving. “[I]nstead of trying to do everything by committee, you try to use the creativity of people who are very large and good thinkers, if you will, and you use their creativity as a driver in moving forward.”

### **Strategies to address the gap between the ‘real’ and ‘ideal’ culture profiles**

*What three strategies would you recommend to change the culture to be more competitive, more creative, and less controlled?* The ‘real’ and ‘ideal’ culture profiles at Visionary University were closely aligned, albeit with a preference for modest shifts in

culture value orientation. Most interview participants did not offer specific strategies they would recommend to shift the culture. However, two comments were noteworthy:

- One interview participant commented that culture shifts are evolutionary in nature and result from changes in environmental conditions and a collective will to change. The individual stated, “where we are in relationship to where some of the desires are, is just something that will be accommodated in the natural flow of things as people see that those are the values that people want to be able to do a little bit more of.”
- Another interview participant spoke about the relationship between the organization’s culture and the strength of its people. The individual stated:

I think the bottom line is there’s a lot of people here that love this institution. It’s not just a job for them. It’s a lifestyle, it’s a life choice, it’s a life’s work. And because we love the institution, I think that we’re willing to get together in our committees, even if it’s ad nauseam, and try and work out a solution, try and find some areas that we all agree on and move forward on those.

### *Organizational Capacity*

3. What factors contributed to the differences in capacity conditions that were rated as the two most important to the success of the initiative at each of the two case study institutions?

Survey responses from Visionary University were typical of the overall survey results, with ‘**Strategic Leadership**’ and ‘**Organizational Structure and Governance**’ ranked as the two highest organizational capacity areas. The interview process focused on obtaining more in-depth understanding of the factors that contributed to the high ratings. In order to focus the discussion, summary tables were presented to the interview participants of the survey responses to the sub-question items for their respective institution as compared to responses from across all five institutions. Based upon a

review of the frequency distributions of survey responses across items, survey question sub-items that were rated by 75% or more of respondents as contributing at least somewhat to the success of the systems initiative were considered to be of ‘high’ importance, those rated between 50% and 74% were considered of ‘moderate’ importance, and those below 50% of ‘low’ importance. Key themes that resulted from an analysis of interview findings are presented below. The themes are aligned with each of the institution-specific sub-questions that guided the interview process.

**What factors contributed to why “Strategic Leadership” was rated among the top two most important conditions?** Interview participants were shown the data in *Table 36*. As indicated by the data in the table, all six survey items associated with the organizational capacity area of *Strategic Leadership* were rated as at least somewhat of a contributor to the success of the enrollment performance measurement system by 75% or more of survey respondents from Visionary University. Of particular importance was an executive leadership who were committed to ‘transparent decision-making,’ ‘evidenced-based decision-making’ and communicating with campus constituents on the ‘importance of investing in enrollment performance measurement systems,’ as well as who understood the ‘relationship between enrollment and resource management.’

Interview participants were probed regarding what factors contributed most to why *Strategic Leadership* was among the top two conditions of importance to the success of the initiative, and were requested to cite examples of strategies employed where possible.

Table 36

*Percent of Respondents Rating Strategic Leadership as at Least ‘Somewhat’<sup>a</sup> a*

*Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions	VU
<b>Strategic Leadership</b>		
<b>1.1 Our Executive leaders understood the relationship between enrollment and resource management</b>	<b>81%</b>	<b>86%</b>
<b>1.2 Our Executive leaders demonstrated commitment to evidence-based decision-making</b>	<b>86%</b>	<b>83%</b>
<b>1.3 Our Executive leaders demonstrated commitment to making information widely available</b>	<b>83%</b>	<b>75%</b>
<b>1.4 Our Executive leaders demonstrated commitment to transparent decision-making</b>	<b>81%</b>	<b>100%</b>
<b>1.5 Our Executive leaders communicated to the campus community on a regular basis the importance of investing in enrollment performance measurement systems.</b>	74%	<b>83%</b>
<b>1.6 The importance of enrollment to the academic well-being of the institution was clearly articulated in the institution’s strategic plans</b>	<b>86%</b>	<b>75%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).  
b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

Two primary themes were identified from the responses to this question as shown in *Table 37*, and included: (a) enrollment was communicated as a top priority to institutional vitality, and (b) there was the executive will to act. Each of these themes is described in more detail in *Table 37*.

***Enrollment was communicated as the top priority for institutional vitality.***

Consistent with having a “one-voice” message that was previously noted, three interview participants commented specifically on survey item 1.5 above- i.e., the importance of

Table 37

*Coding on Importance of Strategic Leadership at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Strategic Leadership	Enrollment Communicated as Top Priority to Institutional Vitality (N = 3)	<ul style="list-style-type: none"> <li>• regular communication of importance of enrollment</li> <li>• visible leadership executive</li> <li>• cross-divisional collaboration (e.g., recruit with academics meetings)</li> </ul>
	Will to Act (N = 3)	<ul style="list-style-type: none"> <li>• recalibrated resource allocations</li> <li>• transparency of decision-making</li> <li>• removed road blocks</li> </ul>

executive leaders communicating to the campus community on a regular basis the importance of investing in enrollment performance measurement systems. One example of a successful strategy involved the collective attendance of executive members at school-based prospective student open houses. As one interview participant commented:

For the first two years for sure, the president, the vice president, and myself were at every single one of them [prospective student campus visit days], every Saturday. . . . That's one example of how we really tried to show that this was our top priority, and we talked about . . . how important it was that we didn't want to ever have to do layoffs again, that our goal here was to stabilize the institution long-term, and so when the economy has its fluctuations that we can have other options besides layoffs.

Another interview participant spoke to how specific “initiatives” were introduced to demonstrate connections between the enrollment efforts of Student Services and the needs of the academic community. An example of this was an initiative that was referred to as “recruitment with academics” meetings, whereby enrollment and student services staff would meet monthly with academic units to report on performance outcomes, as

well as to “hear from the academics what they’re doing and what we can do to support them.”

I look forward to those meetings because we learn a lot. You have people there from first year experience. You have people there from, like I said, each one of the colleges, athletics, student government and there’s a good conversation and the information that’s talked about is disseminated and taken back out to all of those departments on campus.

Another individual highlighted the importance of executive leaders using data to convey the importance of enrollment, as well as in informing decisions, “As they’ve seen the results of using evidence based decision making, they’ve seen its value, not that it controls the process, but that it informs the process.”

***There was a will to take action.*** The second theme associated with the importance of *Strategic Leadership* pertained to the will of executive leaders to take action. In this regard, reference was made to actions taken to reallocate people resources, whereby when vacancies occurred “we basically cannibalized that position” and reallocated the resources to support enrollment initiatives. The importance of “transparent decision making” in this process was considered crucial. As two participants noted:

What we did is we took positions where someone was having a baby or someone was leaving, and we basically cannibalized that position. Then we went in and re-grouped and figured out, “Okay, how can we do this position with our existing staff?” And because no one wanted to go through layoffs again, they were really willing to do it, and it worked out really smoothly.

The executive leaders commitment to being transparent, that was one thing they wanted to do . . . everybody has to know exactly what we’re doing. We can’t move forward with something unless everybody’s kind of in agreement about it, knows about it. That was very high, especially from the presidential level, to be transparent.

Another individual commented on the role of institutional leaders in “removing barriers” and in demonstrating interest in the initiative through visible attendance at

meetings, and through instituting measures of accountability reporting. “But by requesting status reports, by attending the meetings and showing interest, and trying to remove any roadblocks from other areas, if there are any, that’s probably how they demonstrate their interest and their buy-in on things.”

**What factors contributed to why “Organizational Structure & Governance” was rated among the top two most important conditions?** Interview participants were shown the data in *Table 38*. As indicated by the data in the table, 75% or more of the survey respondents from Visionary University identified six of the ten survey items associated with capacity area of *Organizational Structure & Governance* as contributing at least somewhat to the success of the systems initiative. These included: the importance of having strong support from the ‘data owners,’ a ‘designated enrollment management leader,’ strong support from ‘academic leaders at the level of the dean and above,’ strong support from the ‘president,’ a ‘designated enrollment analyst,’ and that the decision to implement the system was a ‘stated strategic objective.’ Interview participants were probed regarding what factors contributed most to why *Organizational Structure and Governance* was among the top two conditions of importance to the success of the initiative, and were requested to cite examples of strategies employed where possible.

Two survey items were identified most frequently in their importance to the success of the initiative as shown in *Table 39*. These were: (a) there was a designated enrollment management leader (item 2.1), and (b) there was strong support from the chief information officer (item 2.7). Interestingly, item 2.7 fell within the threshold of a capacity condition of ‘moderate’ rather than ‘high’ importance. Each of these is described in more detail.

Table 38

*Percent of Respondents Rating Organizational Structure and Governance as at Least 'Somewhat' <sup>a</sup> a Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
<b>Organizational Structure and Governance</b>		
<b>2.1 There was a designated enrollment management leader</b>	<b>88%</b>	<b>92%</b>
<b>2.2 There was a designated enrollment analyst to conduct enrollment performance analyses</b>	<b>81%</b>	<b>84%</b>
2.3 An institutional committee with broad representation from across divisional boundaries was charged with the success of the system development	60%	66%
<b>2.4 The decision to implement the system was strongly supported by academic leaders at the level of the dean and higher.</b>	<b>80%</b>	<b>92%</b>
<b>2.5 The decision to implement the system was strongly supported by the President.</b>	<b>83%</b>	<b>84%</b>
2.6 The decision to implement the system was strongly supported by the governing board	58%	58%
2.7 The decision to implement the system was strongly supported by the Chief Information Officer.	74%	74%
<b>2.8 The decision to implement the system was strongly supported by the data owners.</b>	<b>86%</b>	<b>100%</b>
2.9 The decision to implement the system was strongly supported by the Chief Financial Officer	60%	67%
<b>2.10 The decision to implement the system was a stated strategic objective in the institution's strategic plans.</b>	<b>74%</b>	<b>84%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” in importance on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.



Table 39

*Coding on Importance of Organizational Structure and Governance at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Organizational Structure and Governance	A Designated enrollment management leader (N = 5)	<ul style="list-style-type: none"> <li>• empowered</li> <li>• commitment at the right level</li> </ul>
	Strong Support from the Chief Information Officer/CIO (N = 3)	<ul style="list-style-type: none"> <li>• direct involvement of the CIO</li> <li>• innovative IT team</li> </ul>

***A designated enrollment management leader.*** Five of the nine interview participants spoke about the importance of having an empowered enrollment champion. One individual noted that “unless you have a champion of the system, who’s committed to it at the right level, you are really kind of dead in the water.” Another individual expanded on the important role of an enrollment leader in being able to “educate” and to “create a purpose and show the need to move a project forward” by leveraging the “creative ideas from people that are in the trenches.” Others noted the importance of the enrollment leaders in having the “respect of the academic community,” and a “strong working relationship with institutional research.”

I think the designated enrollment management leader . . . made a huge difference. Having someone that is respected, as this person is, because of the education that the person has, having a doctorate degree, goes over very well with the academic side and getting the respect there and then the natural born leadership of someone in student life, which our leader. . . our enrollment management leader has been a huge factor.

***Strong support from the chief information officer.*** While not identified as among the highest items of importance in the survey responses, this item was the second most frequently identified factor associated with the success of the initiative. Comments were

made by three individuals on the importance of having a Chief Information Officer who “takes the time to come to smaller meetings, and an “innovative” IT team and leader who “want to make things better” for students and staff.

**What factors contributed most to why “Infrastructure” was rated of relative lower importance?** Interview participants were shown the data in *Table 40*. As indicated by the data in the table, 6 of the 11 survey items were rated by 75% or more of the survey respondents as contributing at least somewhat to the success of the initiative. These survey items were associated with the importance of ‘data quality’ to ‘data owners,’ the importance of ‘adequate funding’ being committed to sustain the system initiative, the need for ‘broader access to data’ by operational units, the importance of having an ‘adequate systems technology infrastructure,’ and the need for ‘new technologies’ to improve enrollment performance measurement capabilities. However, more than half of the survey question sub-items were rated substantially lower in importance, including the need to ‘mitigate risk,’ address ‘data integrity’ issues, address the ‘information needs of institutional users,’ address demand for ‘access by faculty,’ and the need to ‘augment staff skills’ with the use of external consultants. Interview participants were probed regarding what factors contributed most to why *Infrastructure* was rated of relative lower importance.

All of the nine interview participants commented on the importance of quality data, funding, and technology infrastructure to the success of the system initiative (survey items 5.8, 5.9, 5.10, 5.1). The relative lower rating overall of this organizational capacity area was attributed largely to one factor: in balancing the importance of the eight

Table 40

*Percent of Respondents Rating Infrastructure as at Least ‘Somewhat’<sup>a</sup> a Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
<b>Infrastructure</b>		
<b>5.1 The existing data and/or systems technology infrastructure was adequate to support the development of the enrollment performance measurement system.</b>	<b>81%</b>	<b>92%</b>
5.2 The existing data and/or systems technology infrastructure required upgrading to mitigate institutional risk.	58%	42%
<b>5.3 The introduction of new systems created opportunities for improved enrollment performance measurement capabilities.</b>	<b>77%</b>	<b>83%</b>
5.4 The existing enrollment performance measurement systems did not meet the needs of institutional users	52%	50%
<b>5.5 Expanded access to more sophisticated enrollment performance information beyond transactional reports was in demand by operational departments</b>	<b>74%</b>	<b>92%</b>
5.6 Expanded access to more sophisticated enrollment performance information beyond transactional reports was in demand by faculty.	45%	67%
5.7 There was a lack of trust in the integrity of enrollment related data (e.g., inquiries, admissions, registrations).	49%	42%
<b>5.8 Data quality was a priority of the data owners.</b>	<b>91%</b>	<b>100%</b>
<b>5.9 Adequate funding was committed to implement the enrollment performance measurement system.</b>	<b>77%</b>	<b>84%</b>
<b>5.10 Adequate funding was committed to sustain the enrollment performance measurement system.</b>	<b>74%</b>	<b>92%</b>
5.11 External consultants were required to augment the skills of internal staff.	37%	42%

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” in importance on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).  
 b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

organizational capacity areas, people issues were more critical to address than infrastructure.

Table 41

*Coding on Lower Importance Rating of Infrastructure at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Infrastructure	Importance of Resolving People Issues a Higher Priority (N = 3)	<ul style="list-style-type: none"> <li>• enrollment management is about customer-service</li> <li>• importance of buy-in from campus constituents</li> </ul>

Two dimensions of people-issues were referenced. On one dimension, the systems initiative was designed to address people issues associated with “customer service.” On the other dimension, resolving internal people-issues was viewed as paramount to adopting change in how services to students (the customer) would be improved.

Infrastructural issues were necessary to address, but only after constituent buy-in to the need for change was addressed. As stated well by one interview participant:

The infrastructure is a lot easier to solve than people. That’s why it was less important. If we could solve the people problem, infrastructure was pretty easy. People would support funding of it, people would support use of it, etc. I think we have pretty good data stewards that were involved all the way along, and so the fact that they bought into the process made it so that basically the infrastructure in general was available, that the permissions were there, etc, within the infrastructure in general.

So the human factors obviously were always kind of the larger risk of making sure that faculty and Student Services and advisors and everybody could live with and be involved with and buy into and feel like it’s important enough to see the success of the whole system.

**What factors contributed most to why “Program Management” was rated of relative lower importance?** Interview participants were shown the data in *Table 42*. As indicated by the data in the table, six of the seven survey items were rated by 75% or more of survey respondents from Visionary University as contributing at least somewhat to the success of the system initiative. These items included the importance of having support from data owners and enrollment managers to ‘share’ and ‘make use of data,’ and the need for enrollment performance management systems to support ‘improved decision-making,’ ‘resource allocation,’ and ‘shared responsibility’ for enrollment outcomes. However, the capacity area of *Program Management* was rated of relative lower importance overall.

When queried regarding the contributing factors, all nine of the interview participants cited the same reasons as those associated with why the capacity area of ‘Infrastructure’ was of relatively lower importance (Table 43).

Two interview participants reflected on this matter in this way:

Moving together as an institution and moving in a direction that we all felt good and comfortable and having buy-in and selling the buy-in, and having leaders preach the buy-in and preach the direction that we’re going, if you will, even convert people to the direction that we’re going, became a lot more important than the other areas, especially program management probably.

These factors were important but it was ensuring that the people issues were addressed up front that was paramount.

**What factors contributed to why “Process Management” was rated of relative lower importance?** Interview participants were shown the data in *Table 44*. As indicated by the data in the table, seven of the ten survey items related to the capacity area of *Process Management* were rated by 75% or more of the survey respondents as

Table 42

*Percent of Respondents Rating Program Management as at Least ‘Somewhat’<sup>a</sup> a Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
<b>Program Management</b>		
<b>6.1 The institution engaged in quantitative external benchmarking of its enrollment performance to inform planning and decision-making.</b>	69%	<b>83%</b>
<b>6.2 The enrollment/student services administrators with data management responsibilities (e.g., Registrar, Admissions Director) supported making the data widely available to others who needed access to it to make informed enrollment decisions.</b>	<b>86%</b>	<b>92%</b>
<b>6.3 There was a commitment by managers in enrollment/student services operations to use data to improve enrollment performance management.</b>	<b>86%</b>	<b>92%</b>
<b>6.4 Broader access to data was viewed by institutional decision leaders as a means to improve collaboration in decision-making.</b>	<b>78%</b>	<b>75%</b>
6.5 Broader access to data was viewed by institutional decision leaders as a means to create internal competition for resources.	35%	42%
<b>6.6 Broader access to data was viewed by institutional decision leaders as a means to foster shared responsibility of enrollment outcomes across operations.</b>	74%	<b>75%</b>
<b>6.7 Broader access to data was viewed by institutional decision leaders as a means to inform better enrollment decisions.</b>	<b>83%</b>	<b>84%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” in importance on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

Table 43

*Coding on Lower Importance Rating of Program Management at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Program Management	Importance of Resolving People Issues a Higher Priority (N = 3)	<ul style="list-style-type: none"> <li>enrollment management is about customer-service</li> <li>importance of buy-in from campus constituents</li> </ul>

Table 44

*Percent of Respondents Rating Process Management as at Least ‘Somewhat’<sup>a</sup> a*

*Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
<b>Process Management</b>		
<b>7.1 There was a shared vision for the system development.</b>	74%	<b>75%</b>
<b>7.2 There were shared goals for the system development.</b>	<b>76%</b>	<b>83%</b>
7.3 The campus community received information on the expected value-adding benefits of the system.	62%	67%
<b>7.4 Regular communications on the status of the systems development were made to institutional decision leaders.</b>	62%	<b>83%</b>
7.5 Assessment to demonstrate return on investment was tied to the implementation of the enrollment performance measurement system.	52%	59%
<b>7.6 The design of the system was driven by the functionality of the technology.</b>	<b>76%</b>	<b>84%</b>
<b>7.7 The design of the system was driven by the functional needs of institutional users.</b>	72%	<b>83%</b>
<b>7.8 Data managers (e.g., Registrar, Admissions Director) demonstrated a willingness to accept change in relation to data process management responsibilities.</b>	<b>86%</b>	<b>92%</b>
7.9 Faculty were actively involved in defining the functional specifications for the system.	31%	33%
<b>7.10 Data managers (e.g., Registrar, Admissions Director) were actively involved in defining the functional specifications for the system.</b>	<b>81%</b>	<b>92%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” in importance on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.

contributing at least somewhat to the success of the initiative. These survey items were associated with the importance of the ‘active involvement of data managers,’ the ‘willingness of data managers to accept change,’ ‘shared vision’ and ‘goals’ for the system development, the design of the system being driven both by the ‘needs of institutional users’ and the ‘functionality of the technology,’ and ‘regular communications were made to institutional decision leaders.’

From a process management perspective, comments related to the importance placed on gaining constituent buy-in.

Table 45

*Coding on Lower Importance Rating of Process Management at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Process Management	Importance of Faculty and Staff Buy-in Upfront (N = 3)	<ul style="list-style-type: none"> <li>importance of campus-wide engagement</li> </ul>

Of particular note was the importance of both faculty and staff buy-in (item 7.9), yet the involvement of faculty in defining the system functional requirements was identified as an item of lower importance in the survey responses.

Moving together as an institution . . . and having buy-in and selling the buy-in, and having leaders preach the buy-in and preach the direction that we’re going, . . . became a lot more important than the other [capacity] areas.

There’s still a lot of diversity in faculty members and in getting everybody to play on the same team. . . .

Well, part of it was being able to involve all of them [faculty and staff] and they wanted to be involved and knowing that they could contribute and that their voice was being heard, was a pretty strong factor.



4. What factors contributed to the differences in capacity conditions that were rated as the two *least important* to the success of the initiative at each of the two case study institutions?

Overall, ‘**Human Resources**’ and ‘**Financial Management**’ were the organizational capacity areas that consistently ranked among the two lowest capacity areas to the success of the initial stages in the system development. These two capacity areas were among the two lowest ranked at all five institutions. When comparing the ranked scores across institutions, some variability was noted particularly in relation to ‘**Inter-organizational Linkages.**’ The interview process focused on obtaining more in-depth understanding of the factors that contributed to the lower ratings of these capacity areas. In order to focus the discussion, summary tables of the survey responses to the sub-question items were presented to the interview participants. Key themes emerging in the interview process are presented. The themes are aligned with each of the institution-specific sub-questions that guided the interview process.

**What factors contributed most to why “Human Resources” was rated among the two least important capacity conditions?** Interview participants were shown the data in *Table 46*. As indicated by the data in the table, among the eight survey items associated with *Human Resource* capacity, only three items were rated by 75% or more of the survey respondents from Visionary University as contributing at least somewhat to the success of the enrollment performance measurement system. These included, ‘staff had the appropriate skills,’ and to a lesser degree, ‘training of staff’ and ‘accountability of staff responsible for the integrity of data.’ However, factors associated with ‘training of

Table 46

*Percent of Respondents Rating Human Resources as at Least ‘Somewhat’<sup>a</sup> a Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
Human Resources		
<b>3.1 Staff had the appropriate skills to support the implementation of advanced enrollment performance measurement systems.</b>	72%	<b>92%</b>
<b>3.2 Training of staff in the use of enrollment performance measurement systems was an institutional priority.</b>	61%	<b>75%</b>
3.3 Training of managers/administrators in the use enrollment performance measurement systems was an institutional priority.	56%	67%
3.4 Staff who were skilled in the use of enrollment performance measurement systems received more career advancement opportunities than those who were not.	28%	42%
3.5 New staff hires required advanced analytical skills.	28%	42%
3.6 New staff hires required higher order technical skills.	33%	59%
3.7 Managers received training in change management to support the implementation process.	40%	42%
<b>3.8 Staff responsible for the integrity of data were held accountable for their performance with consequences.</b>	49%	<b>75%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” in importance on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

managers,’ ‘hiring people to address skill gaps,’ and ‘rewarding performance’ with staff advancement opportunities were not highly rated as important contributors to the success of the systems initiative.

Interview participants were probed regarding what factors contributed to why *Human Resources* was rated among the two capacity conditions of least contribution to

the success of the systems initiative. As shown in *Table 47*, repeated reference was made to the capable staff that were already in place.

Table 47

*Coding on Lower Importance Rating of Human Resources at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Human Resources	Skilled Existing Staff (N = 9)	<ul style="list-style-type: none"> <li>• skilled existing staff</li> <li>• staff willing and able to learn</li> </ul>

All nine interview participants commented on the fact that Visionary University had “really great staff” who were “willing and able to learn.” As one participant noted: “why it’s not that important is because we really have had really great staff.” Another individual commented: “they can learn what you need them to learn. I need people who are good customer service people.”

Several other individuals clarified that training was more important going forward than to the initial stages in the systems development, and that new staff hires focused more on attitude than to fill a technical or analytical skill gap. As one interview participant noted:

I would not say that new staff would be required for advance analytical skills or even advanced technical skills, but what they are required is to be able to work in a team because we’ll use a programmer and we’ll use someone who’s a statistician as a member of the team, and they’ll do the advanced analytical skills or the advanced programming skills. What we need that team to do is work together on the way we’re going to approach the problem and an agreement in approaching the problem.

**What factors contributed most to why “Financial Management” was rated among the two least important capacity conditions?** Interview participants were shown the data in *Table 48*. As indicated by the data in the table, among the eight survey items associated with the capacity area of *Financial Management*, only three were identified as contributing at least somewhat to the success of the systems initiative by 75% or more of survey respondents from Visionary University. These included, ‘enrollment managers were empowered to make decisions impacting enrollment performance’ and, to a lesser degree, ‘enrollment managers were held accountable for achieving enrollment goals,’ and ‘academic deans/directors were empowered to make decisions impacting enrollment performance.’ Budgetary rewards and consequences were not identified as significant contributors to the success of the systems initiative.

Interview participants were probed regarding what factors contributed to why *Financial Management* was rated among the two capacity conditions of least contribution to the success of the systems initiative. Only one factor was repeatedly referenced among the interview participants: when an institution is in survival mode, “financial reward systems and accountabilities that are financially driven, are not as critical. There are other factors that should drive change and that would be people.”

The focus on people was described in terms of how staff were “empowered” to make decisions and the degree of “trust” in people to do the best they can with the resources available. “They let us be creative and they let us do what we feel we can do [within available resources].” “we were held accountable for achieving the enrollment goals, . . . and we were empowered to make those decisions.”

Table 48

*Percent of Respondents Rating Financial Management as at Least 'Somewhat' <sup>a</sup> a Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
<b>Financial Management</b>		
<b>4.1 Managers of enrollment/student services were held accountable for achieving enrollment goals.</b>	65%	<b>75%</b>
<b>4.2 Managers of enrollment/student services were empowered to make decisions impacting enrollment performance.</b>	72%	<b>83%</b>
4.3 There were budgetary consequences to managers of enrollment/student services for missing enrollment goals.	19%	17%
4.4 There were budgetary rewards to managers of enrollment/student services for exceeding enrollment goals	19%	17%
4.5 Academic deans/directors were held accountable for achieving enrollment goals.	35%	33%
<b>4.6 Academic deans/directors were empowered to make decisions impacting enrollment performance.</b>	70%	<b>75%</b>
4.7 There were budgetary consequences to academic deans/directors for missing goals.	19%	17%
4.8 There were budgetary rewards to academic deans/directors for exceeding goals.	21%	28%

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

Table 49

*Coding on Lower Importance Rating of Financial Management at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Financial Management	Focus was on Empowering People (N = 5)	<ul style="list-style-type: none"> <li>no discretionary resources to use as incentives</li> </ul>

in a system of constrained resources, that somebody may miss their goals, not because they mismanaged anything, but because they just didn't have the resources to be able to do it, and so they weren't after to punish anybody. I mean, I think there is a great deal of trust.

### What factors contributed most to why there was variability in the rating

**“Inter-organizational Linkages”?** Interview participants were shown the data in

*Table 50*. As indicated by the data in the table, 75% or more of survey respondents from Visionary University identified three of the four survey items associated with the capacity area of *Inter-organizational Linkages* as contributing at least somewhat to the success of the systems initiative.

Table 50

*Percent of Respondents Rating – Inter-organizational Linkages as at Least ‘Somewhat’<sup>a</sup> a Contributor to the Success of the Initiative at VU*

Capacity Conditions	All Institutions <sup>b</sup>	VU
Inter-Organizational Linkages		
<b>8.1 The system was designed in consideration of the need for compliance with regulatory reporting requirements.</b>	74%	<b>75%</b>
8.2 The system was designed in consideration of the information needs of research granting bodies.	57%	68%
<b>8.3 The system was designed in consideration of the information needs of accrediting bodies</b>	<b>79%</b>	<b>75%</b>
<b>8.4 The system was designed in consideration of the information needs of educational partners (e.g., other institutions, business and industry)</b>	67%	<b>83%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.

Interview participants were probed regarding the factors contributing to both the high and low rating of this capacity area. Interestingly, only one factor was identified of significance to the issues at hand as shown in *Table 51*. That is, while external agencies were important influencers, they did not drive internal change.

Table 51

*Coding on Lower Importance Rating of Inter-Organizational Linkages at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Inter-Organizational Linkages	Not Drivers of Internal Change (N = 3)	<ul style="list-style-type: none"> <li>• leverages use of information provided</li> <li>• validates performance measures</li> <li>• systems changes are internally driven</li> </ul>

One interview participant commented, “We were going to build a system in such a way that we could leverage the information we were already providing [to external agencies].”

Another interview participant indicated that the requirements of external agencies validated the performance measures identified for use:

You want to be able to have a third party that validates your success and the things that you do. At the same time, it was never a driving factor per se. The driving factor again comes back to doing what’s right for the students and the people we serve.

A third individual noted that quality changes must be internally motivated and driven:

But if an institution is thinking that they’re going to use accreditation to drive something, I think they’re really missing the boat because the product that they’re going to get is not going to be a super quality product. It’s got to come internally, and it’s got to come from within those people that work at that institution . . . I

don't think it should drive your changes. I believe that that's got to come from an internal desire and focus of your institution if you really want quality.

***General Questions About the Participant and Lessons Learned***

- A. What were the greatest risks to the success of the initiative?
- B. In what ways did the differences in drivers for the system development impact the success of the initiative?
- C. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
- D. How was success defined for the systems development initiative?
- E. What was the participant's contribution to the systems development initiative?

Interview participants were requested to respond to five general questions regarding their involvement in the enrollment performance measurement systems development initiative and lessons learned. Responses to each of these questions are presented below.

**What were the greatest risks to the success of the initiative?** Interview participants identified three key risk factors to the success of the initiative. As shown by the data in *Table 52*, the primary risks identified included: (a) defining functional requirements, (b) resource management, and (c) managing human dynamics. Each of these risk factors and associated strategies for mitigating the risk will be described in detail below.

***Lack of clarity in functional requirements.*** Three individuals noted challenges in clarifying upfront the functional needs for the enrollment performance measurement system and in identifying the highest priorities for the use of available resources. As one individual noted: "The biggest risk is not properly identifying the end product which you want. Because then you run a risk of getting done and not really having what you want."



Table 52

*Coding on Risks at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Risks	Lack of Clarity in Functional Requirements (N = 3)	<ul style="list-style-type: none"> <li>• define functional requirements upfront</li> <li>• identify priorities for optimal use of resources</li> </ul>
	Management of Staff and Financial Resources (N = 4)	<ul style="list-style-type: none"> <li>• limited cross-training of staff</li> <li>• budgetary cutbacks</li> </ul>
	Managing Human Dynamics of Change (N = 7)	<ul style="list-style-type: none"> <li>• gaining buy-in</li> <li>• delayed decision-making</li> <li>• managing expectations</li> </ul>
Strategies to Mitigate Risks	Adopt Good Practices in Project Management (N = 9)	<ul style="list-style-type: none"> <li>• strategically use committees in ‘advisory’ role</li> <li>• reduce size</li> <li>• maintain locus of control with those empowered to lead change</li> <li>• plan for cross-training of staff</li> <li>• create a reserve budget</li> <li>• utilize effective project management protocols</li> <li>• empower respected leaders</li> <li>• exercise patience</li> <li>• open communication</li> </ul>

Another individual made the observation that the challenge was to use committee input effectively to confirm requirements rather than to define requirements by consensus.

Most of the unsuccessful software systems are done by committee, and most of the successful ones are done by a creative person, a great mind who sees things holistically.” In order to mitigate this risk, one participant suggested that it would have been a preferred approach to “shrink the committee size. . . get the right people in the room and have an architect that is in some ways the holder of the research, that becomes the principal architect of the system and then you work with them directly.

Other comments made related to the need to clearly define the role of the committee(s) as ‘advisory’ to the decision-making process, and to maintain the locus of control with those occupying positions accountable for the delivery of the system.

My experience is that you shrink the committee size, you get the right people in the room and have an architect that is in some ways the holder of the research, that becomes the principal architect of the system and then you work with them directly, architect the system and then say, “Okay, here’s the system. How do we improve it?”

***Management of staff and financial resources.*** Another risk repeatedly mentioned by four interview participants was the challenge of effectively managing people and financial resources to ensure sustainability of the project in the event of unexpected loss of staff or budgetary cutbacks. In order to mitigate this risk, three specific suggestions were made that related to having a risk management plan, including: (a) plan for knowledge transfer among key personnel, (b) ensure use of effective project management protocols, and (c) create a reserve fund as a safeguard for unexpected financial issues. As stated well by one individual, “We have a project management system . . . making sure that we have up front what the project’s going to be. And then on the budgetary side, there sometimes are funds . . . reserve funds, if they’re needed for unforeseen cases.”

***Managing human dynamics of change.*** Seven interview participants spoke to the challenges of managing people dynamics to ensure buy-in to decisions made, timely decision-making, and realistic expectations. The observation was made by one participant that gaining “[T]he buy-in is much more difficult than the actual work.” Another interview participant noted:

any major change is going to take three to five years, and don’t think that it’s going to happen in a year. It just isn’t, and it can’t, because to change a bureaucracy, to change a whole culture in a bureaucracy, it takes a good three to five years to do that.

In terms of strategies to mitigate risks, numerous reflective comments were shared that related to previously noted issues. Specific strategies related to the role of committees, decision-making structures, and the management of people resources and the human dynamics of change.

**In what ways did the differences in drivers for the system development impact the success of the initiative?** When questioned about in what ways did the focus on *enrollment and student success* as a driver to the systems development contribute most and least to the success of the initiative, two themes were identified as shown in *Table 53*.

Table 53

*Coding on Impact of Enrollment and Student Success as the Driver of the Systems*

*Initiative at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Positive Impact	Student Focus is Mission-centric (N = 9)	<ul style="list-style-type: none"> <li>• point of pride</li> <li>• something faculty and staff care about</li> </ul>
Negative Impact	Balancing Action and Buy-in (N = 2)	<ul style="list-style-type: none"> <li>• time-intensive nature of collaboration</li> <li>• persistence</li> </ul>

All interview participants spoke to the fact that a focus on students is “mission-centric,” a “point of pride,” and an area of “passion” for many if not most campus constituents. Therefore, student retention and success was a focus people could “rally around.” The only downside of this driver identified by interview participants was the time-intensive nature and persistence required over time to engage the campus in a

process of culture change As noted by one individual, “it took a good two years to get academics to really get on board.” In this regard, the need for “persistence” over time was noted.

**What lessons were learned that would be recommended to others before they embark on the development of an advanced enrollment performance measurement system?** In answer to the question about lessons learned, all comments reflected the need for effectively managing the human dimensions of change as shown in *Table 54*.

Table 54

*Coding on Lessons Learned at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Lessons Learned	Human Dimensions of Change (N = 7)	<ul style="list-style-type: none"> <li>• support of executive leaders</li> <li>• stability in leadership</li> <li>• engage faculty upfront</li> <li>• know your students</li> <li>• patience in managing culture change</li> </ul>

Interview participants noted the importance of the “support of executive leaders,” embarking on change within a context where there is “stability in leadership,” “engaging faculty upfront” in the process, “knowing the profile and needs of students,” and being skillful in “managing culture change.” Interestingly, change management and leadership skill development workshops were not a component of the system implementation process. Two individuals indicated that “we didn’t have any change management workshops. . . . It would have been really helpful.”

**How was success defined for the systems development initiative?** In answer to the question about how success of the project was defined, interview participants commented on their definition of success being grounded in both the tangible and intangible as shown in *Table 4.32D*.

Table 55

*Coding on Definition of Success at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Definition of Success	Tangible (N = 9)	<ul style="list-style-type: none"> <li>• stabilize freshmen enrollment</li> <li>• improve student retention by 15%</li> <li>• faculty use of system</li> </ul>
	Intangible (N = 9)	<ul style="list-style-type: none"> <li>• better information to target strategies</li> <li>• better information for decision-making (students and institution)</li> <li>• personal satisfaction of contribution to institutional goals</li> </ul>

The tangible evidence of ‘success’ was in relation to enrollment growth and faculty use of the system. In less tangible terms, success was also defined in relation to the value of better information for decision-making, and to the personal sense of accomplishment in supporting improved decision-making and the institution’s development.

**What was the participant’s contribution to the systems development initiative?** The final question in the interview process focused on what was the participant’s greatest contribution to the success of the systems development initiative.

What was evident from the comments made, as shown in *Table 56*, was the critical nature of a having a balanced team of people.

Table 56

*Coding of Participant's Contributions at VU*

Sub-Question Category	Key Themes (N = 9 Interviewees)	Thematic Dimensions
Participant's Contributions	Balanced Team (N = 9)	<ul style="list-style-type: none"> <li>• facilitating teamwork</li> <li>• fun</li> <li>• creativity</li> <li>• understanding of student needs</li> <li>• knowledge of data</li> <li>• knowledge of enrollment processes</li> <li>• technical expertise</li> <li>• facilitator of process</li> <li>• historical knowledge of institution</li> <li>• passion</li> </ul>

Each participant's contribution was unique to the expertise of the individual or their leadership attributes. Individuals commented on their contributions in providing technical expertise, strategic leadership, creative out-of-the box- thinking, knowledge of the institution and its culture, and process management skills within an atmosphere of fun. Also very evident in the interview process was the level of passion people had for the institution and student success. This was demonstrated by the comments made regarding their fortitude in staying the course during turbulent times, as well as in the tone and expressive nature of their comments.

## *Case Study Analysis #2. Fabulous Small College*

### **Overview of Research Setting and Interview Participants**

Fabulous Small College is a small, open-access community-based two-year college offering vocation and associate degrees. The college is located in a relatively remote area within the southern region of the United States. Fabulous Small College operated under the leadership of a single president for more than two decades during which time student enrollment reached about 2,000 students. The leadership style of the day was “laid-back” in nature, the workplace environment was “family-oriented,” and the service culture focused on “creating a personal experience for students.” Structures, systems, and practices were informal and manually intensive. The institution lagged in the use of technologies in all aspects of its operations.

Following the retirement of a long-standing president, a new president assumed office who became a catalyst for aggressive change. During the two-year period of this president’s tenure, there was significant turnover within most senior leadership positions at the level of the dean and higher. Some positions became a ‘revolving door.’ All institutional operations came under scrutiny of the new president, who was “demanding,” “results-driven,” and “impatient.” While this shift in leadership served as a catalyst for change, particularly in relation to the focus on enrollment management and the systems initiative, the mode of operation at the unit levels became that of “survival.” The introduction of new technologies to support enrollment management was initiated by a core team of longstanding middle managers who bonded together to address the new president’s desire for aggressive change. At the time of the initiation of the system, the institution was “heavily divided” and experiencing “a time of strife.” Over the three-year

lifespan of the project to date, a core team championed the system initiative based upon a commonly shared vision, goals, and values. During this period, a third president had assumed office who had less direct involvement in the system development initiative. However, the enrollment performance measurement system remained a priority within the institution's strategic plan.

### **Interview Participants**

Four of the seven survey respondents participated in the interview process. Their positions, affiliated constituent group, and years of tenure at the college are presented in *Table 57*. The constituent representation of the four interview participants included two 'systems developers,' one 'enrollment manager' and one 'institutional user.' Two of the interview participants had been employed at the college for more than ten years, and two for less than five years.

Table 57

#### *Interview Participant Attributes at FSC*

Participant	Gender	Position or Title	Constituent Affiliation	Years at Institution
Interview 1	Male	Director, IT	Systems Developers	10 or more years
Interview 2	Male	Assistant Director, IT	Systems Developers	Less than 5 years
Interview 3	Female	Recruiter (Marketing)	Institutional User	Less than 5 years
Interview 4	Female	Director Enrollment Services/Registrar	Enrollment Manager	10 or more years



## Explanatory Findings from Qualitative Interviews

### *Organizational Culture*

1. What factors contributed to the ‘very unbalanced’ ‘real’ culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the ‘real’ and ‘ideal’ culture profiles?

**Culture profile.** Based upon the OCAI survey responses, Fabulous Small College had a culture profile depicted as ‘very unbalanced,’ with a *paradoxical* culture profile with two opposing culture types of ‘Collaborate’ and ‘Compete’ almost to the diminution of the other two culture types (Control and Create). The two opposing culture types emphasized both a collaborative culture along with culture values that focused on competitiveness. The ‘ideal’ culture that would have been preferred by survey respondents reflected a substantial shift from the ‘real’ culture. That is, a shift away from a culture type of ‘Compete’ toward the culture types of ‘Control’ and ‘Create.’ The interview process focused on obtaining more in-depth understanding of two aspects of the culture orientation of Fabulous Small College stemming from the OCAI survey results:

1. What factors contributed to the ‘very unbalanced’ ‘real’ culture at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the ‘real’ and ‘ideal’ culture profiles?

Key themes derived from the interview process are presented below. The themes are aligned with each of the institution-specific sub-questions that guided the interview process.

*What were the factors that contributed most and least to the Collaborative culture”?* In answer to the question on what the factors contributed most and least to a collaborative culture, responses focused on four thematic areas as shown in *Table 58*.

Table 58

*Coding on Contributors to the Collaborative Culture at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Contributed <i>Most</i> to Collaborative Culture	Historical Roots (N = 3)	<ul style="list-style-type: none"> <li>• shared vision and values</li> <li>• focus on mission</li> <li>• small institution</li> <li>• family-type culture</li> </ul>
	Top-down Leadership (N = 4)	<ul style="list-style-type: none"> <li>• new president a catalyst for change</li> </ul>
	Sense of Urgency (N = 4)	<ul style="list-style-type: none"> <li>• core group of dedicated employees</li> <li>• longevity of employees</li> <li>• close teamwork relationships</li> </ul>
Contributed <i>Least</i> to Collaborative Culture	Sense of Urgency (N = 4)	<ul style="list-style-type: none"> <li>• forced quick decisions</li> <li>• need to retrofit</li> <li>• insufficient time to plan</li> <li>• spread too thin</li> </ul>

Three factors were identified most frequently as contributing *most* to the highly collaborative culture. These included:

Historical roots. Three of the four interview participants reflected on the “family-type” culture of the institution that stemmed from the smallness of its size and also from the longstanding leadership style of a very “laid-back” and congenial former president.

“I would say that we kept our mission and our values and our vision at the forefront of whether it was daily operations or something out of the norm.”

Our former president . . . [had a] management style that was really management by walking around. So he would come to . . . the campus every day, to everybody’s office, to say, “How are you doing? How’s things going?” Which was nice, I think that built a culture here of a family type environment.

Top-down leadership. All four interview participants indicated that a change in presidential leadership was the “catalyst” for change in that “we just can’t continue to do business as usual.” Two interview participants articulated the situation well, “I think the president, the change in the president was one of the catalysts for us to say that we just can’t continue to do business as usual.”

When [our former president] left, we got a new president who came in, who was [the] total opposite end of the scale, in my opinion. . . . So we went from one extreme to the other . . . the new president came in, was the one who authorized us to purchase this software and . . . she challenged us on what we had done in the past. “Why are you doing this? We need to increase enrollment.

Sense of urgency. The sense of urgency of being in survival mode strengthened the bond among a core group of people who teamed together in leading the implementation of the enrollment performance measurement system initiative. Each of the four interview participants commented on the collaborative situation as follows:

At that time we were an institution that was heavily divided. There is a core group of about 15 or so individuals who have . . . a sense of dedication to not only the institution but to its mission to serve our constituents. And that particular group of people, despite some pretty difficult and very trying times during the last couple years, have really stuck together and managed to work in a collaborative effort to not only salvage some very important aspects of the institution but to actually go forward again in a time of strife.

We knew we had to do this for our survival and I think we sort of stuck together because of that.

We didn't really have much of a choice if we wanted to get anything done. It was only really a group of us that could work on it, that would work with each other. And you know, the way were split up, it was mainly a group of five.

It was a crossroads point for the institution in the sense that it's been kind of meandering down this path for so many years and then all of a sudden it's like this new force came in and really had some wonderful, great outcomes from it, but at the same time I think it rocked everyone's boat in that sense.

A **sense of urgency** was both a contributor and inhibitor to a collaborative culture. The pressure for immediacy of results created internal tension between collaboration versus getting things done.

I think that since we were in a survival mode, we also needed to have things done quickly, to satisfy the president. I think now, as we get further away from the implementation that we did, to the actual use, if we could have spent more time in the planning stages. I mean, . . . we implemented faster than anybody else . . . and we probably would have done things differently if we had more time to think about it.

We kind of were doing it in a bubble and not really having buy-in from the top. So we would do something, and then it turns out we made some progress, but it wasn't exactly what they were looking for 'cause they didn't really say what they were looking for. So then we would just go back and do something else again.

***What were the factors that contributed most and least to a Competitive culture?***

When questioned about the factors that contributed most and least to a competitive culture, responses focused on three thematic areas shown in *Table 59*. Two of the factors that contributed *most* to the highly 'collaborative' culture were largely the same factors identified as contributing most to why there was a dual emphasis on 'competitiveness.'

In answer to this question, all four interview participants indicated that the competitiveness was internally focused more so than externally focused. There was pressure from the president to change, and given the instability in executive leadership, created "culture shock" across the institution. Two camps formed: those wanting to hold

Table 59

*Coding on Contributors to a Competitive Culture at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Contributed <i>Most</i> to Competitive Culture	Sense of Urgency (N = 4)	• a matter of survival
	Top-down Leadership (N = 4)	• pressure from top
Contributed <i>Least</i> to Competitive Culture	Unmanaged Tension (N = 4)	• lack of clarity of goals and priorities

to the traditional collaborative value-systems and those wanting to become more market-driven. Three participants described the situation as people being “pitted against each other.”

And it created this huge division within the institution. It kind of pitted a faculty member against a staff, or vice versa, or faculty member against a faculty member, and it almost came to the point where you had to choose a side, which was extremely unfortunate

Because of the divisiveness at the time, there was always an “us” against “them” sort of scenario that played out. So even though positive gains were made, they were still seen in some eyes as not so positive.

honestly there was a lot of tension, and one of the major dividing lines was between a section of faculty and a section of the staff, and that division, like I said, it resonates today. The lines are getting fainter and fainter but still, it’s still an underlying theme in some areas.

Most interview participants commented that there was not any positive aspect from the competitive side.

When we tried to formalize and make some standard process, that was questioned. Our judgment was questioned. It was . . . we were constantly all questioned about what we were doing and how we were doing things and when it was going to be done. And then once something was done, that was questioned. You know, “Why did you do it this way? Go back and tweak it.” Just constantly. And she would tell us that we needed to do that and we needed to do it in a quicker

fashion, you know, if we had to work on weekends, on holidays. So we had a lot of pressure from her.

While some tension can be healthy to stimulate idea generation and creativity, left unmanaged it could become debilitating. “At that time period, organizationally, it was kind of weird because there would be one thing that's top priority today and then tomorrow it'd be another thing that's top priority. So you're kinda competing for resources and attention span.” These results help to explain why the culture value differences between the ‘real’ and ‘ideal’ were so distinctly different.

***In what ways did culture value differences among key stakeholders positively and negatively impact the success of the initiative?*** Within an institutional context described as being “in strife,” where there was “instability” in executive leadership and “divisiveness” across the organization, enrollment managers and systems developers came under intense pressure to effect growth in enrollment through the introduction of improved systems and practices. When questioned about the positive and negative impact of culture value differences, two themes were identified from among the comments made by all four interview participants as shown in *Table 60*.

Examples cited on the positive impacts related largely to the collective will to take action among the “core team” of five individuals and their staff, and to build greater institutional buy-in by achieving national recognition in what was accomplished. As two interview participants commented:

Now that she is not here, we have a new president who respects our judgment, . . . So I don't know, that pressure from her... actually helped bond us more as a group.

By gaining some national recognition [on the systems initiative], we actually tried . . . to unify the institution.

Table 60

*Coding on Impact of Culture Value Differences at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
<i>Positive</i> Impact of Culture Value Differences	Collective Will to Act (N = 4)	<ul style="list-style-type: none"> <li>• strengthened bond of core team</li> <li>• will to achieve national recognition</li> </ul>
<i>Negative</i> Impact of Culture Value Differences	Limited Forward Planning (N = 2)	<ul style="list-style-type: none"> <li>• pressure was for immediate results</li> <li>• insufficient long-term planning</li> <li>• lack of inclusive process</li> <li>• reworking developments</li> </ul>

The negative impacts of culture value differences related to a lack of forward planning. More specifically, two interview participants indicated that due to the divisiveness among institutional constituents of the day, there was not an inclusive process by which different perspectives were brought to bear on the systems development initiative. One interview participant commented, “if we could have taken some more time to get things done, . . . we could have developed processes a little bit better up front, instead of reworking them.”

*What strategies needed to be employed to mitigate the negative impacts?* In answer to the question on what strategies needed to be employed to mitigate the negative impacts of culture value differences, interview participants most frequently cited the need for what they did not have, as shown in *Table 61*. That is, greater “**executive buy-in**” to a common vision for the project and its deliverables, whereby people would be assigned full-time to the project, and the academic community would be engaged in the process.

Table 61

*Coding on Successful Strategies at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Successful Strategies to Mitigate Limited Forward Planning	Role of Executive Leadership (N = 4)	<ul style="list-style-type: none"> <li>• buy-in from executive team</li> <li>• focus on vision</li> <li>• clarity of expectations</li> <li>• broaden lines of communication</li> <li>• dedicate project staff</li> <li>• engage faculty upfront</li> </ul>

Comments made by interview participants included:

Again, I think that comes mostly from just vision and basically saying how much resources do you want to devote to this sort of thing. For example, are we going to focus on retention and are we working on this particular area or is it just everything in general. That's where it's been very vague for us. One week they [president and vice-presidents] want to focus on one thing and the other was something else.

It would help us more if they [executive staff] knew more what we did and they pushed us a little bit more to be creative. I feel like this team, it's all us.

We are working on re-opening standard lines of communication, broadening existing lines of communication, and just trying to be more positive overall.

I do think that it would be helpful, as a team, if we were allotted time to actually work on this project and it wasn't sort of just put on your plate as you had to do it, it was something that you were able to give enough time to, to be a little bit more creative, . . . instead of so reactive, but time to plan.

**Strategies to address the gap between the 'real' and 'ideal' culture profiles.**

*What three strategies would you recommend to change the culture to be less competitive, more creative and more controlled?* The 'ideal' culture that would have been preferred by survey respondents reflected a substantial shift from the 'real' culture. That is, a shift away from a culture type of 'Compete' toward the culture types of



‘Control’ and ‘Create.’ The specific strategies offered in response to this question yielded the same results as that of the previous question. That is, greater **executive buy-in** to a common vision for the project and its deliverables, **people assigned full-time to the project**, and **engagement of the academic community** in the process. In relation to the latter, three individuals commented on the value that faculty added to the initiative, and that in retrospect, there would have been value to have included faculty earlier in the process.

It wasn't until recently we've been able to get the instructional side more involved and they have been becoming more involved. They've seen more of the capability of what can be done with the system. I think we would have been better off if we could have had their buy-in earlier on.

So you know, in hindsight yes, we certainly should have included someone from faculty. Next best thing we can do is to engage them now and see how we can tweak all of our campaigns to better meet the needs of the students.

When we brought a faculty member in, it really opened up our eyes on all the stuff that we thought we would try to do that would help. Our faculty member said, “I think you’re going down the wrong road here. I don’t think you’re going to get students to do this earlier,” which was like a real eye opener.

And it has really shed a lot of great light having faculty on the academic side involved because they see enrollment from a completely different perspective, because they’re dealing with students firsthand.

### **Organizational Capacity Conditions**

1. What factors contributed to the differences in capacity conditions that were rated as the two most important to the success of the initiative at each of the two case study institutions?

Results from the organizational capacity survey indicated that there was considerable consistency among three of the five participating institutions in which of the eight capacity areas were most and least important to the success of the systems development initiative based upon ranked survey scores. However, the survey responses

from Fabulous Small College were somewhat at variance from the other three institutions, with **‘Infrastructure’** and **‘Program Management’** identified as the two most highly ranked organizational capacity areas. These capacity areas were of somewhat lesser importance at the other four institutions. The interview process focused on obtaining more in-depth understanding of the factors that contributed to the high ratings. In order to focus the discussion, summary tables were presented to the interview participants of the survey responses to the sub-question items for their respective institution as compared to responses from across all five institutions. Based upon a review of the frequency distributions of survey responses across items, survey question sub-items that were rated by 75% or more of respondents as contributing at least somewhat to the success of the systems initiative were considered to be of ‘high’ importance, those rated between 50% and 74% were considered of ‘moderate’ importance, and those below 50% of ‘low’ importance. Key themes that resulted from an analysis of interview findings are presented below. The themes are aligned with each of the institution-specific sub-questions that guided the interview process.

*What factors contributed to why “Infrastructure” was rated among the top two most important conditions?* Interview participants were shown the data in *Table 62*. As indicated by the data in the table, 75% or more of the survey respondents from Fabulous Small College rated 7 of the 11 survey items associated with the capacity area of *Infrastructure* as contributing at least somewhat to the success of the systems initiative. These survey items were associated with the importance of ‘data quality’ to ‘data owners,’ of ‘adequate funding’ being committed to implement and sustain the system initiative, the need for ‘new technologies’ to improve enrollment performance

Table 62

*Percent of Respondents Rating Infrastructure as at Least ‘Somewhat’<sup>a</sup> a Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Infrastructure</b>		
<b>5.1 The existing data and/or systems technology infrastructure was adequate to support the development of the enrollment performance measurement system.</b>	<b>81%</b>	<b>83%</b>
<b>5.2 The existing data and/or systems technology infrastructure required upgrading to mitigate institutional risk.</b>	58%	<b>100%</b>
<b>5.3 The introduction of new systems created opportunities for improved enrollment performance measurement capabilities.</b>	<b>77%</b>	<b>100%</b>
5.4 The existing enrollment performance measurement systems did not meet the needs of institutional users	52%	33%
5.5 Expanded access to more sophisticated enrollment performance information beyond transactional reports was in demand by operational departments	74%	67%
5.6 Expanded access to more sophisticated enrollment performance information beyond transactional reports was in demand by faculty.	45%	16%
5.7 There was a lack of trust in the integrity of enrollment related data (e.g., inquiries, admissions, registrations).	49%	67%
<b>5.8 Data quality was a priority of the data owners.</b>	<b>91%</b>	<b>100%</b>
<b>5.9 Adequate funding was committed to implement the enrollment performance measurement system.</b>	<b>77%</b>	<b>100%</b>
<b>5.10 Adequate funding was committed to sustain the enrollment performance measurement system.</b>	<b>77%</b>	<b>100%</b>
<b>5.11 External consultants were required to augment the skills of internal staff.</b>	37%	<b>83%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).  
 b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

measurement capabilities and ‘mitigate risk,’ as well as the importance of having an ‘adequate data/system infrastructure’ and ‘expertise of consultants.’ Several survey items were rated substantially lower in importance, including the need to address ‘data integrity issues,’ address the ‘information needs of institutional users,’ address demand for ‘access to information by faculty,’ and ‘trust’ in the integrity of the data. Interview participants were probed regarding what factors contributed to why *Infrastructure* was rated of among the top two conditions of importance to the success of the systems initiative, and were requested to cite examples of strategies employed where possible.

All four interview participants commented on the fact that the implementation of the systems initiative catapulted them from a lagging technology state to an advanced state, and served as a vehicle to advance an enrollment management strategy.

Table 63

*Coding on High Importance Rating of Infrastructure at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Infrastructure	Enabled More Strategic Approach to Enrollment Management (N = 4)	<ul style="list-style-type: none"> <li>• catapulted technology applications</li> <li>• advanced enrollment management strategy</li> </ul>

The following specific comments by three interview participants attest to the dramatic impact that technology served in this situation:

It was something that we had never had in place prior to implementing the project. So we were sort of flailing out there and this technology product became available. So it became not only our resource but our guide in developing enrollment management.

We all felt that we needed this integrity of the data and we needed something to drive us, and if it wasn't going to be our leadership, it was going to be this data-driven product that we were creating.

If we didn't have that software package here, I don't know that we would have implemented any kind of enrollment management strategy, other than what we were doing. The software package was key for us.

***What factors contributed to why “Program Management” was rated among the top two most important conditions?*** Interview participants were shown the data in *Table 64*. As indicated by the data in the table, 75% or more of the survey respondents from Fabulous Small College rated four of the seven survey items associated with the capacity area of *Program Management* as contributing at least somewhat to the success of the systems initiative. These included: the support of ‘data managers’ and ‘enrollment managers’ as contributing at least somewhat to the success of the system initiative; as well as the need for ‘improved decision-making,’ and fostering ‘shared responsibility for enrollment outcomes’ as contributing at least somewhat to the success of the system initiative.

Interview participants were probed regarding what factors contributed most to why *Program Management* was among the top two capacity conditions of importance to the success of the initiative, and were requested to cite examples of strategies employed where possible. One thematic comment was consistently made by all four participants as shown in *Table 65*.

Table 64

*Percent of Respondents Rating Program Management as at Least ‘Somewhat’<sup>a</sup>*

*Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Program Management</b>		
6.1 The institution engaged in quantitative external benchmarking of its enrollment performance to inform planning and decision-making.	69%	50%
<b>6.2 The enrollment/student services administrators with data management responsibilities (e.g., Registrar, Admissions Director) supported making the data widely available to others who needed access to it to make informed enrollment decisions.</b>	<b>86%</b>	<b>100%</b>
<b>6.3 There was a commitment by managers in enrollment/student services operations to use data to improve enrollment performance management.</b>	<b>86%</b>	<b>100%</b>
6.4 Broader access to data was viewed by institutional decision leaders as a means to improve collaboration in decision-making.	78%	67%
6.5 Broader access to data was viewed by institutional decision leaders as a means to create internal competition for resources.	35%	17%
<b>6.6 Broader access to data was viewed by institutional decision leaders as a means to foster shared responsibility of enrollment outcomes across operations.</b>	<b>74%</b>	<b>83%</b>
<b>6.7 Broader access to data was viewed by institutional decision leaders as a means to inform better enrollment decisions.</b>	<b>83%</b>	<b>83%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).  
 b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.

Table 65

*Coding on High Importance Rating of Program Management at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Program Management	Fostered Culture of Evidence (N = 4)	<ul style="list-style-type: none"> <li>• introduced enrollment management controls</li> <li>• enabled improved decision-making</li> </ul>

The enrollment performance measurement system provided a mechanism to better control enrollment operations and focus enrollment planning and strategy development. As one participant noted, the systems initiative provided “a sense of focus and structure, because we had none in the past.” Another interview participants reflected on the importance of data as “a way for us to gain control over something maybe we didn’t feel like we had control over”- enrollment management. A third individual commented that “one of the goals of the team, was to put this data out because . . . it’s just not one department that’s solely responsible for the enrollment goals of the institution.”

***What factors contributed most to why “Strategic Leadership” was rated of relative lower importance?*** Interview participants were shown the data in *Table 66*. As indicated by the data in the table, only one survey item related to the capacity area of *Strategic Leadership* was rated by 75% or more of the survey respondents as contributing at least somewhat to the success of the systems initiative. All of the other five survey items received considerably lower response ratings.

While the importance of enrollment was articulated in the institution’s strategic plan, *Strategic Leadership* was not a capacity area that was rated highly by FSC survey respondents in contributing to the success of the systems initiative for reasons shown in *Table 67*.

Table 66

*Percent of Respondents Rating Strategic Leadership as at Least 'Somewhat' <sup>a</sup> a Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Strategic Leadership</b>		
1.1 Our Executive leaders understood the relationship between enrollment and resource management	81%	50%
1.2 Our Executive leaders demonstrated commitment to evidence-based decision-making.	86%	67%
1.3 Our Executive leaders demonstrated commitment to making information widely available.	83%	67%
1.4 Our Executive leaders demonstrated commitment to transparent decision-making.	81%	50%
1.5 Our Executive leaders communicated to the campus community on a regular basis the importance of investing in enrollment performance measurement systems.	74%	67%
<b>1.6 The importance of enrollment to the academic wellbeing of the institution was clearly articulated in the institution's strategic plans.</b>	<b>86%</b>	<b>83%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).  
b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.

Table 67

*Coding on Lower Importance Rating of Strategic Leadership at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Strategic Leadership	Lack of Executive Leadership Inhibited Progress (N = 4)	<ul style="list-style-type: none"> <li>• lack of executive leadership not ideal</li> <li>• leadership exercised by mid-managers</li> </ul>



All four interview participants noted that the lack of executive leadership was “not ideal” and was an inhibitor to optimal conditions for success. As stated well by one interview participant, “This was not the ideal. We had none. We had no support, or very little, so we sort of took the reins and saw the project from Point A to Point Completion.”

Another individual indicated that, “on the positive side, the core team [Middle Management] had the latitude to experiment and define the system deliverables.” However, the individual elaborated further in stating “there was a lot of work going into doing something that was kind of mandated that something had to be done and we weren't really getting any sort of buy-in from the top.”

***What factors contributed most to why “Organizational Structure & Governance” was rated of relative lower importance?*** Interview participants were shown the data in *Table 68*. As indicated by the data in the table, 75% or more of the survey respondents from Fabulous Small College rated only three of the ten survey items associated with the capacity area of *Organizational Structure & Governance* as contributing at least somewhat to the success of the systems initiative. These included: having a ‘dedicated enrollment analyst,’ ‘support of the CIO,’ and ‘support of data owners.’

In effect, the individuals occupying those positions (i.e., enrollment analyst, data owners, and CIO) were members of the core team who implemented the system. When probed regarding the factors that contributed to the lower overall rating of *Organizational Structure & Governance*, one factor consistently was identified by all four interview participants as shown in *Table 69*.

Table 68

*Percent of Respondents Rating Organizational Structure & Governance as at Least**'Somewhat' <sup>a</sup> a Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Organizational Structure and Governance</b>		
2.1 There was a designated enrollment management leader.	88%	33%
<b>2.2 There was a designated enrollment analyst to conduct enrollment performance analyses</b>	<b>81%</b>	<b>100%</b>
2.3 An institutional committee with broad representation from across divisional boundaries was charged with the success of the system development	60%	67%
2.4 The decision to implement the system was strongly supported by academic leaders at the level of the dean and higher.	80%	17%
2.5 The decision to implement the system was strongly supported by the President.	83%	50%
2.6 The decision to implement the system was strongly supported by the governing board	58%	0%
<b>2.7 The decision to implement the system was strongly supported by the Chief Information Officer.</b>	74%	<b>83%</b>
<b>2.8 The decision to implement the system was strongly supported by the data owners.</b>	<b>86%</b>	<b>83%</b>
2.9 The decision to implement the system was strongly supported by the Chief Financial Officer	60%	0%
2.10 The decision to implement the system was a stated strategic objective in the institution's strategic plans.	74%	33%

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.

Table 69

*Coding on Lower Importance Rating of Strategic Leadership at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Organizational Structure & Governance	Lack of Executive Leadership a Reality Albeit Not Ideal (N = 4)	<ul style="list-style-type: none"> <li>• lack of executive leadership not ideal</li> </ul>

The lower rating was attributed primarily to the “less than ideal” situational context in which the systems initiative was implemented –i.e., lack of executive support at the level of the vice-president and higher. One interview participant articulated the situation well: “Well, it gave us the freedom to do what we felt needed by not having the engagement of others.” However, the individual went on to indicated: “It’s just like I was saying before, once we had something to bring forward and really needed the input from that higher level, we weren't getting that input so that was quite a negative.” Two other individuals noted “The enrollment management leader [vice-presidential position] was sort of off in another realm, and I think that’s why that was rated as it was. There was just no cohesion whatsoever for any strategic enrollment plans within the institution.” “There was times when we didn’t feel like we were getting the guidance that we needed, and it would have behoved decision-makers to be on-hand to say ‘Yes’ or ‘No.’”

***What factors contributed why “Process Management” was rated of relative lower importance?*** Interview participants were shown the data in *Table 70*. As indicated by the data in the table, six of the ten survey items related to the capacity area of *Process*

Table 70

*Percent of Respondents Rating Process Management as at Least ‘Somewhat’<sup>a</sup> a*

*Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Process Management</b>		
<b>7.1 There was a shared vision for the system development.</b>	74%	<b>100%</b>
<b>7.2 There were shared goals for the system development.</b>	<b>76%</b>	<b>100%</b>
7.3 The campus community received information on the expected value-adding benefits of the system.	62%	33%
7.4 Regular communications on the status of the systems development were made to institutional decision leaders.	62%	33%
7.5 Assessment to demonstrate return on investment was tied to the implementation of the enrollment performance measurement system.	52%	67%
<b>7.6 The design of the system was driven by the functionality of the technology.</b>	<b>76%</b>	<b>83%</b>
<b>7.7 The design of the system was driven by the functional needs of institutional users.</b>	72%	<b>83%</b>
<b>7.8 Data managers (e.g., Registrar, Admissions Director) demonstrated a willingness to accept change in relation to data process management responsibilities.</b>	<b>86%</b>	<b>100%</b>
7.9 Faculty were actively involved in defining the functional specifications for the system.	31%	0%
<b>7.10 Data managers (e.g., Registrar, Admissions Director) were actively involved in defining the functional specifications for the system.</b>	<b>81%</b>	<b>100%</b>

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% or more of respondents.

*Management* were rated by 75% or more of the survey respondents as contributing at least somewhat to the success of the initiative. These survey items were associated with the importance of the ‘active involvement of data managers,’ the ‘willingness of data managers to accept change,’ there were ‘shared goals for the system development,’ as well as the design of the system was driven both by the ‘functionality of the technology’ and the ‘needs of institutional users.’

All of the interview participants commented on the important contribution faculty made in the process (item 7.9), yet the involvement of faculty in defining the system functional requirements was identified as an item of *no* importance in the survey responses.

Table 71

*Coding on Lower Importance Rating of Process Management at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Process Management	Importance of Faculty and Staff Buy-in Upfront (N = 4)	<ul style="list-style-type: none"> <li>importance of involving faculty earlier in the process</li> </ul>

What was learned from the interviews was that the active engagement of faculty occurred considerably later into the systems initiative than at the planning stages. Initially, the system was launched as a need within the enrollment management and student services operations. However, there was repeated reference among all four interview participants to the valuable perspectives offered by faculty, who have since

shaped subsequent stages in the development of the systems. There was recognition in retrospect that the engagement of faculty should have occurred earlier in the process.

It wasn't until recently we've been able to get the instructional side more involved and they have been becoming more involved. They've seen more of the capability of what can be done with the system. I think we would have been better off if we could have had their buy-in earlier on.

1. What factors contributed to the differences in capacity conditions that were rated as the two *least important* to the success of the initiative at each of the two case study institutions?

Overall, '**Human Resources**' and '**Financial Management**' were the organizational capacity areas that consistently ranked among the two lowest capacity areas to the success of the initial stages in the system development. These two capacity areas were among the two lowest ranked at all five institutions. When comparing the ranked percentage scores across institutions, some variability was noted particularly in relation to '**Inter-organizational Linkages.**' The interview process focused on obtaining more in-depth understanding of the factors that contributed to the lower ratings of these capacity areas. In order to focus the discussion, summary tables of the survey responses to the sub-question items were presented to the interview participants. Key themes emerging in the interview process are presented below. The themes are aligned with each of the institution-specific sub-questions that guided the interview process.

*What factors contributed most to why "Human Resources" was rated among the two least important capacity conditions?* Interview participants were shown the data in *Table 72*. As indicated by the data in the table, among the eight survey items associated with *Human Resource* capacity, *none* of the items was rated by 75% or more

Table 72

*Percent of Respondents Rating Human Resources as at Least 'Somewhat'<sup>a</sup> a Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Human Resources</b>		
3.1 Staff had the appropriate skills to support the implementation of advanced enrollment performance measurement systems.	72%	67%
3.2 Training of staff in the use of enrollment performance measurement systems was an institutional priority.	61%	33%
3.3 Training of managers/administrators in the use enrollment performance measurement systems was an institutional priority.	56%	50%
3.4 Staff who were skilled in the use of enrollment performance measurement systems received more career advancement opportunities than those who were not.	28%	16%
3.5 New staff hires required advanced analytical skills.	28%	16%
3.6 New staff hires required higher order technical skills.	33%	0%
3.7 Managers received training in change management to support the implementation process.	40%	16%
3.8 Staff responsible for the integrity of data were held accountable for their performance with consequences.	49%	33%

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

of the survey respondents from Fabulous Small College as contributing at least somewhat to the success of the enrollment performance measurement system. The most highly rated survey item by 67% of survey respondents was, ‘staff had the appropriate skills.’

However, factors associated with ‘training of staff and managers,’ hiring people to

address ‘skill gaps,’ and ‘rewarding performance’ with staff advancement opportunities were all rated as important contributors to the success of the systems initiative by 50% or fewer of survey respondents.

Interview participants were probed regarding what factors contributed to why *Human Resource* was rated among the two capacity conditions of least contribution to the success of the systems initiative. Two themes were identified as shown in *Table 73*. These were: (a) existing staff were willing and able to learn, and (b) consultants filled the gap in required skill. Each of these is described in more detail.

Table 73

*Coding on Lower Importance Rating of Human Resources at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Human Resources	Skilled Existing Staff (N = 4)	• staff willing and able to learn
	Use of Consultants (N = 4)	• consultants filled skill gap

***Existing staff willing and able to learn.*** Given the lack of technology applications prior to the systems initiative, the willingness and ability of staff to learn contributed largely to the success of the project. As stated by one individual: “I believe everybody has learning potential, and I think that that’s something that we foster here.” In addition, several interview participants indicated that while training and skill sets of staff were important, these were not critical to getting the initiative off the ground. Two



individuals commented that “We certainly learned as we went,” and “You get to where your "treading water," then you can learn how to swim.”

***Use of consultants.*** All interview participants commented, however, that external consultants served a critical role in the system implementation process. The consultants filled the skill gap both on approaches to enrollment management and to the application of the systems technology in supporting the process. The consultants were described as having done a “really good job,” and as being “phenomenon” in providing upfront training. The following comments captured the sentiments well:

The external consultants basically came in talked a lot about the strategic vision, how to actually use the data to guide the decisions that they want to go with for enrollment management. . . . So there was a bit of training on that, as well as just overall training on use of the new system.

We’ve had some absolutely phenomenal folks that helped us through the process. Part of the model for deployment of this package was an initial consultation with a strategic management person, and that really set us off and set us in gear from the very, very beginning. And we were able to align all of the rest of the implementation components in conjunction with the strategy that we developed at the very beginning. And it was flexible enough that we could sort of alter the strategy at the same time as well, and we could not have done it without some very, very knowledgeable folks from SunGard.

***What factors contributed most to why “Financial Management” was rated among the two least important capacity conditions?*** Interview participants were shown the data in *Table 74*. As indicated by the data in the table, among the eight survey items associated with the capacity area of *Financial Management*, only one was identified as contributing at least somewhat to the success of the systems initiative by 75% or more of survey respondents from Fabulous Small College. This was: (a) ‘enrollment managers were empowered to make decisions impacting enrollment performance.’ To a lesser degree, ‘enrollment managers were held accountable for

Table 74

*Percent of Respondents Rating Financial Management as at Least 'Somewhat' <sup>a</sup>*

*Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Financial Management</b>		
4.1 Managers of enrollment/student services were held accountable for achieving enrollment goals.	65%	67%
<b>4.2 Managers of enrollment/student services were empowered to make decisions impacting enrollment performance.</b>	72%	<b>83%</b>
4.3 There were budgetary consequences to managers of enrollment/student services for missing enrollment goals.	19%	0%
4.4 There were budgetary rewards to managers of enrollment/student services for exceeding enrollment goals	19%	0%
4.5 Academic deans/directors were held accountable for achieving enrollment goals.	35%	16%
4.6 Academic deans/directors were empowered to make decisions impacting enrollment performance.	70%	33%
4.7 There were budgetary consequences to academic deans/directors for missing goals.	19%	17%
4.8 There were budgetary rewards to academic deans/directors for exceeding goals.	21%	0%

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).

b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

achieving enrollment goals’ was rated by 67% of survey respondents as a contributing factor to the success of the systems initiative. Matters of ‘accountability’ and ‘empowerment’ of academic deans/directors, and ‘budgetary rewards and consequences’ were not identified as significant contributors to the success of the systems initiative.

Interview participants were probed regarding what factors contributed to why *Financial Management* was rated among the two capacity conditions of least contribution to the success of the systems initiative. Only one factor was identified from the comments among all four interview participants.

Table 75

*Coding on Lower Importance Rating of Financial Management at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Financial Management	Managed within Existing Resource Constraints (N = 4)	<ul style="list-style-type: none"> <li>• initial financial commitment addressed both development and sustainability of system</li> <li>• no financial rewards</li> <li>• empowered staff</li> </ul>

Comments reinforced that beyond the initial infusion of financial resources, the focus was on how to effectively implement and sustain the system within the constraints of existing resources.

So really, the situation that we were in was, some money was thrown at it up front and then, you know, told to make it work.

We had an up front commitment for the software. . . . Our commitment from outside of that was just our time.

Regarding the use of incentives, another participant commented that “We offered no rewards period, other than empowering them to do more and to make decisions based on real data, which I think people were actually thrilled about.”

***What factors contributed most to why “Inter-organizational Linkages” was rated among the two least important capacity conditions?*** Interview participants were

shown the data in *Table 76*. As indicated by the data in the table, among the four survey items associated with *Inter-organizational Linkages*, none of the items was rated by 75% or more of the survey respondents from Fabulous Small College as contributing at least somewhat to the success of the enrollment performance measurement system. The most highly rated survey item by 67% of survey respondents was “the system was designed in consideration of the information needs of accrediting bodies.”

Table 76

*Percent of Respondents Rating Inter-organizational Linkages as at Least ‘Somewhat’<sup>a</sup> a Contributor to the Success of the Initiative at FSC*

Capacity Conditions	All Institutions <sup>b</sup>	FSC
<b>Inter-Organizational Linkages</b>		
8.1 The system was designed in consideration of the need for compliance with regulatory reporting requirements.	74%	50%
8.2 The system was designed in consideration of the information needs of research granting bodies.	57%	17%
8.3 The system was designed in consideration of the information needs of accrediting bodies	79%	67%
8.4 The system was designed in consideration of the information needs of educational partners (e.g., other institutions, business and industry)	67%	17%

*Note.* a. Percentage scores were calculated using the composite responses to “3. Somewhat” and “4. A Great Degree” on the 4-point scale. Computationally, the percent is the count of all 3 and 4 responses divided by the count of all valid responses (i.e., 1, 2, 3, or 4).  
b. Items denoted in ‘bold’ type were rated highest in importance by 75% of more of respondents.

Interview participants were probed regarding the factors contributing to the low rating of this capacity area. Interestingly, only one factor was identified of significant to the issues at hand as shown in *Table 77*.

Table 77

*Coding on Importance Rating of Inter-Organizational Linkages at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Inter-Organizational Linkages	Not Drivers of Internal Change (N = 3)	• leverages use of information provided

Three of the four interview participants indicated that while external regulatory and accrediting agencies were important influencers, they did not drive internal change.

I would say we pretty much got into it with the understanding that we would be able to pull the type of information that we need to better serve those type of requirements for state reporting and for providing information for accreditation, but it wasn't really a driver. We were already doing that through a different ad hoc type of process.

But as far as the design and consideration of the information needs for research, or for regulatory reporting, we already had our reporting requirements in place. I'm sure now this data is able to be supplemental data, but at the time that wasn't given great consideration.

***General Questions About the Participant and Lessons Learned***

- A. What were the greatest risks to the success of the initiative?
- B. In what ways did the differences in drivers for the system development impact the success of the initiative?
- C. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
- D. How was success defined for the systems development initiative?
- E. What was the participant's contribution to the systems development initiative?

Interview participants were requested to respond to five general questions regarding their involvement in the enrollment performance measurement systems development initiative and lessons learned. Responses to each of these questions are presented below.

**What were the greatest risks to the success of the initiative?** Interview participants identified three key risk factors to the success of the initiative, as well as strategies to mitigate risk. As shown by the data in *Table 78*, the risk areas included: (a) defining functional requirements, (b) human resource dynamics, and (c) resource management. Each of these risk factors and associated strategies for mitigating the risks will be described in detail below.

Table 78

*Coding on Risks at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Risks	Lack of Clarity in Functional Requirements (N = 2)	<ul style="list-style-type: none"> <li>• lack of clarity of executive expectations</li> <li>• losing sight and focus</li> </ul>
	Management of Staff and Financial Resources (N = 2)	<ul style="list-style-type: none"> <li>• maintaining team spirit</li> </ul>
	Managing Human Dynamics of Change (N = 2)	<ul style="list-style-type: none"> <li>• small implementation team</li> <li>• budgetary cutbacks</li> <li>• need dedicated staff time</li> </ul>
Strategies to Mitigate Risks	Adopt Good Practices in Project Management (N = 4)	<ul style="list-style-type: none"> <li>• more planful approach to project</li> <li>• effective use of consultants</li> <li>• cross-train staff</li> </ul>

***Lack of clarity in functional requirements.*** Two dimensions associated with the definition of the systems initiative that were identified as risks by two interview participants included: (a) the need for clear definition of expectations and deliverables from the executive leaders, and (b) the need to maintain focused and not lose momentum.

More specifically, the interview participants reflected on the risk of not having clarity of expectations from executive leaders as follows “Because we haven’t had a lot of guidance from the executive level, what if it all gets shot down and we’ve done all of this work and again, it’s not what they wanted or not what they expected?” “I would say the greatest risks were losing sight and losing focus of the project as a whole, and I can happily and proudly say that we have not done that yet.”

***Management of staff and financial resources.*** From a resource management perspective, the greatest risks identified by two interview participants were associated with the small size of the core team who were relied upon for their expertise, the potential loss of budgetary resources during times of fiscal exigency, and ensuring sufficient staff time was dedicated to the initiative. “[The greatest risks} were mostly from a resource standpoint: people, time, and money.”

We have such a small implementation team and we haven’t really gone outside that. If we lose a member of this team, for whatever reason, we would have a big stumbling, you know, that would give us a big setback, to get back up to where we were.

***Managing human dynamics of change.*** In relation to human resource matters, the time-intensive nature of developing and maintaining a sense of team and project momentum was noted.

Challenges have been definitely on the Human Resource side. . . . I had weekly meetings and folks actually set aside time to come to every single weekly meeting, and not only were they strategic, they were also working meetings. And that can take a toll, because we invested quite a lot of Human Resource energy in that respect, and that’s always been a big challenge. But we’ve again reaped rewards because we’re doing things smarter.

Several interview participants noted the importance of adopting good practices in project management to mitigate risk. Specific strategies that were identified were in

keeping with previously noted issues, and included: (a) start with a defined plan that establishes clear goals and deliverables that have been endorsed by executive leaders, (b) effectively use external consultants in facilitating strategic visioning and in bringing best practice concepts into the institution, and (c) plan for cross-training of staff where possible.

**In what ways did the focus on efficiency and effectiveness as a driver to the system development contribute most and least to the success of the initiative?** As shown by the data in *Table 79*, the need to do more with less was expressed repeatedly. In doing so, the use of technology became the vehicle to enable process improvements, to “recruit students,” and to “better serve students.”

Table 79

*Coding on Impact of Efficiency and Effectiveness as the Driver of the Systems Initiative at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Most Impact	Improved Service to Students (N = 3)	<ul style="list-style-type: none"> <li>• need to do more with less</li> <li>• technology enabled better service to students</li> </ul>
Least Impact		<ul style="list-style-type: none"> <li>• none identified</li> </ul>

One interview participant articulated the sentiments well:

Before we implemented the project we were flailing with enrollment management. We didn't have a clear, concise path. We didn't really have a clue as to what to do or what we were doing. This just helped streamline everything, has created and helped us maintain a focus. We again are doing our jobs smarter, not harder, and yeah.



No negative impacts were identified by the interview participants related to a focus on efficiency and effectiveness as a driver or impetus to the initiation of the systems initiative, as all participants considered this focus as a means to better serve students.

**What lessons were learned that would be recommended to others before they embark on the development of an advanced enrollment performance measurement system?** In answer to the question about lessons learned, comments were made in relation to three thematic areas. As shown in *Table 80*, these include: (a) managing the human dimensions of change, (b) project planning, and (c) project management. Each of these will be described in detail below.

Table 80

*Coding on Lessons Learned at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Lessons Learned	Human Dimensions of Change (N = 3)	<ul style="list-style-type: none"> <li>• engage faculty upfront</li> <li>• campus-wide engagement including students</li> <li>• buy-in from executive leaders</li> <li>• regular communications with executive leaders and campus constituents</li> </ul>
	Project Management (N = 4)	<ul style="list-style-type: none"> <li>• small project team</li> <li>• timely decision-making</li> <li>• internal communications campaign</li> <li>• people, budgets, timelines</li> </ul>
	Project Planning (N = 2)	<ul style="list-style-type: none"> <li>• mechanisms for idea generation</li> <li>• build functionality around the product</li> </ul>

***Managing the human dimensions of change.*** Three individuals commented on the need for buy-in from executive leaders. As stated by one interview participant, “we had the buy-in from our president, but I think you really need to have your executive staff, the top level, really understand what you’re doing and support it.”

Others commented that beyond the executive leaders, these initiatives have campus-wide impact and must therefore provide for the engagement of the campus community, including students, in the process. This was articulated well by two interview participants, who stated:

I would certainly make sure you have representatives from all areas that deal with students and student engagement. Like I mentioned, the faculty not being involved was probably a downside for us. So certainly involving people from all different areas. Having at least some sort of executive buy-in to guide the project, to make sure that your group’s vision is the same as your executive board’s vision. Ultimately we came out because it happened to be that we were doing the right thing, but I think having some type of reaffirmation throughout the process would have helped.

Definitely you have to start with a wide slice of the college. You can't do it just by one department or two departments. You really need representation across the board. The sooner you can get buy in from the different areas the better. Besides that, it's really just making the system to where you can actually measure your effectiveness or success and making changes based on that.

***Project management.*** Two interview participants commented on the value of having a “small dedicated team” who worked closely with the external consultants and who were empowered to make decisions quickly outside of large committee processes. As one individual noted: “That was extremely helpful, and helped us, I think, make great stride in a very small amount of time.” Another participated stated:

I believe that one thing that has really worked for us is starting out with a small dedicated team. . . . So because we didn't make decisions by a committee, we did have a reporting structure so the implementation team took minutes and reported to exec staff. So there was awareness. But we were still able to make decisions very quickly and not through committee.

A third participant spoke to the importance of developing an internal awareness campaign to foster buy-in early on in the project. "I think that an overall general awareness campaign so that you do receive buy-in, so that the data doesn't go to waste." Another individual spoke to the importance "performance measures," and "processes for tracking progress."

**Project planning.** In terms of project planning, two interview participants indicated that there was value in building business processes around the functionality of the product instead of vice versa. This allowed for expediency in the implementation and maximized the use of limited resources. As one participant stated:

We also again built our business processes around the functionality of the product instead of vice versa and have continued to let the product be a guide for us. And I cannot reiterate that enough to institutions because folks always try to make a square peg fit in a round hole and that's just not very easy.

**How was success defined for the systems development initiative?** When questioned about how success of the project was defined, interview participants commented on their definition of success being grounded in both the tangible and intangible as shown in *Table 81*. The tangible evidence was in relation to enrollment growth, improved student retention, positive feedback from students, and improved market positioning within the state system. In less tangible terms, success was also defined in relation to a personal sense of accomplishment in supporting improved decision-making and the institution's development.

Table 81

*Coding on Definition of Success at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Definition of Success	Tangible (N = 4)	<ul style="list-style-type: none"> <li>• enrollment growth</li> <li>• improved student retention</li> <li>• feedback from students</li> <li>• improved market share within the state</li> </ul>
	Intangible (N = 4)	<ul style="list-style-type: none"> <li>• better information for decision-making (students and institution)</li> <li>• personal satisfaction of contribution to institutional goals</li> </ul>

**What was the participant’s contribution to the systems development**

**initiative?** The final question in the interview process centred on what was the participant’s greatest contribution to the success of the systems development initiative.

What was evident from the comments made as shown in *Table 82*, was the critical nature of a having a ‘balanced’ team of people who bring ‘technical expertise,’ ‘strategic leadership,’ ‘creative out-of-the-box thinking,’ ‘knowledge of the institution and its culture,’ and ‘process management skills, as well as a sense of ‘fun.’ Of particular note in the interview process was the level of ‘passion’ people had for the institution and student success. One interview participant reflected on his contribution as “Blood, sweat, and tears” and persistence in sticking with the vision of what could be.

Table 82

*Coding of Participant's Contributions at FSC*

Sub-Question Category	Key Themes (N = 4 Interviewees)	Thematic Dimensions
Participant's Contributions	Balanced Team (N = 4)	<ul style="list-style-type: none"> <li>• creativity</li> <li>• understanding of student needs</li> <li>• historical knowledge of institution</li> <li>• passion</li> <li>• knowledge of data</li> <li>• knowledge of enrollment processes</li> <li>• technical expertise</li> <li>• facilitator of process</li> </ul>

### **Research Findings—Mixed Methods**

In this chapter, research findings are presented for both the quantitative and qualitative phases of this two-phase, explanatory mixed methods study. This concluding section of the chapter presents a summary of the ‘mixed methods’ findings which combine the qualitative interview results with the findings from the quantitative survey in answer to the following **central research** question which guided this study:

How did the primary developers of ‘advanced’ enrollment performance measurement systems at a purposeful sample of ‘leading-edge’ public North American colleges describe the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the system development?

By examining the degree to which various organizational factors contributed to and impeded the initial stages in the system development, the organizational factors that were required for success were identified. On the basis of the combined results, a set of guiding principles were developed to address the second purpose of this study, which

was to establish a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management. The guidelines derived from the analysis of the mixed methods research findings are presented following the findings associated with each of the research questions.

### *Research Question 1*

What **culture value orientations** using the OCAI instrument best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system?

The OCAI culture survey was used to determine the culture value orientations that best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system at participating institutions as defined by:

- whether or not there was consistency in a **predominant** 'real' culture type,
- the degree of **balance** in the 'real' culture among the four culture value types, and
- **discrepancies** between the 'real' and 'ideal' culture profiles.

Computed 'culture type' mean scores and standard deviations across institutions were used as the basis for interpreting the 'real' and 'ideal' culture profiles using established statistical criteria in combination with the graphical representation of the mean scores on the CVF model visual map. A defining characteristic associated with culture value orientation was determined on the basis of consistent survey findings across at least four of the five institutions. The qualitative research provided more in-depth understanding of the OCAI survey results in relation to: (a) the factors that contributed to

the 'real' culture and (b) strategies needed to address the gap between the 'real' and 'ideal' cultures. Consistency in the interview findings between the two institutions was determined when recurring thematic comments were identified from two or more interview participants at each institution.

Results from the mixed methods research indicated the following:

1. Survey results indicated that there was no consistent 'predominant' 'real' culture type across institutions during the initial stages in the systems development initiative. Similarly, there was no consistency in the 'degree of balance' among the four culture types (i.e., Create, Compete, Control, and Collaborate) across institutions. Therefore, there was no culture value orientation that best characterized the 'real' culture at the time of the initial development of the enrollment performance measurement system.
2. Results from the cross-case analysis of interview comments indicated that the factors contributing most and least to the 'real' culture were situational to the institutional context, and included historical roots, sense of urgency, and the top-down style of the vice-presidents and president. As shown by the data in *Table 83*, these three factors were identified to be both contributors and inhibitors of a specific culture type (i.e., collaborative culture and competitive culture).
3. Survey results indicated that there was more consistency in the culture value orientation that best characterized the 'ideal' culture. There was a preference for an 'unbalanced' culture, where one or more culture value types predominated, and an 'ideal' culture type that had a 'leaning' toward

Table 83

*Coding of Factors Contributing Most and Least to an Institution's 'Real' Culture Type*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Contributed <i>Most</i> to Collaborative Culture	<b>Historical Roots</b>	7	3
	<b>Sense of Urgency</b>	3	4
	<b>Top-down Leadership</b>	5	4
	Approach to Planning	6	
Contributed <i>Most</i> to Competitive Culture	Differing Perspectives Between Faculty and Staff	4	
	Generational Divide	3	
	<b>Sense of Urgency</b>		4
	<b>Top-down Leadership</b>		4
Contributed <i>Least</i> to Collaborative Culture	Delayed Decisions	5	
	<b>Sense of Urgency</b>		4
Contributed <i>Least</i> to Competitive Culture	<b>Historical Roots</b>	4	
	<b>Sense of Urgency</b>	2	
	<b>Top-down Leadership</b>	3	
	Approach to Planning	3	
	Unmanaged Tension		4

'Collaborate.' A 'collaborative' culture type was consistently scored higher than any of the other culture types among all five institutions, and within a relatively low range of standard deviation. According to the OCAI theoretical framework, this culture type represented a very friendly place to work where people shared a lot of themselves. Features of a collaborative culture type included:



The leaders or head of the organization, are considered to be mentors, and maybe even, parent figures. The organization is held together by loyalty and tradition. Commitment is high. The organization emphasizes the long-term benefit of human resource development and attaches great importance to cohesion and morale. Success is defined in terms of sensitivity to customers and concern for people. The organization places a premium on teamwork, participation and consensus. (Cameron & Quinn, 2006, p. 66)

4. Survey results indicated that the 'ideal' culture was substantively at variance with the 'real' culture. The 'real' versus 'ideal' culture value type survey scores and standard deviations were markedly at variance across four of the five institutions.
5. Results from the cross-case analysis of interview comments indicated that there were both positive and negative impacts of culture value differences on the success of the systems initiative. Culture value differences had a positive influence on culture change when effectively managed. However, left unmanaged, the consequences were identified as being counter-productive, if not detrimental, to progress. The critical role of executive leaders in managing the culture value differences was identified as a contributing factor to the success of the systems initiatives. As shown by the data in *Table 84*, from a positive perspective, culture value differences stimulated a "collective will to act." In one institution, the will to take action stimulated campus-wide engagement in the systems initiative (VU), whereas in the other institution (FSC), it stimulated the bonding of a core management team who worked to bring unity to an institution in strife. In both case studies, the positive tension stemming from culture value differences was described in relation to an

Table 84

*Coding of Impact of Culture Value Differences*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
<i>Positive</i> Impact of Culture Value Differences	<b>Collective Will to Act</b>	4	4
<i>Negative</i> Impact of Culture Value Differences	Protracted Decision-making	5	
	Stifling of Innovation and Creativity	2	
	Limited Forward Planning		2

“openness to consider new ideas” in finding solutions to enrollment challenges. However, the differences in culture values were also a source of negative impacts.

While the types of negative impact associated with culture value differences identified by interview participants varied somewhat between the two institutions, in both cases, the negative impacts were noted as inhibiting progress. The types of negative impacts led to reactive versus proactive planning and the stifling of innovation and creativity at one institution; and to protracted decision-making processes at the other. These results suggested that culture value differences had a positive influence on culture change when effectively managed. However, left unmanaged, the consequences were counter-productive, if not detrimental, to progress.

Results from the cross-case analysis of interviews also suggested that managing culture value differences required **executive leaders** to serve a critical role in stimulating positive change and in mitigating the negative impacts of culture value differences. As shown by the data in *Table 85*, the success strategies that were identified by both

institutions in mitigating the negative impact of culture value differences were associated with the critical role that executive leadership served in the process.

Table 85

*Coding of Successful Strategies*

Sub-Question Category	Key Themes	VU (N = 9)	FSC (N = 4)
Successful Strategies to Mitigate Protracted Decision-making	Role of Executive Leadership	6	4

The role of executive leaders was defined as either a ‘real’ condition for success of the systems initiative (VU) or one that was ‘highly desired’ (FSC). The success strategies associated with the role of executive leaders in addressing the gap between the ‘real’ and ‘ideal’ culture profiles were described in relation to a number of the thematic dimensions as shown in the following chart. In combination, these thematic dimensions indicated a role for executive leadership in clarifying the vision and expectations for the systems initiative, ensuring an inclusive process of consultation, communicating its importance with the use of research and data to the campus community, and allocating resources with appropriate levels of accountability (see Table 86).

Table 86

*Role of Executive Leader*

VU Actual Contributing Role of Executive Leaders	FSC Desired (but lacking) Role of Executive Leaders
<ul style="list-style-type: none"> <li>• communicating one- voice message on the importance of enrollment to institutional vitality</li> <li>• empowering individuals</li> <li>• use of research and data in demonstrating the need for change</li> </ul>	<ul style="list-style-type: none"> <li>• buy-in from executive team</li> <li>• focus on vision</li> <li>• clarity of expectations</li> <li>• broaden lines of communication</li> <li>• dedicate project staff</li> <li>• engage faculty upfront</li> </ul>

**Foundational Guideline for Success**

A summary of the results from the mixed methods research is presented in *Table 87*. These findings suggested that an understanding of organizational culture values and the management of organizational culture change that fostered collaboration in the process were important conditions associated with the success of the systems initiative.

Analysis of the mixed methods research findings support the following foundational guidelines for success:

*Organizational Culture*

- Executive leaders need to be committed to fostering a culture of collaboration and to effectively managing organizational culture change.

Table 87

*Summary of Mixed Methods Findings on Culture Value Orientations*

Culture Attributes	Defining Features (Quantitative Survey)	Interview Themes
Consistency in a <b>Predominant</b> 'Real' Culture Type	<ul style="list-style-type: none"> <li>• <b>None</b></li> </ul>	<p>Factors that contributed to the 'very unbalanced' 'real' culture:</p> <ul style="list-style-type: none"> <li>• "Historical Roots"</li> <li>• "Sense of Urgency"</li> <li>• "Top-down Leadership"</li> </ul>
Degree of <b>Balance</b> in the 'Real' Culture	<ul style="list-style-type: none"> <li>• <b>None</b></li> </ul>	
<b>Discrepancies</b> between the 'real' and 'ideal' culture profiles	<ul style="list-style-type: none"> <li>• 'Real' and 'ideal' culture types were <b>substantively at variance</b></li> <li>• Preference for an 'ideal' culture that was '<b>unbalanced</b>,' where one or more culture value types predominated</li> <li>• Preference for an 'ideal culture' that had a 'leaning' toward a culture type of '<b>Collaborate</b>'</li> </ul>	<p>Impacts of culture value differences:</p> <p>Positive impact</p> <ul style="list-style-type: none"> <li>• "Collective will to act"</li> </ul> <p>Negative impact</p> <ul style="list-style-type: none"> <li>• "Protracted decision-making"</li> <li>• "Stifled innovation and creativity"</li> <li>• "Limited forward planning"</li> </ul> <p>Success strategies in addressing the gap between the 'real' and 'ideal' culture profiles required "executive leadership"</p>

*Note.* The defining features reflect attributes that were based on consistent survey results among at least four of the five institutions.

***Research Question 2***

What level of importance was each of the **eight areas of organizational capacity** associated with the IOA model to the success of the initial development of the enrollment performance measurement system?

Original survey questions based on the IOA organizational assessment framework were developed and used to assess what level of importance were each of the eight areas

of organizational capacity in contributing to the success of the initial development of the enrollment performance measurement system. The eight capacity areas included: (a) strategic leadership, (b) organizational structure, (c) human resources, (d) financial management, (e) infrastructure, (f) program management, (g) process management, and (h) inter-organizational linkages. In order to determine what level of importance were each of the eight IOA areas of organizational capacity to the success of the initial development of the enrollment performance measurement system, a composite 'percentage' score was calculated by compiling the response ratings across question items within each grouping associated with the highest ratings of a '3' and '4' on the four-point scale. These scores were then used as the basis for ranking the eight organizational capacity areas to determine the relative importance of each. Results from the ranking of the scores indicated the following:

- The resultant ranked list of organizational capacity areas in order of most to least importance based on the overall responses from all five institutions was as follows:
  1. Strategic leadership
  2. Organizational structure and governance
  3. Program management
  4. Inter-organizational linkages
  5. Process management
  6. Infrastructure
  7. Human resources
  8. Financial management

*Strategic Leadership* ranked highest overall in contributing to the success of the initial stages in the systems development, and consistently ranked among the top two capacity areas among four of the five institutions.

*Human Resources* and *Financial Management*, respectively, ranked lowest overall, and consistently ranked among the two lowest among all five institutions.

There was considerable variability in the ranked position of the other capacity areas across institutions.

On the basis of these results, more in-depth understanding was warranted in the qualitative component of the research in relation to:

1. the factors that contributed to the relative ranking of the top two and lowest two capacity areas; and
2. which sub-question items associated with each of the eight IOA capacity areas contributed 'most' and 'least' to the success of the systems initiative.

Results from the mixed methods research bring together the findings from the survey research with the recurring themes from the cross-case analysis of interview comments from the two case studies. The defining organizational capacity conditions associated with each of the eight IOA areas are denoted in the summary tables in 'bold' type and reflect the survey sub-question items that were rated by 75% or more of the total survey respondents from across the five institutions as contributing at least somewhat to the success of the systems initiative.

### **Capacity Areas of Most Importance**

#### ***Strategic Leadership***

*Strategic Leadership* ranked highest overall in contributing to the success of the initial stages in the systems development, and consistently ranked among the top two capacity areas among four of the five institutions.

Of the six capacity survey items associated with *Strategic Leadership*, five were rated by 75% or more of the total survey respondents as contributing at least somewhat to

the success of the systems initiative. These survey items included the importance of executive leaders in:

1. 'understanding the relationship between enrollment and resources,'
2. 'demonstrating a commitment to evidenced-based decision-making,'
3. 'making information widely available,'
4. 'transparent decision-making,' and
5. 'articulating the importance of enrollment to the academic wellbeing of the institution in the strategic plan.'

The sixth survey item related to the role of executive leaders in regularly communicating the importance of investing in enrollment performance measurement systems fell slightly below the 75% threshold with a response rating of 74%.

Results from the cross-case study analysis of interview comments indicated that:

1. the factors that contributed most to the high ranking of *Strategic Leadership* related to the importance of enrollment being communicated as a top institutional priority to the institution's vitality, and to the role of executive leaders in demonstrating commitment by a "will to act" in reallocating resources, removing roadblocks, and ensuring transparency in decisions taken; and
2. while strategic leadership was not always provided by those who occupied executive leadership positions (i.e., at the level of the vice-president and higher), a lack of executive leadership was identified as an inhibitor to success.



Substantiating research findings included:

- In the case study contexts, *Strategic Leadership* ranked second in importance to the success of the systems initiative at VU, and ranked fourth in importance at FSC. Therefore, interview participants at both institutions were probed regarding the factors that contributed most to the institution-specific ranked position. As shown by the data *Table 88*, the thematic factors identified as contributing most to the high ranking of *Strategic Leadership* at VU related to the importance of enrollment being communicated as a top institutional priority to the institution's vitality, and of the role of executive leaders in demonstrating commitment by a "will to act" in reallocating resources, removing roadblocks, and ensuring transparency in decisions taken.

Table 88

*Comparative Coding on Importance of Strategic Leadership*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Strategic Leadership	Enrollment communicated as top priority to institutional validity	3	
	Will to act	3	
	Lack of executive leadership inhibited progress		4

At VU, strategic leadership was provided by the president and executive leaders, and reflected what FSC indicated would have been "ideal." In the latter case, a core middle management team assumed the strategic leadership role somewhat by default given a directive by the president of the day but during a period of internal turmoil and

instability in executive leadership. All of the survey respondents from this institution noted that the lack of executive leadership was “not ideal” and was an inhibitor to the success of the initiative.

**Foundational guideline for success.** A summary of the organizational capacity conditions associated with *Strategic Leadership* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 89*.

Table 89

*Defining Capacity Conditions Associated with Strategic Leadership*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Strategic Leadership	
<b>1.1 Our Executive leaders understood the relationship between enrollment and resource management</b>	<p>Factors contributing most to the high importance ranking:</p> <ul style="list-style-type: none"> <li>• “Enrollment communicated as top priority to institutional vitality” (Item 1.5)</li> <li>• “Will to act”</li> </ul> <p>Factors contributing most to the lower importance ranking:</p> <ul style="list-style-type: none"> <li>• “Lack of executive leadership inhibited progress”</li> </ul>
<b>1.2 Our Executive leaders demonstrated commitment to evidence-based decision-making.</b>	
<b>1.3 Our Executive leaders demonstrated commitment to making information widely available.</b>	
<b>1.4 Our Executive leaders demonstrated commitment to transparent decision-making.</b>	
1.5 Our Executive leaders communicated to the campus community on a regular basis the importance of investing in enrollment performance measurement systems.*	
<b>1.6 The importance of enrollment to the academic wellbeing of the institution was clearly articulated in the institution's strategic plans.</b>	

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.

\* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results support the following

**foundational guideline for success:**

*Strategic Leadership*

Executive leaders at the level of the vice-president and higher need to be willing to demonstrate commitment to the systems initiative by:

- communicating the importance of enrollment to the institution's vitality
- fostering an evidence-based approach to decision-making
- making information widely available
- adopting transparency in decision-making
- dedicating resources

***Organizational Structure and Governance***

*Organizational Structure and Governance* ranked second highest overall across the five institutions in contributing to the success of the systems initiative.

Of the ten capacity survey items associated with *Organizational Structure and Governance*, five were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of having:

1. 'a designated enrollment management leader,'
2. 'a designated enrollment analyst,'
3. strong support of institutional 'data owners,'
4. strong support of 'the president,' and
5. strong support of 'academic leaders at the level of the dean and higher.'

Results from the cross-case study analysis of interview comments indicated that the factors that contributed most to the high ranking of *Organizational Structure and Governance* included:

1. there was a designated enrollment management leader at the right level of authority to champion the process, and
2. there was strong support from the Chief Information Officer/CIO.

Substantiating research findings included:

- In the case study contexts, *Organizational Structure and Governance* ranked highest in importance to the success of the systems initiative at VU, and ranked fifth in importance at FSC. Therefore, interview participants at both institutions were probed regarding the factors that contributed most to the institution-specific ranked position. As shown by the data in *Table 90*, the thematic factors identified as contributing most to the high ranking of *Organizational Structure and Governance* at VU included: (a) there was a designated enrollment management leader at the right level of authority to champion the process, and (b) there was strong support from the Chief Information Officer/CIO.

Table 90

*Comparative Coding on Importance of Organizational Structure and Governance*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Organizational Structure and Governance	A designated enrollment management leader	5	
	Strong support from the chief information officer/CIO	3	
	Lack of executive leadership a reality albeit not ideal		4

The lower ranking of this capacity area at FSC was attributed largely to the “less than ideal” situational context where the institution suffered from a lack of consistency in executive leadership. Moreover, the “defacto” enrollment management leader, enrollment analyst, primary data owners, and CIO were all members of the core team who implemented the system and participated in both the survey and interview process. Therefore, the importance of their roles were intrinsic to the success of the systems initiative.

The importance of a designated enrollment management leader and support from the CIO were substantiated by two other survey findings.

- The ‘enrollment management/student affairs leader’ was identified as the **initial champion** of the enrollment performance measurement system initiative by over half of the total survey respondents, representing three of the five participating institutions; and
- ‘One or more departments working in partnership with IT’ was most frequently identified as the **decision-making structure** associated with the initial systems development among four of the five participating institutions.

**Foundational guideline for success.** A summary of the organizational capacity conditions associated with *Organizational Structure and Governance* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 91*.

Table 91

*Defining Capacity Conditions Associated with Organizational Structure and Governance*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Organizational Structure and Governance	
<b>2.1 There was a designated enrollment management leader.</b>	Factors contributing most to the high importance ranking: <ul style="list-style-type: none"> <li>• A designated enrollment management leader (Item 2.1)</li> <li>• Strong support from the Chief Information Officer/CIO (item 2.7)*</li> </ul>
<b>2.2 There was a designated enrollment analyst to conduct enrollment performance analyses</b>	
<b>2.4 The decision to implement the system was strongly supported by academic leaders at the level of the dean and higher.</b>	Factors contributing most to the lower importance ranking: <ul style="list-style-type: none"> <li>• “Lack of executive leadership a reality albeit not ideal”</li> </ul>
<b>2.5 The decision to implement the system was strongly supported by the President.</b>	
2.7 The decision to implement the system was strongly supported by the Chief Information Officer.*	
<b>2.8 The decision to implement the system was strongly supported by the data owners.</b>	

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.

\* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results support the following

foundational guidelines for success:

*Organizational Structure and Governance*

- There needs to be a designated and empowered enrollment leader to champion the systems initiative.
- The Chief Information Officer /CIO needs to strongly support the systems initiative as a strategic partner in the process.
- A designated enrollment analyst needs to be committed to support the systems initiative.
- There needs to be strong support by the data owners.
- There needs to be strong institutional support at the level of the dean and higher.

## Capacity Areas of Some Importance

### *Program Management*

*Program Management* ranked third highest overall across the five institutions in contributing to the success of the systems initiative.

Of the seven capacity survey items associated with *Program Management*, four were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of:

1. support and commitment from enrollment/student services administrators with data management responsibilities (e.g., Registrar, Admissions Director) in
  - (a) using data to ‘improve enrollment performance management’ and
  - (b) expanding ‘access to data for others involved in enrollment decisions’
2. buy-in from institutional decision leaders to: (a) use the data to ‘improve enrollment decisions,’ and (b) to ‘improve collaboration in the decision-making process.’

Results from the cross-case analysis of interview comments indicated that the factors that contributed most to the success of the systems initiative associated with *Program Management* were situational to the institutional context. However, in both institutional contexts, the contributing factors for success related to this capacity area involved influencing people to adopt change. The situational context defined where the energies were needed in this process. Substantiating research findings included:

In the case study contexts, *Program Management* ranked fourth in importance to the success of the systems initiative at VU, and second in importance at FSC. Therefore, interview participants at both institutions were probed regarding the factors that

contributed most to the institution-specific ranked position. As shown by the data in *Table 92*, *Program Management* was of lesser importance to the success of the systems initiative at VU when considered in relation to the human dimensions of change which took priority in their situational context; whereas this capacity area had heightened importance at FSC in enabling a more systems approach to enrollment management through evidenced-based decision-making.

Table 92

*Comparative Coding on Importance Rating of Program Management*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Program Management	Importance of resolving people issues a higher priority	3	
	Fostered a culture of evidence		4

In both cases, the contributing factors for success in relation to program management conditions involved influencing people to adopt change. The situational context defined where the energies were needed in this process.

**Foundational Guideline for Success.** A summary of the organizational capacity conditions associated with *Program Management* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 93*.



Table 93

*Defining Capacity Conditions Associated with Program Management*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Program Management	
<b>6.2 The enrollment/student services administrators with data management responsibilities (e.g., Registrar, Admissions Director) supported making the data widely available to others who needed access to it to make informed enrollment decisions.</b>	Factors contributing most to the high importance ranking: <ul style="list-style-type: none"> <li>• “Fostered a culture of evidence”</li> </ul>
<b>6.3 There was a commitment by managers in enrollment/student services operations to use data to improve enrollment performance management.</b>	Factors contributing most to lower importance ranking: <ul style="list-style-type: none"> <li>• “Importance of resolving people issues a higher priority”</li> </ul>
<b>6.4 Broader access to data was viewed by institutional decision leaders as a means to improve collaboration in decision-making.</b>	
<b>6.7 Broader access to data was viewed by institutional decision leaders as a means to inform better enrollment decisions.</b>	

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.

\* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results support the following

foundational guideline for success:

*Program Management*

- Administrators with data management responsibilities need to be committed to using data to improve collaborative decision-making in enrollment performance management; and to expand access to data for others involved in enrollment decisions.

*Inter-organizational Linkages*

*Inter-organizational Linkages* ranked fourth highest overall across the five institutions in contributing to the success of the systems initiative.

Of the four capacity survey items associated with *Inter-organizational Linkages*, only one was rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. The one capacity item related to the importance of designing the system in consideration of ‘the information needs of accrediting bodies.’

Results from the cross-case analysis of interview comments indicated that the factor that contributed most to the success of the systems initiative associated with *Inter-organizational Linkages* was that, while the needs of external agencies did not drive internal change, they were important considerations. Substantiating research findings included:

- In the case study contexts, *Inter-organizational Linkages* ranked third in importance to the success of the systems initiative at VU, and sixth in importance at FSC. Therefore, interview participants at both institutions were probed regarding the factors that contributed most to the institution-specific ranked position. As shown by the data in *Table 94*, thematic responses from the qualitative interviews at both institutions indicated that while the needs of external agencies were important, these agencies did not drive internal change. this was particularly noteworthy since at one of the two case study institutions, some of the funding to support the systems initiative was based upon an external grant.

Table 94

*Comparative Coding on Importance Rating of Inter- Organizational Linkages*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Inter-Organizational Linkages	“Not drivers of internal change”	3	4

**Foundational Guideline for Success.** A summary of the organizational capacity conditions associated with *Inter-Organizational Linkages* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 95*.

Table 95

*Defining Capacity Conditions Associated with Inter-Organizational Linkages*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Inter-Organizational Linkages	
<b>8.3 The system was designed in consideration of the information needs of accrediting bodies</b>	Factors contributing most to the immediate importance ranking: <ul style="list-style-type: none"> <li>• “Not a driver of internal change”</li> </ul>

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.  
 \* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results support the following foundational guideline for success:

*Inter-organizational Linkages*

- The design of the system needs to consider the information needs of external agencies such as accrediting bodies for purposes of verifying compliance as appropriate.

***Process Management***

This capacity area ranked fifth highest overall across the five institutions in contributing to the success of the systems initiative.

Of the ten capacity survey items associated with *Process Management*, four were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of:

1. data managers (e.g., Registrar, Admissions Director) being ‘willing to accept change in relation to data process management responsibilities;’
2. the ‘active involvement of data managers in defining the functional specifications for the system;’
3. the ‘design of the system being driven by the functionality of the technology;’  
and
4. ‘shared goals for the system development.’

Results from the cross-case analysis of interview comments indicated that the factors that contributed most to the success of the systems initiative associated with *Process Management* related to the important contributions of faculty and staff. Interview participants at both institutions indicated that faculty and staff buy-in through an inclusive planning process should occur at the early stages in the systems development initiative. Substantiating research findings included:

- In the case study contexts, *Process Management* ranked sixth in importance to the systems initiative at VU, and third in importance at FSC. Therefore,

interview participants at both institutions were probed regarding the factors that contributed most to the institution-specific ranked position. As shown by the data in *Table 96*, thematic responses from the interview process at both institutions indicated that the contributions made by faculty and staff were important to the success of the systems initiative. However, the involvement of faculty in defining the system functional requirements was identified as an item of lower importance in the overall survey findings.

Table 96

*Comparative Coding on Importance Rating of Process Management*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Process Management	“Importance of faculty and staff buy-in upfront”	3	4

What was learned from the interviews was that considerable effort went into actively engaging faculty and staff upfront at VU, but this aspect of the process occurred later into the systems initiative than at the planning stages at FSC. There was repeated reference among interview participants, particularly at FSC, regarding the valuable perspectives offered by faculty, who had since shaped subsequent stages in the development of the systems. Interview participants at both institutions indicated that faculty and staff buy-in through an inclusive planning process should occur at the early stages in the systems development initiative.

**Foundational Guideline for Success.** A summary of the organizational capacity conditions associated with *Process Management* that were important contributors to the

success of the initial development of the enrollment performance measurement system is presented in *Table 97*.

Table 97

*Defining Capacity Conditions Associated with Process Management*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Process Management	
<b>7.2 There were shared goals for the system development.</b>	Factors contributing most to the intermediate importance ranking: <ul style="list-style-type: none"> <li>• “Importance of faculty and staff buy-in upfront”*</li> </ul>
<b>7.6 The design of the system was driven by the functionality of the technology.</b>	
<b>7.8 Data managers (e.g., Registrar, Admissions Director) demonstrated a willingness to accept change in relation to data process management responsibilities.</b>	
7.9 Faculty were actively involved in defining the functional specifications for the system.*	
<b>7.10 Data managers (e.g., Registrar, Admissions Director) were actively involved in defining the functional specifications for the system.</b>	

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.

\* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results support the following foundational guideline for success:

*Process Management*

- Planning processes need to exist that foster inclusiveness and engagement of campus constituents in the development of shared goals and functional specifications.

### ***Infrastructure***

*Infrastructure* ranked sixth highest overall across the five institutions in contributing to the success of the systems initiative.

Of the 11 capacity survey items associated with *Infrastructure*, four were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of having:

1. data owners who are committed to ‘data quality,’
2. an adequate ‘existing data and/or technology infrastructure,’
3. recognition of the need for new systems to improve ‘enrollment performance measurement capabilities,’ and
4. the commitment of ‘adequate funding’ to implement the system.

Results from the cross-case analysis of interview comments indicated that the factors that contributed most to the success of the systems initiative associated with *Infrastructure* were institution-specific and involved influencing people to invest in more sophisticated technology-enabled approaches to enrollment management. Substantiating research findings included:

- In the case study contexts, *Infrastructure* ranked fifth in importance to the success of the systems initiative at VU, and highest in importance at FSC. Therefore, interview participants at both institutions were probed regarding the factors that contributed most to the institution-specific ranked position. As shown by the data in *Table 98*, thematic responses were twofold. In the case of VU, a foundational and more sophisticated technology infrastructure pre-existed the systems initiative. Therefore, the energy of the implementers

Table 98

*Comparative Coding on Importance Rating of Infrastructure*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Infrastructure	Importance of resolving people issues a higher priority	3	
	Enabled more strategic approach to enrollment management		4

focused more on gaining campus-wide buy-in and support to expand investments in this area. In the case of FSC, this capacity area had heightened importance as an enabler of more sophisticated approaches to enrollment management at FSC. According to all of the interview participants at this institution, the systems initiative “catapulted” them from a context of lagging sophistication in the use of technology to an advanced state.

In both cases, the contributing factors for success in relation to infrastructural conditions involved influencing people to invest in more sophisticated technology-enabled approaches to enrollment management. However, the situational context defined where the energies were needed in this process.

**Foundational Guideline for Success.** A summary of the organizational capacity conditions associated with *Infrastructure* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 99*.



Table 99

*Defining Capacity Conditions Associated with Infrastructure*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Infrastructure	
<b>5.1 The existing data and/or systems technology infrastructure was adequate to support the development of the enrollment performance measurement system.</b>	Factors contributing most to the high importance ranking: <ul style="list-style-type: none"> <li>• “Enabled a more strategic approach to enrollment management”</li> </ul>
<b>5.3 The introduction of new systems created opportunities for improved enrollment performance measurement capabilities.</b>	
<b>5.8 Data quality was a priority of the data owners.</b>	Factors contributing most to the lower importance ranking: <ul style="list-style-type: none"> <li>• “Importance of resolving people issues a higher priority”</li> </ul>
<b>5.9 Adequate funding was committed to implement the enrollment performance measurement system.</b>	

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.  
 \* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results support the following foundational guideline for success:

*Infrastructure*

- There needs to be willingness among institutional decision leaders to invest resources (people and funding) in data quality management, data/technology infrastructure, and development of more sophisticated enrollment performance measurement capabilities.

**Capacity Areas of Least Importance***Human Resources*

*Human Resources* ranked second lowest overall across the five institutions in contributing to the success of the systems initiative.

Of the eight capacity survey items associated with *Human Resources*, none were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative.

Results from the cross-case analysis of interview comments indicated that the primary factor that contributed to the low ranking of *Human Resources* was that existing staff had the “fundamental skills” and were “willing and able to learn.” Therefore, investments in staff training and hiring to acquire staff skills were not considered critical foundational conditions for success. Rather, training was viewed as a growing issue as the roll-out of the system functionality to institutional constituents expanded.

Substantiating research findings included:

- In the case study contexts, *Human Resources* ranked among the two lowest capacity areas at both VU and FSC. Therefore, interview participants at both institutions were probed regarding the factors that contributed most to the low ranked position. As shown by the data *Table 100*, thematic responses from the qualitative interview process at both institutions indicated that existing staff had the “fundamental skills” and were “willing and able to learn.” At VU, there was instability within the organization (budgetary and leadership) due to structural reorganization. In this context, the timing was not appropriate to invest in staff and/or manager training. At FSC, consultants were used to fill the skill gaps of existing staff.

Table 100

*Comparative Coding on Importance Rating of Human Resources*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Human Resources	Skilled existing staff	9	4
	Use of Consultants		4

Interview participants at both institutions indicated that while training and development of staff and managers were important, these were not critical at the initial stages in the system development. Rather, training was viewed as a growing issue as the roll-out of the system functionality to institutional constituents expanded.

**Foundational Guideline for Success.** A summary of the organizational capacity conditions associated with *Human Resources* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 101*.

Table 101

*Defining Capacity Conditions Associated with Human Resources*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Human Resources	
3.1 Staff had the appropriate skills to support the implementation of advanced enrollment performance measurement systems.*	Factors contributing most to lower importance ranking: <ul style="list-style-type: none"> <li>• “Skilled existing staff”*</li> <li>• “Use of consultants”</li> </ul>

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.

\* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

Analysis of the mixed methods research results suggested that the organizational capacity area associated with *Human Resources* was not a foundational condition for success.

### ***Financial Management***

This capacity area ranked lowest overall across the five institutions in contributing to the success of the systems initiative.

Of the eight capacity survey items associated with *Financial Management*, none were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative.

Results from the cross-case analysis of interview comments indicated that the primary factor that contributed most to the low ranking of *Financial Management* was related to the financial exigencies of the day at each of the two institutions. The focus was on how to effectively implement the system and sustain it within the constraints of existing resources. Substantiating research findings included:

- In the case study contexts, *Financial Management* ranked among the two lowest capacity areas at both VU and FSC. Therefore, interview participants at both institutions were probed regarding the factors that contributed most to the low ranked position. As shown by the data in *Table 102*, results from the qualitative interview process indicated that given the financial exigencies of the day at each of the two institutions, the focus was on how to effectively implement the system and sustain it within the constraints of existing resources.

Table 102

*Comparative Coding on the Importance Rating of Financial Management*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Financial Management	Focus was on empowering people	5	
	Managed within existing resource constraints		4

In both institutions, an initial infusion of financial resources was made to support the implementation and sustainment of the initial stages of the system development. Also noteworthy during the interview process was the passion and commitment of the people to the success of the systems initiative. What was learned was that the systems initiative was considered a condition for “survival.” The interview participants who were in enrollment management positions (and to a lesser degree academic deans) were empowered and held accountable for making decisions impacting enrollment performance, more through a sense of personal commitment than through any defined incentive program.

**Foundational Guideline for Success.** A summary of the organizational capacity conditions associated with *Financial Management* that were important contributors to the success of the initial development of the enrollment performance measurement system is presented in *Table 103*.

Analysis of the mixed methods research results suggested that the organizational capacity area associated with *Financial Management* was not a foundational condition for success.

Table 103

*Defining Capacity Conditions Associated with Financial Management*

Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Financial Management	
4.1 Managers of enrollment/student services were held accountable for achieving enrollment goals.*	Factors contributing most to lower importance ranking: <ul style="list-style-type: none"> <li>• “Focus was on empowering people”*</li> <li>• “Managed within existing resource constraints”</li> </ul>
4.2 Managers of enrollment/student services were empowered to make decisions impacting enrollment performance.*	
4.6 Academic deans/directors were empowered to make decisions impacting enrollment performance*	

Note. Items in **bold** were rated highest in importance by 75% or more of total survey respondents.

\* Items denoted with an asterisk and unbolded were identified in the interview process as among the top contributing conditions for success, but were not rated among the highest in importance by 75% or more of total survey respondents.

*Research Question 3*

What were the **defining features of the advanced enrollment performance measurement system**, using the Katz and Goldstein (2005) terminology and relevant survey questions, and profile of the primary developers?

*Section Three* of the quantitative survey obtained information on the defining features of the advanced enrollment performance measurement system, using the Goldstein and Katz (2005) terminology and relevant survey questions, where relevant. In addition, information was collected about the survey participant in order to contextual the interpretation of the quantitative findings. More specifically, information was collected in relation to the following five topical areas:

1. Alignment of the system objective(s) to the institution’s SEM context
2. Primary objectives, scope, and intended users of the system
3. Champion(s) for initiating and implementing the system development project
4. Role of the survey respondent in the systems development project
5. Willingness of the survey participant to be involved in a follow-up interview process

The quantitative survey findings to select questions were compared to the Goldstein and Katz study on ‘academic analytics’ for two purposes: (a) to validate the ‘leading edge’ nature of the participating institutions in the development of higher order levels of sophisticated reporting capabilities as defined by the system features, and (b) to confirm that the participating institutions met the pre-defined criteria for selecting a potential case study site for the qualitative interview component of the research.

The qualitative research provided more in-depth understanding about the systems reporting capabilities, interview participants, and institutional context. Information was collected in relation to:

1. the greatest risks to the success of the initiative,
2. the impact of the differences in drivers for the system development to the success of the initiative,
3. lessons learned that would be recommended to others before they embark on the development of an advanced performance measurement system,
4. how success was defined for the systems development initiative, and
5. the participant’s contribution to the success of the initiative.

Results from the mixed methods research bring together the findings associated with topics one through four of the quantitative survey research, with the recurring themes from the cross-case analysis of interview comments from the two case studies. A ‘defining feature’ was determined when a survey item received at least 25% of the ‘total’ responses across all institutions, and was consistently reported by two or more survey respondents from at least four of the five institutions. Findings from the mixed methods research have been organized around three topical categories. These include:

- (a) institutional context, (b) reporting capabilities and definition of success, and
- (c) project/risk management.

## **Institutional Context**

Survey questions associated with the institutional context related to: (a) the year in which the systems was initiated, (b) the enrollment context during the prior three-year period, and (c) drivers for the systems development initiative. Qualitative research questions provided more in-depth understanding to the survey findings. Results from the mixed methods research were as follows:

Survey results indicated that there was considerable variability within and across institutions in the institutional context associated with the initiation of the systems initiative. Therefore, none of these factors were determined to be a key defining feature associated with the success of the initial development of the system. Substantiating research findings included:

- Survey results indicated that there were varying perspectives *within* institutions regarding the year in which the systems were initiated. Similarly, survey responses varied within and across institutions on the enrollment context (i.e., healthy, stable, unstable, crisis) during the prior three-year period. Results from the cross-case analysis of interview comments suggested that perceptions varied depending on the role of the individuals, their familiarity with the details pertaining to enrollment data, as well on when they became involved in the systems development process.
- Survey results indicated that two primary drivers for initiating the enrollment performance measurement system were most frequently identified across the five institutions. These included: (a) to improve the institution's ability to proactively support student success, and (b) to improve operational



efficiency/effectiveness. However, there was significant variability in survey responses both within and between institutions.

Results from the cross-case analysis of interview comments indicated that communicating the over-riding goal of the systems initiative in mission-centric terms (i.e., to support student success and improve service to students) was a contributing factor to the success of the systems initiative. This finding confirmed the survey finding associated with the importance of *Strategic Leadership* in communicating the importance of enrollment to institutional vitality. Substantiating research findings included:

Results from the cross-case analysis of interview comments indicated that while the drivers that served as catalysts for the systems initiative varied, the over-riding goal at each institution was to support student success and improve service to students. As shown by the data in *Table 104*, 12 of the 13 interview participants across both institutions commented that quality service to students and a focus on student success was communicated as the purposes of the systems initiative.

Table 104

*Comparative Impact of Different Drivers of the Systems Initiative*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Most Impact	Student focus is mission centric	9	
	Improved service to students		3
Least Impact	Balancing action and buy-in	2	

This finding helped to explain a survey finding associated with the capacity area of ‘Strategic Leadership.’ The importance of executive leaders communicating enrollment as an institutional priority was rated slightly below the 75% threshold for a defining feature (i.e., 74%). However, the qualitative research findings confirmed the importance and focus of communication by executive leaders as a contributing factor to the success of the systems initiative.

### ***Foundational Guideline for Success***

A summary of the defining features associated with *Institutional Context* that contributed to the success of the initial development of the enrollment performance measurement system is presented in *Table 105*.

Table 105

### *Defining Drivers for the Systems Initiative*

Type of Feature	Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Year in which the system development was initiated	<ul style="list-style-type: none"> <li>Inconclusive</li> </ul>	<ul style="list-style-type: none"> <li>Perceptions varied depending on when an individual became engaged in the initiative</li> </ul>
Institutional enrollment context (prior 3 years)	<ul style="list-style-type: none"> <li><b>Stable or Unstable</b></li> </ul>	<ul style="list-style-type: none"> <li>Perceptions varied depending on the role of the individual</li> </ul>
Primary Driver	<ul style="list-style-type: none"> <li>To improve ‘the institution’s ability to proactively support student success,’ or</li> <li>To improve ‘operational efficiency/effectiveness of enrollment/student service operations.’</li> </ul>	Focus of the system drivers: <ul style="list-style-type: none"> <li>“Student focus is mission-centric”</li> <li>“Improved service to students”</li> </ul>

Note: Items in bold reflect attributes reported by two or more survey respondents from at least four of the five institutions.

Analysis of the mixed methods research results support the following foundational guideline for success:

*Institutional Context*

- The purpose of the systems development initiative need to be defined and communicated in relation to the mission-centric benefits in enhancing student success and in improving quality service to students.

### **Reporting Capabilities and Definition of Success**

Survey questions associated with the system reporting features related to:

(a) reporting capabilities, (b) system analytical capabilities, (d) enrollment management functionality of the system, and (d) how success was defined. These questions were intended to validate the ‘leading edge’ nature of the participating institutions in the development of ‘advanced’ enrollment performance measurement systems as defined by Goldstein and Katz (2005), and to identify whether or not the ‘definition of success’ was a contributing factor in the success of the systems initiative. Qualitative research questions provided more in-depth understanding to the survey findings. Results from the mixed methods research were as follows:

1. Survey results indicated that the system reporting features at all five institutions reflected ‘advanced’ levels of enrollment performance measurement systems. The reporting features reflected a higher order (i.e., advanced) suite of analytic reporting applications, involving at least three of the following five types of applications defined by Goldstein and Katz (2005), including: (a) extraction and reporting of transaction data, (b) analysis and monitoring of operational performance, (c) *what-if* decision support (e.g.,

scenario building), (d) predictive modeling and simulation, and (e) automatically triggered business process (e.g., early alert systems).

2. Results from the cross-case analysis of interview comments indicated that success of the systems initiative was defined in both tangible and intangible terms. However, mechanisms to measure success and return on investment were not identified as contributors to the success of the systems initiative.

Substantiating research findings included:

- Results from the cross-case analysis of interview comments indicated that the tangible indicators of success included growth in enrollment of the freshmen class and/or in student retention, improved prospective student market share, faculty use of the system, and feedback from students. The less tangible success indicators related to the value of better data to inform enrollment management strategies and decisions, and the personal satisfaction people gained from contributing to the organization's development. However, the need to track and assess 'return on investment' was not a factor that interview participants from either institution identified as a key contributor to the success of the systems initiative; nor was it highly rated in the survey research as a contributor to the success of the initial stages in the systems initiative. This issue was identified by interview participants as a notable deficit and a 'lesson learned.'

### ***Foundational Guideline for Success***

A summary of the defining features associated with *Reporting Capabilities and Definition of Success* that contributed to the success of the initial development of the enrollment performance measurement system is presented in *Table 106*.

Table 106

#### ***Defining Reporting Features***

Type of Feature	Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
System Reporting Capabilities	<ul style="list-style-type: none"> <li>• <b>On-demand reports</b></li> <li>• <b>Scheduled periodic reports</b></li> <li>• <b>Drill-down reports</b></li> <li>• <b>Data extracts to off-line tools</b></li> <li>• <b>Ad hoc reports</b></li> <li>• <b>User-defined reports</b></li> <li>• <b>Performance management 'dashboard'</b></li> <li>• <b>Executive-style 'balanced scorecard'</b></li> </ul>	<p>Lessons Learned:</p> <ul style="list-style-type: none"> <li>• Key success indicators should be defined upfront to measure and communicate the value-adding impact and efficacy of the systems initiative</li> </ul>
System Analytical Capabilities	<ul style="list-style-type: none"> <li>• <b>Extracting and reporting of transaction-level data</b></li> <li>• <b>Analysis and monitoring of operational performance</b></li> <li>• <b>Predictive modeling and simulations</b></li> <li>• What-if decision support</li> </ul>	
Enrollment Management Functionality	<ul style="list-style-type: none"> <li>• <b>Forecast demand for courses</b></li> <li>• <b>Forecast future enrollment</b></li> <li>• <b>Automatic alert when an enrollment performance metric falls outside of a desired range</b></li> <li>• Tailor recruitment strategy for an individual prospective student</li> <li>• Early identification of students academically at-risk</li> <li>• Identify potential students who are the strongest</li> </ul>	

Analysis of the mixed methods research results suggested that the definition and tracking of the success of the systems initiative were not foundational conditions for success.

### **Project/Risk Management**

Survey questions associated with project/risk management related to: (a) the initial champion for the system, (b) decision-structures, (c) use of committees, and (d) primary users of the systems. Qualitative research questions provided more in-depth understanding to the survey findings in relation to the contributions of the core implementation team, the greatest risks to the success of the systems initiative, strategies to mitigate risks, and lessons learned. Results from the mixed methods research indicated:

1. Survey results indicated that the initial champion for the systems initiative, the decision-making structure, as well as whether or not a committee provided strategic guidance to the system development initiative were situational to the institutional context. However, there was consistency in survey findings related to the ‘intended primary users’ of the system. Six constituent groups were consistently identified across at least four of the five institutions:
  - Enrollment management/student affairs units
  - Institutional research
  - Executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher)
  - Deans and deans’ staff
  - Department chairs and chairs staff
  - Business/finance/administrative staff - central office and/or school-based

Substantiating research findings included:

- Survey results related to the **initial champion** of the enrollment performance measurement system were variable. Overall, survey findings indicated that ‘enrollment management/ student affairs’ was identified by more than fifty percent of the survey respondents. However, this finding represented only three of the five institutions. Responses varied at the other two institutions.
- Survey results indicated that ‘one or more department(s) working in partnership with IT’ was identified more frequently than others as the **decision-making structure** associated with the initial development of the enrollment performance measurement system. This response was consistently reported by two or more respondents from across four of the five institutions. However, there was considerable variability in survey responses both within and across institutions.
- Survey results related to the **primary user groups** were consistently identified by at least four of the five institutions to include six constituent groups, including enrollment management/student affairs units, Institutional research, executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher), deans and deans’ staff, department chairs and chairs staff, business/finance/administrative staff - central office and/or school-based.
- Survey results related to the **use of committees** were considerably variable within and across institutions. Results from the cross-case analysis of interview comments related to the **use of committees** suggested that, on the

basis of lessons learned, decision-making authority should be vested with key individuals who were accountable for implementing change, and that committees should be relatively small in size (12 or less), and serve in an ‘advisory’ capacity only.

2. Results from the cross-case analysis of interview comments indicated the use of good practice principles in project/risk management were contributing factors to the success of the systems initiatives. Factors recurrently identified as important to the success of the systems initiative included:
  - the need for an empowered core implementation team
  - strategic use of committees in an advisory capacity
  - clearly defined and agreed upon goals, strategies to manage risks associated with the allocation of human and financial resources
  - an internal communications strategy
  - strategies for leveraging organizational learning and change management

These findings help to explain the low importance ratings of the two capacity areas of *Human Resources* and *Financial Management*. Staff training and development, and accountability systems with incentives were not as important at the initial stage in the system development as the effective management of existing resource capacity to mitigate risk while focusing on the human dimensions of change. The investment in learning and accountability systems were identified to be factors of heightened importance to the subsequent stages in the systems development.

Substantiating research findings included:



- Results from the cross-case analysis of interview comments related to the **contributions of the core implementation team** consistently identified the importance of a team who brought complementary skills, knowledge and abilities to the implementation of the systems initiative. The types of skills/knowledge areas cited by the interview participants included technical expertise, strategic leadership, innovative thinking, knowledge of the institution and its culture, process management skills, as well as a sense of ‘fun’ to the initiative.
- Results from the cross-case analysis of interview comments associated with the **greatest risks** to the success of the systems initiative indicated that while human resources and financial management ranked lowest overall across the five institutions in contributing to the success of the systems initiative, both of these capacity areas were also associated with the areas of greatest risk. As shown by the data in *Table 107*, there was considerable consistency in the risk areas identified by interview participants at both case study institutions.

Table 107

*Comparative Coding on Areas of Greatest Risks*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Risks	Lack of clarity in functional requirements	3	2
	Management of staff and financial resources	4	2
	Managing human dynamics of change	7	2

The risk areas included: (a) lack of clarity in the functional requirements to guide optimal use of resources, (b) fluctuations in the availability of human and financial resources as a result of staff loss and/or budgetary cutbacks, and (c) time intensive processes associated with managing the human dimensions of change. Interview participants cited examples of protracted decision-making processes, lost opportunities in decisions made due to lack of consensus, unclear priorities and expectations to inform the optimal deployment of resources, and vulnerability due to loss of staff and budgetary resources.

Results from the cross-case analysis of interview comments associated with the **strategies to mitigate identified risks** indicated numerous strategies that were logically associated with the use of good practices principles in project/risk management. The types of strategies recommended included: cross-training of staff, potential use of external consultants to supplement staff skills and infuse best practice concepts, creation of budgetary reserve funds, project management timelines that are adhered to in maintaining momentum on the project, a change management strategy to support effective management of the human dynamics associated with change, and an internal communications plan.

Results from the cross-case analysis of interview comments associated with **lessons learned** indicated the importance of managing the human dimensions of change. As shown by the data in *Table 108*, there was considerable consistency in the survey responses across both case study institutions

Table 108

*Comparative Coding of Lessons Learned*

Sub-Question Category	Key Interview Themes	VU (N = 9)	FSC (N = 4)
Lessons Learned	<b>Human dimensions of change</b>	<b>7</b>	<b>3</b>
	Project management		4
	Project planning		2

Specific examples cited in the interview process related to the importance of gaining support of executive leaders, embarking on change within a context where there was stability in leadership, engaging faculty upfront in the process, understanding the profile and needs of students, and being skillful in effectively managing culture change. While the criticality of managing the human dimensions of change was identified by interview participants from both institutions, when queried about the strategies used, neither institution proactively focused on building leadership capacity to effectively manage the change process. Similarly, the need for cross-training of staff and the use of external consultants were identified as strategies to mitigate risk, yet there was no proactive attention given to incorporating ‘organizational learning’ into the project plan at either institution. These were notable observed deficits that were based on discussions with several interview participants at both institutions.

***Foundational Guideline for Success***

A summary of the defining features associated with *Project/Risk Management* that contributed to the success of the initial development of the enrollment performance measurement system is presented in *Table 109*.

Table 109

*Defining Capacity Conditions Associated with Project/Risk Management*

Type of Feature	Key Defining Capacity Conditions (Quantitative Survey)	Interview Themes
Initial Champion	<ul style="list-style-type: none"> <li>Enrollment management/student affairs</li> </ul>	<p>Identified Risks</p> <ul style="list-style-type: none"> <li>“Lack of clarity in functional requirements”</li> <li>“Management of staff and financial resources”</li> <li>“Managing human dynamics of change”</li> </ul>
Decision-making Structures	<ul style="list-style-type: none"> <li><b>One or more department(s) working in partnership with IT</b></li> </ul>	<p>Synthesis of Lessons Learned:</p> <ul style="list-style-type: none"> <li>Vest decision-authority with those empowered to champion the initiative</li> <li>Assemble small core team to lead the system implementation</li> <li>Establish functional requirements upfront and seek endorsement by executive leaders</li> <li>Adopt best practices in project management, including a risk management plan</li> </ul>
SEM Committee to Guide the System Development	<ul style="list-style-type: none"> <li>Inconclusive</li> </ul>	<p>Synthesis if Lessons Learned:</p> <ul style="list-style-type: none"> <li>Strategically use committees with broad representation (less than 12 individuals) in an advisory capacity</li> </ul>
Intended Primary Users of the System	<ul style="list-style-type: none"> <li><b>Enrollment management/student affairs units</b></li> <li><b>Institutional research</b></li> <li><b>Executive leaders (e.g., associate vice-chancellor/vice-president or higher)</b></li> <li><b>Deans and deans’ staff</b></li> <li><b>Department chairs and chairs staff</b></li> <li><b>Business/finance/administrative staff - central office and/or school-based</b></li> </ul>	<p>Synthesis if Lessons Learned:</p> <ul style="list-style-type: none"> <li>Actively engage key user groups in an ‘advisory’ capacity in defining the desired functionality of the system</li> </ul>

Note: Items in bold reflect attributes reported by two or more survey respondents from at least four of the five institutions

Analysis of the mixed methods research results support the following foundational guideline for success:

*Project/Risk Management*

- Good practice principles in project/risk management need to be adopted that foster inclusiveness in the systems development initiative.

**Summary**

In this chapter, results from the quantitative and qualitative phases of the two-phase mixed methods study were presented. Patterns of study participant understandings and behaviors that contributed to and impeded valid and reliable findings were presented. Based on this data, the defining features associated with the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the systems development were determined in answer to the central research question guiding this study. The chapter concluded with a summary of the ‘mixed methods’ findings from which thirteen foundational guidelines for success were developed to address the second purpose of this study, which was to establish a set of guidelines for conducting a self-assessment of an organization’s capacity for developing an advanced enrollment performance measurement system to support effective SEM planning. In the final chapter, *Chapter Five*, the research results are discussed in relation to the theories and models framing this study, including interpretations and related conclusions and recommendations for further research.

## CHAPTER V

### DISCUSSION AND CONCLUSIONS

#### Introduction

Many experts in the field of Strategic Enrollment Management (SEM) maintained that as an inherently goal-oriented process, effective SEM practice must be tied to accountability and the availability of performance measurement systems (Black, 2008a; Brown, 2008; Campbell & Oblinger, 2007; Campbell et al., 2007; Dolence, 1997; Kalsbeek, 2006). A review of the literature suggested that although most institutions were awash with data, few had developed the necessary measurement systems to inform these processes (Black, 2008a; Norris, 2008; Norris & Leonard, 2008). In addition, no published models or guidelines were found that identified the organizational conditions needed to build the capacity for more advanced enrollment performance measurement systems.

Two purposes guided this mixed methods study. The first purpose was to identify the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the development of advanced enrollment performance measurement systems at a purposeful sample of leading-edge public North American colleges. The study was designed to obtain the perspectives of the primary individuals who were involved in the development of the systems, including the systems developers, enrollment managers, and institutional users. By examining the degree to which various organizational factors contributed to and impeded the initial development stages of the system, the organizational factors that were required for success were identified. Therefore, following from the first purpose, a second purpose of the study was to develop

a set of guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system to support effective strategic enrollment management (SEM). The central research question guiding this mixed methods study was:

How did the primary developers of 'advanced' enrollment performance measurement systems at a purposeful sample of 'leading-edge' public North American colleges describe the culture value orientations and organizational capacity conditions that existed at the time of the initial stages in the system development?

The secondary research questions that guided the quantitative and qualitative research phases respectively, included:

### *I. Quantitative Phase (Survey Research)*

1. What **culture value orientations** using the OCAI instrument best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system?
2. What level of importance was each of the following **eight areas of organizational capacity** associated with the IOA model to the success of the initial development of the enrollment performance measurement system:
  - a. Strategic leadership?
  - b. Organizational structure?
  - c. Human resources?
  - d. Financial Management?
  - e. Infrastructure?
  - f. Program management?
  - g. Process management?
  - h. Inter-organizational linkages?
3. What were the **defining features of the advanced enrollment performance measurement system**, using the Goldstein and Katz (2005) terminology and relevant survey questions, and profile of the primary developers in relation to:
  - a. The alignment of the system objective(s) to the institution's SEM context?
  - b. The primary objectives, scope, and intended users of the system?
  - c. The champion(s) for initiating and implementing the system development project?

- d. The role of the survey respondent in the systems development project?
- e. Willingness of the survey respondents in participating in the follow-up interview process?

## ***II. Qualitative Phase (Semi-Structured Interviews)***

1. What factors contributed to the "very unbalanced" 'real' culture at each of the two case study institutions at the time of the initial systems development?
2. What strategies needed to be employed in order to address the gap between the *real* and *ideal* culture profiles?
3. What factors contributed to the differences in capacity conditions that were rated as the two *most* important to the success of the initiative at each of the two case study institutions?
4. What factors contributed to the differences in capacity conditions that were rated as the two *least* important to the success of the initiative at each of the two case study institutions?
5. What were the greatest risks to the success of the initiative?
6. In what ways did the differences in drivers for the system development impact the success of the initiative?
7. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?
8. How was success defined for the systems development initiative?
9. What was the participant's contribution to the success of the initiative?

A two-phase, explanatory sequential mixed methods study design was used, and involved collecting quantitative data followed by the collection of qualitative data to explain the quantitative data in more depth. Quantitative and qualitative methods of data collection included a structured multi-part survey and explanatory case studies at two institutions which were combined to better understand a complex issue of culture value orientations and organizational capacity conditions associated with a change initiative from the multiple perspectives of three constituent groups (i.e., system developers, enrollment managers, institutional users). This triangulation of data and methodology used qualitative data as a secondary source to expand on the results of a quantitative study, thereby adding methodological rigor to the research (Creswell & Plano, 2007; Tashakkori & Teddlie, 1998).



In order for the study to serve the purposes stated above, the research design was grounded in empirically tested theoretical constructs, and was applied using valid and reliable research methods which could be replicated within other institutional settings and refined over time. The two theoretical constructs used included: the *Organizational Cultural Assessment Instrument* (OCAI) developed by Cameron and Quinn (2006) and the *Institutional and Organizational Assessment Model* (IOA) developed by Lusthaus et al. (1999).

In the first phase of the study a multi-part quantitative survey was constructed and administered at five small-to-medium size public North American colleges and universities with undergraduate headcount enrollment between 2,000 and 30,000. The five institutions represented 27.8% of the 18 institutions that constituted the purposeful sample from which presidential consent to participate in the study was invited. A total of 53 individuals were identified through communication with the presidents of the 5 institutions as potential study participants, and were and invited for voluntary participation in the survey. Of these, 45 individuals (85%) participated in the culture survey, and 43 individuals (81%) participated in the capacity survey. Data analyses involved statistical interpretation of survey results primarily based on descriptive statistics.

In the second phase of the study, an instrumental case study was conducted at each of two institutions purposefully selected based on the results from the quantitative survey. Fictitious names were assigned to the institutions to protect the anonymity of the institutions and participants. Case studies were conducted at a four-year university (Visionary University) and a two-year college (Fabulous Small College). These two

institutions were selected because they presented distinctively different culture and capacity profiles based on the survey results. A total of 13 individuals were invited and all agreed to be included in the 90-minute telephone-based interview process, including 9 of the 12 survey participants from Visionary University (VU), and 4 of the 7 survey participants from Fabulous Small College (FSC). At least one of the 3 constituent groups included in the research was represented at each institution. Data analysis involved open coding of individual responses followed by categorical aggregation of codes to identify themes first within and then between the two institutions.

The mixed methods approach to the study was grounded in the potential to draw generalizations from the combined results within the parameters of the scope and study design. Results from this two-phase research process were sufficiently generalizable to provide insights into the foundational organizational culture value orientations and capacity conditions for success in the development of advanced enrollment performance measurement systems. From these results, foundational guidelines for success were developed for conducting a self-assessment of an organization's capacity in developing an advanced enrollment performance measurement system to support effective strategic enrollment management.

In this chapter, a summary of the mixed methods research findings are presented, along with the foundational guidelines for success that were derived from the research findings. Results from this study are then discussed in relation to the theories and models that were examined in the review of the literature that informed the design of this study. Implications for the use of the foundational guidelines in practice by other institutions are

also discussed within the limitations of the scope and design of the study. The chapter concludes with recommendations for further research.

### Summary of Mixed Methods Research Findings

#### *Research Question 1*

What **culture value orientations** using the OCAI instrument best characterized the ‘real’ versus ‘ideal’ conditions at the time of the initial development of the enrollment performance measurement system?

The OCAI culture survey was used to determine the culture value orientations that best characterized the ‘real’ versus ‘ideal’ conditions at the time of the initial development of the enrollment performance measurement system at participating institutions as defined by:

- whether or not there was consistency in a **predominant** ‘real’ culture type,
- the degree of **balance** in the ‘real’ culture among the four culture value types, and
- **discrepancies** between the ‘real’ and ‘ideal’ culture profiles.

Computed ‘culture type’ mean scores and standard deviations across institutions were used as the basis for interpreting the ‘real’ and ‘ideal’ culture profiles using established statistical criteria in combination with the graphical representation of the mean scores on the CVF model visual map. A defining characteristic associated with culture value orientation was determined on the basis of consistent survey findings across at least four of the five institutions. The qualitative research provided more in-depth understanding of the OCAI survey results in relation to: (a) the factors that contributed to the ‘real’ culture and (b) strategies needed to address the gap between the ‘real’ and ‘ideal’ cultures.

Consistency in the interview findings between the two institutions was determined when

recurring thematic comments were identified from two or more interview participants at each institution.

The results from the mixed methods research indicated the following:

1. Survey results indicated that there was no consistent 'predominant' 'real' culture type across institutions during the initial stages in the systems development initiative. Similarly, there was no consistency in the 'degree of balance' among the four culture types (i.e., Create, Compete, Control, and Collaborate) across institutions. Therefore, there was no culture value orientation that best characterized the 'real' culture at the time of the initial development of the enrollment performance measurement system.
2. Results from the cross-case analysis of interview comments indicated that the factors contributing most and least to the 'real' culture were situational to the institutional context, and included historical roots, sense of urgency, and the top-down style of the vice-presidents and president.
3. Survey results indicated that there was more consistency in the culture value orientation that best characterized the 'ideal' culture. There was a preference for an 'unbalanced' culture, where one or more culture value types predominated, and an 'ideal' culture type that had a 'leaning' toward 'Collaborate.' A 'collaborative' culture type was consistently scored higher than any of the other culture types among all five institutions, and within a relatively low range of standard deviation.
4. Survey results indicated that the 'ideal' culture was substantively at variance with the 'real' culture. The 'real' versus 'ideal' culture value type survey

scores and standard deviations were markedly at variance across four of the five institutions.

5. Results from the cross-case analysis of interview comments indicated that there were both positive and negative impacts of culture value differences on the success of the systems initiative. Culture value differences had a positive influence on culture change when effectively managed. However, left unmanaged, the consequences were identified as being counter-productive, if not detrimental, to progress. The critical role of executive leaders in managing the culture value differences was identified as a contributing factor to the success of the systems initiatives

In combination, these findings suggested that an understanding of organizational culture values and the management of organizational culture change that fostered collaboration in the process were important conditions associated with the success of the systems initiative. Analysis of the mixed methods research findings support the following foundational guidelines for success:

*Organizational Culture*

- Executive leaders need to be committed to fostering a culture of collaboration and to effectively managing organizational culture change.

***Research Question 2***

What level of importance was each of the **eight areas of organizational capacity** associated with the IOA model to the success of the initial development of the enrollment performance measurement system?

Original survey questions were developed based on the IOA organizational assessment framework and used to assess what level of importance were each of the eight areas of organizational capacity in contributing to the success of the initial development of the enrollment performance measurement system. The eight capacity areas included: (a) strategic leadership, (b) organizational structure, (c) human resources, (d) financial management, (e) infrastructure, (f) program management, (g) process management, and (h) inter-organizational linkages. In order to determine what level of importance were each of the eight IOA areas of organizational capacity to the success of the initial development of the enrollment performance measurement system, a composite 'percentage' score was calculated by compiling the response ratings across question items within each grouping associated with the highest ratings of a '3' and '4' on the four-point scale. These scores were then used as the basis for ranking the organizational capacity areas to determine the relative importance of each. Results from the analysis of the survey results indicated the following:

- The resultant ranked list of organizational capacity areas in order of most to least importance based on the overall responses from all five institutions was as follows:
  1. Strategic leadership
  2. Organizational structure and governance
  3. Program management
  4. Inter-organizational linkages
  5. Process management
  6. Infrastructure

7. Human resources
  8. Financial management
- *Strategic Leadership* ranked highest overall in contributing to the success of the initial stages in the systems development, and consistently ranked among the top two capacity areas among four of the five institutions.
  - *Human Resources* and *Financial Management*, respectively, ranked lowest overall, and consistently ranked among the two lowest among all five institutions.
  - There was considerable variability in the ranked position of the other capacity areas across institutions.

The qualitative research provided more in-depth understanding in relation to: (a) the factors that contributed to the relative ranking of the top two and lowest two capacity areas; and (b) which survey sub-question items associated with each of the eight IOA capacity areas contributed ‘most’ and ‘least’ to the success of the systems initiative.

A defining ‘organizational capacity condition’ was determined on the basis of survey sub-question items that were rated by 75% or more of the total survey respondents from across the five institutions as contributing at least somewhat to the success of the systems initiative.

Of the 64 survey sub-question items, 23 (or 36%) were rated as at least somewhat important by 75% or more of the total survey respondents. All 23 items were associated with the top six ranked IOA capacity areas, including: strategic leadership, organizational structure and governance, program management, inter-organizational linkages, process management, and infrastructure. Based upon a cross-case analysis of recurring themes

from two or more interview participants at each institution, an additional 7 survey sub-question items from the list of 64 (or 11%) were identified as important contributors to the success of the systems initiative, but were not among the highest rated items in the survey. Four of the seven items were associated with the two lowest rated capacity areas of ‘human resources’ and ‘financial management.’

A summary of the mixed methods research findings relative to each of the eight IOA organizational capacity areas is presented below. From these research findings, an understanding was developed of what were the defining organizational capacity conditions associated with the success of the initial stages in the systems development. Based upon the supporting evidence, foundational guidelines for success were developed. These results are presented in the order of the overall ranked priority of each IOA capacity area presented above, and grouped according to: (a) the two capacity areas that ranked highest in importance, (b) the five capacity areas that ranked as somewhat in importance, and (c) the two capacity areas that ranked as lowest in importance to the success of the systems initiative.

### **Capacity Areas of Most Importance**

#### ***Strategic Leadership***

*Strategic Leadership* ranked highest overall in contributing to the success of the initial stages in the systems development, and consistently ranked among the top two capacity areas among four of the five institutions.

Of the six capacity survey items associated with *Strategic Leadership*, five were rated by 75% or more of the total survey respondents as contributing at least somewhat to



the success of the systems initiative. These survey items included the importance of executive leaders in:

1. ‘understanding the relationship between enrollment and resources,’
2. ‘demonstrating a commitment to evidenced-based decision-making,’
3. ‘making information widely available’,
4. ‘transparent decision-making,’ and
5. ‘articulating the importance of enrollment to the academic wellbeing of the institution in the strategic plan.’

The sixth survey item related to the role of executive leaders in regularly communicating the importance of investing in enrollment performance measurement systems fell slightly below the 75% threshold with a response rating of 74%.

Results from the cross-case study analysis of interview comments indicated that:

1. the factors that contributed most to the high ranking of *Strategic Leadership* related to the importance of enrollment being communicated as a top institutional priority to the institution’s vitality, and to the role of executive leaders in demonstrating commitment by a “will to act” in reallocating resources, removing roadblocks, and ensuring transparency in decisions taken; and
2. while strategic leadership was not always provided by those who occupied executive leadership positions (i.e., at the level of the vice-president and higher), a lack of executive leadership was identified as an inhibitor to success.

The combined results from the mixed methods research support the following

**foundational guideline for success:**

*Strategic Leadership*

Executive leaders at the level of the vice-president and higher need to be willing to demonstrate commitment to the systems initiative by:

- communicating the importance of enrollment to the institution's vitality
- fostering an evidence-based approach to decision-making
- making information widely available
- adopting transparency in decision-making
- dedicating resources

***Organizational Structure and Governance***

*Organizational Structure and Governance* ranked second highest overall across the five institutions in contributing to the success of the systems initiative.

Of the ten capacity survey items associated with *Organizational Structure and Governance*, five were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of having:

1. 'a designated enrollment management leader,'
2. 'a designated enrollment analyst,'
3. strong support of institutional 'data owners,'
4. strong support of 'the president,' and
5. strong support of 'academic leaders at the level of the dean and higher.'

Results from the cross-case study analysis of interview comments indicated that the factors that contributed most to the high ranking of *Organizational Structure and Governance* included:

1. there was a designated enrollment management leader at the right level of authority to champion the process, and
2. there was strong support from the Chief Information Officer/CIO.

The importance of a designated enrollment management leader and support from the CIO were substantiated by two other survey findings.

1. The ‘enrollment management/student affairs leader’ was identified as the initial champion of the enrollment performance measurement system initiative by over half of the total survey respondents, representing three of the five participating institutions; and
2. ‘One or more departments working in partnership with IT’ was most frequently identified as the decision-making structure associated with the initial systems development among four of the five participating institutions.

The combined results from the mixed methods research support the following foundational guideline for success:

*Organizational Structure and Governance*

- There needs to be a designated and empowered enrollment leader to champion the systems initiative.
- The Chief Information Officer /CIO needs to strongly support the systems initiative as a strategic partner in the process.
- A designated enrollment analyst needs to be committed to support the systems initiative.
- There needs to be strong support by the data owners.
- There needs to be strong institutional support at the level of the dean and higher.

## Capacity Areas of Some Importance

### *Program Management*

*Program Management* ranked third highest overall across the five institutions in contributing to the success of the systems initiative.

Of the seven capacity survey items associated with *Program Management*, four were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of:

1. support and commitment from enrollment/student services administrators with data management responsibilities (e.g., Registrar, Admissions Director) in  
(a) using data to ‘improve enrollment performance management’ and  
(b) expanding ‘access to data for others involved in enrollment decisions,’ and
2. buy-in from institutional decision leaders to: (a) use the data to ‘improve enrollment decisions,’ and (b) to ‘improve collaboration in the decision-making process.’

Results from the cross-case analysis of interview comments indicated that the factors that contributed most to the success of the systems initiative associated with *Program Management* were situational to the institutional context. However, in both institutional contexts, the contributing factors for success related to this capacity area involved influencing people to adopt change. The situational context defined where the energies were needed in this process. Substantiating research findings included:

- The combined results from the mixed methods research support the following foundational guideline for success:

*Program Management*

- Administrators with data management responsibilities need to be committed to using data to improve collaborative decision-making in enrollment performance management; and to expand access to data for others involved in enrollment decisions.

***Inter-organizational Linkages***

*Inter-organizational Linkages* ranked fourth highest overall across the five institutions in contributing to the success of the systems initiative.

Of the four capacity survey items associated with *Inter-organizational Linkages*, only one was rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. The one capacity item related to the importance of designing the system in consideration of ‘the information needs of accrediting bodies.’

Results from the cross-case analysis of interview comments indicated that the factor that contributed most to the success of the systems initiative associated with *Inter-organizational Linkages* was that, while the needs of external agencies did not drive internal change, they were important considerations.

The combined results from the mixed methods research support the following foundational guideline for success:

*Inter-organizational Linkages*

- The design of the system needs to consider the information needs of external agencies such as accrediting bodies for purposes of verifying compliance as appropriate.

***Process Management***

This capacity area ranked fifth highest overall across the five institutions in contributing to the success of the systems initiative.

Of the ten capacity survey items associated with *Process Management*, four were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of:

1. data managers (e.g., Registrar, Admissions Director) being ‘willing to accept change in relation to data process management responsibilities,’
2. the ‘active involvement of data managers in defining the functional specifications for the system,’
3. the ‘design of the system being driven by the functionality of the technology,’ and
4. ‘shared goals for the system development.’

Results from the cross-case analysis of interview comments indicated that the factors that contributed most to the success of the systems initiative associated with *Process Management* related to the important contributions of faculty and staff. Interview participants at both institutions indicated that faculty and staff buy-in through an inclusive planning process should occur at the early stages in the systems development initiative.

The combined results from the mixed methods research support the following foundational guideline for success:

*Process Management*

- Planning processes need to exist that foster inclusiveness and engagement of campus constituents in the development of shared goals and functional specifications.

### *Infrastructure*

*Infrastructure* ranked sixth highest overall across the five institutions in contributing to the success of the systems initiative.

Of the 11 capacity survey items associated with *Infrastructure*, 4 were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative. These included the importance of having:

1. data owners who are committed to ‘data quality,’
2. an adequate ‘existing data and/or technology infrastructure,’
3. recognition of the need for new systems to improve ‘enrollment performance measurement capabilities,’ and
4. the commitment of ‘adequate funding’ to implement the system.

Results from the cross-case analysis of interview comments indicated that the factors that contributed most to the success of the systems initiative associated with *Infrastructure* were institution-specific and involved influencing people to invest in more sophisticated technology-enabled approaches to enrollment management.

The combined results from the mixed methods research support the following foundational guideline for success:

#### *Infrastructure*

- There needs to be willingness among institutional decision leaders to invest resources (people and funding) in data quality management, data/technology infrastructure, and development of more sophisticated enrollment performance measurement capabilities.

## **Capacity Areas of Least Importance**

### ***Human Resources***

*Human Resources* ranked second lowest overall across the five institutions in contributing to the success of the systems initiative.

Of the eight capacity survey items associated with *Human Resources*, none were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative.

Results from the cross-case analysis of interview comments indicated that the primary factor that contributed to the low ranking of *Human Resources* was that existing staff had the “fundamental skills” and were “willing and able to learn.” Therefore, investments in staff training and hiring to acquire staff skills were not considered critical foundational conditions for success. Rather, training was viewed as a growing issue as the roll-out of the system functionality to institutional constituents expanded.

The combined results from the mixed methods research suggested that the organizational capacity area of *Human Resources* was not a foundational condition for success.

### ***Financial Management***

This capacity area ranked lowest overall across the five institutions in contributing to the success of the systems initiative.

Of the eight capacity survey items associated with *Financial Management*, none were rated by 75% or more of the total survey respondents as contributing at least somewhat to the success of the systems initiative.



Results from the cross-case analysis of interview comments indicated that the primary factor that contributed most to the low ranking of *Financial Management* was related to the financial exigencies of the day at each of the two institutions. The focus was on how to effectively implement the system and sustain it within the constraints of existing resources.

The combined results from the mixed methods research suggested that the organizational capacity area of *Financial Management* was not a foundational condition for success.

### *Research Question 3*

What were the **defining features of the advanced enrollment performance measurement system**, using the Katz and Goldstein (2005) terminology and relevant survey questions, and profile of the primary developers?

*Section Three* of the quantitative survey obtained information on the defining features of the advanced enrollment performance measurement system, using the Goldstein and Katz (2005) terminology and relevant survey questions, where relevant. In addition, information was collected about the survey participant in order to contextual the interpretation of the quantitative findings. More specifically, information was collected in relation to the following five topical areas:

1. Alignment of the system objective(s) to the institution's SEM context
2. Primary objectives, scope, and intended users of the system
3. Champion(s) for initiating and implementing the system development project
4. Role of the survey respondent in the systems development project
5. Willingness of the survey participant to be involved in a follow-up interview process

The quantitative survey findings to select questions were compared to the Goldstein and Katz (2005) study on ‘academic analytics’ for two purposes: (a) to validate the ‘leading edge’ nature of the participating institutions in the development of higher order levels of sophisticated reporting capabilities as defined by the system features, and (b) to confirm that the participating institutions met the pre-defined criteria for selecting a potential case study site for the qualitative interview component of the research.

The qualitative research provided more in-depth understanding about the systems reporting capabilities, interview participants, and institutional context. Information was collected in relation to:

1. the greatest risks to the success of the initiative,
2. the impact of the differences in drivers for the system development to the success of the initiative,
3. lessons learned that would be recommended to others before they embark on the development of an advanced performance measurement system,
4. how success was defined for the systems development initiative, and
5. the participant’s contribution to the success of the initiative.

Results from the mixed methods research bring together the findings associated with topics one through four of the quantitative survey research, with the recurring themes from the cross-case analysis of interview comments from the two case studies. A ‘defining feature’ was determined when a survey item received at least 25% of the ‘total’ responses across all institutions, and was consistently reported by two or more survey respondents from at least four of the five institutions. Findings from the mixed methods research have been organized around three topical categories. These include:

- (a) institutional context, (b) reporting capabilities and definition of success, and  
(c) project/risk management.

### **Institutional Context**

Survey questions associated with the institutional context related to: (a) the year in which the systems was initiated, (b) the enrollment context during the prior three-year period, and (c) drivers for the systems development initiative. Qualitative research questions provided more in-depth understanding to the survey findings. Results from the mixed methods research were as follows:

1. Survey results indicated that there was considerable variability within and across institutions in the ‘institutional context’ associated with the initiation of the systems initiative. Therefore, none of these factors were determined to be a key defining feature associated with the success of the initial development of the system.
2. Results from the cross-case analysis of interview comments indicated that communicating the over-riding goal of the systems initiative in mission-centric terms (i.e., to support student success and improve service to students) was a contributing factor to the success of the systems initiative. This finding confirmed the survey finding associated with the importance of *Strategic Leadership* in communicating the importance of enrollment to institutional vitality.

The combined results from the mixed methods research support the following foundational guideline for success:

*Institutional Context*

- The purpose of the systems development initiative needs to be defined and communicated in relation to the mission-centric benefits in enhancing student success and in improving quality service to students.

**Reporting Capabilities and Definition of Success**

Survey questions associated with the system reporting features related to:

(a) reporting capabilities, (b) system analytical capabilities, (d) enrollment management functionality of the system, and (d) how success was defined. These questions were intended to validate the ‘leading edge’ nature of the participating institutions in the development of ‘advanced’ enrollment performance measurement systems as defined by Goldstein and Katz (2005), and to identify whether or not the ‘definition of success’ was a contributing factor in the success of the systems initiative. Qualitative research questions provided more in-depth understanding to the survey findings. Results from the mixed methods research were as follows:

1. Survey results indicated that the system reporting features at all five institutions reflected ‘advanced’ levels of enrollment performance measurement systems. The reporting features reflected a higher order (i.e., advanced) suite of analytic reporting applications, involving at least three of the following five types of applications defined by Goldstein and Katz (2005), including: (a) extraction and reporting of transaction data, (b) analysis and monitoring of operational performance, (c) *what-if* decision support (e.g., scenario building), (d) predictive modeling and simulation, and (e) automatically triggered business process (e.g., early alert systems).

2. Results from the cross-case analysis of interview comments indicated that success of the systems initiative was defined in both tangible and intangible terms. However, mechanisms to measure success and return on investment were not identified as contributors to the success of the systems initiative.

The combined results from the mixed methods research suggested that the definition and tracking of the success of the systems initiative were not foundational conditions for success.

### **Project/Risk Management**

Survey results indicated that the initial champion for the systems initiative, the decision-making structure, as well as whether or not a committee provided strategic guidance to the system development initiative were situational to the institutional context. However, there was consistency in survey findings related to the ‘intended primary users’ of the system. Six constituent groups were consistently identified across at least four of the five institutions:

- Enrollment management/student affairs units
- Institutional research
- Executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher)
- Deans and deans’ staff
- Department chairs and chairs staff
- Business/finance/administrative staff - central office and/or school-based

Results from the cross-case analysis of interview comments indicated the use of good practice principles in project/risk management were contributing factors to the

success of the systems initiatives. Factors recurrently identified as important to the success of the systems initiative included:

- the need for an empowered core implementation team
- strategic use of committees in an advisory capacity
- clearly defined and agreed upon goals
- strategies to manage risks associated with the allocation of human and financial resources
- an internal communications strategy
- strategies for leveraging organizational learning and change management

These findings help to explain the low importance ratings of the two capacity areas of *Human Resources* and *Financial Management*. Staff training and development, and accountability systems with incentives were not as important at the initial stage in the system development as the effective management of existing resource capacity to mitigate risk while focusing on the human dimensions of change. The investment in learning and accountability systems were identified to be factors of heightened importance to the subsequent stages in the systems development.

The combined results from the mixed methods research support the following foundational guideline for success:

*Project/Risk Management*

- Good practice principles in project/risk management need to be adopted that foster inclusiveness in the systems development initiative.

## **Discussion of Research Findings**

### ***Organizational Culture***

For purposes of this study, an organization's culture value orientation was defined as the values, beliefs, understandings and ways of thinking that were shared by members of an organization and contributed to or impeded change and improved organizational performance (adapted from Lusthaus et al., 2002). Based on the IOA assessment model developed by Lusthaus et al. (2002) which served as a foundational construct for this study, organizational culture was determined to be a critical element in understanding the motivational forces associated with what drives an organization to perform in contributing to and impeding change and improved performance (pp. 11, 87). The IOA model included four primary concepts associated with organizational motivation of which culture was a significant element. These included: history, mission, culture, and incentives (p. 85). In application to the disciplinary field of SEM and the development of SEM-related 'intelligence' systems, many experts have noted that while the technical capacity for institutions to develop and use these tools is within reach, the primary constraints were in the cultures of institutions, the behaviors and predispositions of institutional leaders (Goldstein & Katz, 2005), and in achieving faculty buy-in to the importance of adopting performance measurement processes in the instructional practice (Norris et al., 2008).

Results from this study provided greater insight into the cultural factors that contributed to and impeded the success in the initial stages in the development of advanced enrollment performance measurement systems. Overall, the research results indicated that organizational culture value orientation was a factor that contributed to organizational motivation in the initial stages in the development of advanced enrollment performance

measurement systems, as well as indicated the importance of executive leadership and the engagement of the campus community, with specific reference to the importance of faculty, in the process. The significance of the research findings for application to other institutions is that the importance of understanding organizational culture values and managing culture change were identified as conditions of success at the time of the initial stages in the development of advanced enrollment performance measurement systems.

### *Organizational Capacity*

For purposes of this study, organizational capacity was defined as the factors and conditions that enabled an organization to use its resources (human, financial, physical, technology, information) to perform and adapt to change (adapted from Lusthaus et al., 2002). A review of the literature related to an organization's capacity to change (OCC) revealed that it was a nascent field of research (Judge & Blocker, 2008) that went beyond an "individual analysis to describe an organizational unit's collective capacity for change" (Judge & Elenko, 2005, p. 919). Many experts in SEM related fields identified the use of advanced enrollment performance measurement systems to be in their infancy within higher education, and the development of such systems to be a nascent area in which only a few institutions had been successful (Campbell et al., 2007; Norris, 2008). These experts indicated that 'intelligence' systems such as these were often defined in accordance with accreditation and accountability requirements (both internal and external) to monitor performance progress and inform strategic decision-making. In doing so, these systems were developed with broad involvement of systems developers, enrollment managers, and institutional users.



Results from this study of exemplary practices at five institutions provided greater insights into the organizational capacity conditions that contributed to the success of the initial stages in the systems development. There was considerable consistency in the survey results and interview findings related to the capacity conditions that contributed ‘most’ and ‘least’ to the success of the systems initiative. Success factors of most contribution to the success of the systems initiative substantiated the importance of approaching the development of advanced enrollment performance measurement systems as a ‘strategic’ initiative rather than as a ‘project’ of localized focus solely within enrollment operations. The research results identified the criticality of strategic leadership in leading ‘organizational change,’ and the importance of an inclusive process that promoted the active involvement of a broad representation of campus constituents in the process. These results are consistent with observations drawn by Bryson (2004) from his research that an organization’s capacity to improve its performance is a function of its leadership, management, and the application of sound strategic planning and management concepts that leads to strategic thinking, acting, and learning.

### ***Features of Advanced Enrollment Performance Measurement Systems***

The findings presented in the previous sections on organizational culture and capacity conditions described essentially ‘what’ factors contributed most and least to the success of the systems initiatives. The research findings associated with this section provided contextual information about the system features and circumstances pertaining to its development; as well as helped to explain and expand upon the previous findings in detailing the ‘who’ in terms of specific constituents that were involved and ‘how’ in terms of the processes used to engage them. Information provided in the interview

process by study participants were rich in ‘lessons learned,’ reflections on what could or would have enhanced the success of the systems initiative, and how their contributions made a difference. Of particular significance, the results indicated that while there was considerable variability in the environmental circumstances that led to the initiation of the systems initiative and its purposes, the processes associated with the initial stages in the systems development focused on effectively managing the human dimensions of change and mitigating institutional risk through good practices in project management.

### **Implications for Practice**

The value of scholarship is derived from its relevance to professional practice and to the improvement of practice through the creation of new knowledge (McMillan, 2004). The present study provided higher education professionals, particularly within the enrollment management field, with a tool in the form of guidelines that has been absent from the profession. The foundational guidelines for success were derived from research that was grounded in empirically tested theoretical constructs, aligned with established theories and concepts related to the discipline of SEM, and informed by an explanatory mixed methods study of exemplary practices using valid and reliable research methods. Therefore, results from this study are considered to be reasonably generalizable for use by other institutions within the limitations of this study, which are discussed in the section that follows.

The preceding sections of this chapter presented the foundational guidelines for success related to organizational culture, organizational capacity, and features of the enrollment performance measurement systems that were derived from the two-phase explanatory mixed methods research findings. Results from the research suggested that

the organizational capacity conditions that contributed ‘most’ to the success of the systems initiative were related to *Strategic Leadership* in effectively managing organizational culture change and in communicating the importance of enrollment to the institution’s vitality. Other factors that were identified as important contributors to the success of the systems initiative included broad-based commitment of institutional leaders from across academic and administrative organizational boundaries as evidenced by the subsequently ranked capacity areas of *Organizational Structure and Governance*, *Program Management*, *Inter-organizational Linkages*, *Process Management*, and *Infrastructure*. While *Human Resources* and *Financial Management* were not identified as organizational capacity areas that significantly contributed to the success of the initial systems development, the effective management of human and financial resources through the use of good practice principles in project management to mitigate risk was consistently identified in the case studies as critical to the success of the systems initiative.

Following from these results, *Table 5.1* presents a synthesis of the foundational guidelines for success for use in conducting a self-assessment of an organization’s capacity for implementing an advanced enrollment performance measurement system. In application, these guidelines may be useful as a simple checklist or as part of a formal self-study. However, the tool has not been field tested in its application. Therefore, if used, particularly in relation to a more formal self-study, the use of a third party external auditor would add to the credibility of the self-assessment process and resultant findings.

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*Foundational Guidelines for Success**Organizational Culture*

- Executive leaders need to be committed to fostering a culture of collaboration and to effectively managing organizational culture change.

*Strategic Leadership*

- Executive leaders at the level of the vice-president and higher need to be willing to demonstrate commitment to the systems initiative by:
  - communicating the importance of enrollment to the institution's vitality
  - fostering an evidence-based approach to decision-making
  - making information widely available
  - adopting transparency in decision-making
  - dedicating resources
- The purpose of the systems development initiative need to be defined and communicated in relation to the mission-centric benefits in enhancing student success and in improving quality service to students.

*Organizational Structure and Governance*

- There needs to be a designated and empowered enrollment leader to champion the systems initiative.
- The Chief Information Officer /CIO needs to strongly support the systems initiative as a strategic partner in the process.
- A designated enrollment analyst needs to be committed to support the systems initiative.
- There needs to be strong support of the data owners.
- There needs to be strong institutional support at the level of the dean and higher.

*Program Management*

- Administrators with data management responsibilities need to be committed to using data to improve collaborative decision-making in enrollment performance management; and to expand access to data for others involved in enrollment decisions.

*Inter-organizational Linkages*

- The design of the system needs to consider the information needs of external agencies such as accrediting bodies for purposes of verifying compliance as appropriate.

*Process Management*

- Planning processes need to exist that foster inclusiveness and engagement of campus constituents in the development of shared goals and functional specifications.

*Infrastructure*

- There needs to be willingness among institutional decision leaders to invest resources (people and funding) in data quality management, data/technology infrastructure, and development of more sophisticated enrollment performance measurement capabilities.

*Project/Risk Management*

- Good practice principles in project/risk management need to be adopted that foster inclusiveness in the systems development initiative.

### **Limitations for Application**

While the resultant guidelines derived from this study offer utility for conducting a self-assessment of the readiness of an organization for success in embarking on an advanced enrollment performance measurement system, there are several qualifications that must be considered in their application. These include:

- The OCAI survey instrument and CVF construct for assessing organizational culture defined culture from a functional and sociological perspective, as compared to an anthropological perspective. In this regard, ‘culture’ was viewed as an enduring, slow-changing core attribute of organizations distinct from climate, which referred to more temporary attitudes, feelings and perceptions that can change quickly. The validity of the OCAI instrument as a tool for assessing culture was grounded in the core beliefs that:  
(a) organizational cultures are comprised of unique sub-cultures, yet contain common attributes that make up an overarching ‘culture type’ of the entire organization; (b) quantitative approaches to measuring culture at the organizational level of analysis are valid and can be compared across organizations; and (c) the OCAI instrument reliably measures six core content dimensions of culture that reflect ‘dominant psychological archetypes’ of how individuals perceive “how things are” and the pattern dimensions of culture that reflect cultural strength, cultural congruence and cultural type. There are many opposing viewpoints on whether culture can be assessed, as well as alternative approaches to the assessment of organizational culture and cultural

phenomena. The selected model represents only one school of thought, albeit empirically grounded (see Cameron & Quinn, 2006, pp. 143-161).

- The study did not assess the ‘effectiveness’ of the advanced enrollment performance measurement systems in contributing to the institution’s SEM plan or planning process. It was assumed that the continued investment in retaining the enrollment performance measurement system gave testimony to the fact that it had value-adding benefits in enhancing performance improvement. Therefore, investment in these systems cannot be perceived as a guarantee of enrollment performance improvement.
- From a methodological perspective, the following limitations must be considered in applying the results from the study:
  - a. The study results were based upon only five of the eighteen institutions that constituted the purposeful sample, representing a participation rate of 27.8%.
  - b. Participating institutions included representation from two-year and four-year colleges with undergraduate headcount enrollment of between 20,000-30,000 and less than 5,000. The study did not include representation from institutions with an enrollment in the middle range between 5,000 and 20,000.
  - c. The culture of the represented public institutions may differ substantially from that of larger institutions, private institutions, as well as institutions that are not grounded in Western culture perspectives. Therefore, different findings could result in different cultural or institutional contexts.

- d. The perspectives reflected in this study represent three specific constituent groups (i.e., systems developers, enrollment managers, and institutional users). The selection of individuals to be included in the study and the constituents they represented was left to the discretion of each institution through communications with the president. Some inherent bias within each institutional context may be reflected in the resultant culture profiles.

### **Conclusions**

Results from this study provided new insights into the capacity conditions for success in the initial stages in the development of advanced enrollment performance measurement systems that support effective SEM planning. These included:

- There was no *culture value orientation* that best characterized the ‘real’ culture conditions at the time of the initial development of the enrollment performance measurement system. However, the ‘ideal’ culture was best characterized as having a ‘leaning’ toward a ‘collaborative’ culture.
- *Strategic Leadership* was the ‘most’ important organizational capacity area to the success of the initial development of the enrollment performance measurement system.
- Capacity conditions associated with *Organizational Structure and Governance, Program Management, Inter-organizational Linkages, Process Management, and Infrastructure* were important to the success of the systems initiative. However, the relative importance of each capacity area was situational to the institutional context.

- Capacity conditions associated with *Human Resources* and *Financial Management* were least important to the success of the systems initiative. However, the effective management of existing resources (human and financial) to mitigate risk was identified as an important contributor to success.

From this research, 13 foundational guidelines for success were developed that may offer guidance to other institutional leaders in conducting a self-assessment of an organization's capacity for implementing an advanced enrollment performance measurement system. The significance of this research outcome is that no such tool of this type had existed.

### **Recommendations for Further Research**

A review of the literature suggested that many experts believed organizational capacity for change (OCC) to be a nascent field of research. Similarly, the development of advanced systems in enrollment performance measurement was also identified as being in its infancy in higher education. The present study added to the existing body of research associated with both of these evolving disciplines. The study was among the first research studies to consider both 'organizational culture' and 'capacity conditions' for success in a change management initiative focused on the development of advanced enrollment performance measurement systems associated with SEM planning.

In terms of areas of research that would build upon the present study, two areas of focus would be most value-adding: (a) replication within a broader purposeful sample of institutions similar in profile to the present study, but with larger numbers of study participants in each of the three constituent groups of systems developers, enrollment



managers, and institutional users in order to examine similarities and differences among the constituents groups; and (b) replication of the study at institutions with more diverse profiles than those represented in the purposeful sample, such as in public colleges and universities with a headcount enrollment between 15,000-20,000 and greater than 30,000 students, in private and for profit institutions, in less mature institutions, in institutions with cultures other than that of Western perspectives, among others, in order to explore whether or not the results can be generalized to institutions beyond those represented in the present study.

Another area for future research that would build on the understandings resulting from the present study is in whether or not relationships exist between ‘organizational culture value orientations’ and ‘capacity conditions.’ In the present study, differing behavioral response scales were used in the respective components of the survey. Therefore, no statistical correlations were conducted to explore potential relationships between the ‘culture’ and ‘capacity’ survey results.

Additional research is encouraged by others to test the guidelines as a self-assessment tool and to establish a rating rubric that is valid and reliable. The intent of this research could yield a tool that may translate into operational standards for use in a maturing field of professional practice.

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**APPENDICES****Appendix A1 UNL Institutional Review Board Approval**

April 26, 2010

Lynda Wallace-Hulecki  
Department of Educational Administration

Ronald Joekel  
Department of Educational Administration  
124 TEAC UNL 68588-0360

IRB Number: 20100210571 EX  
Project ID: 10571  
Project Title: Building Organizational Capacity for Enrollment Performance  
Measurement: A Mixed Methods Investigation

Dear Lynda:

This letter is to officially notify you of the final approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as exempt category 2.

You are authorized to implement this study as of the Date of Conditional Approval: 02/17/2010. This approval is Valid Until: 12/31/2010.

1. It has been approved to include Cuyahoga Community College in your research. Other sites can be added on a case by case basis as approval letters are submitted to the IRB.
2. The approved interview informed consent form has been uploaded to NUgrant (Wallace-Hulecki ICF-Approved.pdf). Please use this form to distribute to participants. If you need to make changes to the informed consent form, please submit the revised form to the IRB for review and approval prior to using it.
3. The IRB approval number has been added to the Intro email to Survey (Appendix E Intro Email to Survey Participants-Approved.doc). Please use the text of this message to send to participants. If you need to make changes to this email, please submit the revised message to the IRB for review and approval prior to using it.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

Becky R. Freeman, CIP  
for the IRB



**Appendix A2 Questionnaire Abstract and Survey Questionnaire  
Questionnaire Abstract**

Research Questions	Survey Items
<b><i>Quantitative Stage (Survey)</i></b>	
A survey will be constructed and administered at institutions participating in this study to obtain the perspectives of the primary system developers, enrollment managers, and institutional users in relation to the following:	
3. What <b>culture value orientations</b> using the OCAI instrument best characterized the 'real' versus 'ideal' conditions at the time of the initial development of the enrollment performance measurement system?	<b>1.1, 1.2</b>
4. What level of importance were the following eight <b>areas of organizational capacity</b> associated with the IOA model to the success of the initial development of the enrollment performance measurement system:	
a. Strategic leadership?	<b>2.1</b>
b. Organizational structure?	<b>2.2</b>
c. Human resources?	<b>2.3</b>
d. Financial Management?	<b>2.4</b>
e. Infrastructure?	<b>2.5</b>
f. Program management?	<b>2.6</b>
g. Process management?	<b>2.7</b>
h. Inter-organizational linkages?	<b>2.8</b>
5. What were the <b>defining features of the 'advanced' enrollment performance measurement system</b> , using the Katz and Goldstein (2005) terminology and relevant survey questions, in relation to:	
a. The alignment of the system objective(s) to the institution's SEM context?	<b>3.1-3.5</b>
b. The primary objective(s), scope and users of the system development?	<b>3.6-3.8</b>
c. The champion(s) for initiating and implementing the system development project?	<b>3.10, 3.11</b>
d. The role of the survey respondent in the systems development project?	<b>3.9, 3.12-3.14</b>
<b><i>Qualitative Stage (Case Study)</i></b>	
Willingness to participate in the qualitative case study interview process, if institution selected as host site.	
	<b>3.15</b>



## Appendix A3 Survey Questionnaire

**Note: Survey Section 1 Copyright 2006 by John Wiley & Sons  
Survey Sections 2 and 3 Copyright 2010 by Lynda Wallace-Hulecki**

**The survey is divided into three sections, including:**

- Section 1: Assessment of Organizational Culture Value Orientations
- Section 2: Assessment of Organizational Capacity Conditions
- Section 3: Features of the Enrollment Performance Measurement System

This questionnaire will be administered in two parts: The first section should take about **15 minutes** to complete. Following submission of the completed first section, a second survey will be administered including sections two and three of the survey. The second section should take about **30 minutes** to complete, and the third section about **5 minutes**.

### **Section 1: Assessment of Organizational Culture Value Orientations -- 2010** *General Instructions*

#### **ORGANIZATIONAL INFORMATION**

The purpose of the Organizational Culture Assessment is to assess six key dimensions of organizational culture using the Organizational and Cultural Assessment Instrument developed by Cameron and Quinn (2006). In completing the instrument, you will be providing a picture of the fundamental assumptions on which your organization operated and the values that characterized it at the time of the initial stage in the development of the enrollment performance measurement system.

#### ***Instructions:***

1. First complete the survey question from the perspective of the **'real' conditions** that existed at the initial stage of the system development.
2. Then you will be asked to complete the survey question again from the perspective of what **'ideal' conditions** would have been preferred to support the success of the system development initiative.

The survey question consists of six items with four alternative responses to each.

**Divide 100 points among the four alternatives for each of the six items.** Give a higher number of points to the alternative(s) that best reflects your organizational conditions from the perspective shaping your response.

For the purposes of this question, the term “organization” refers to the entire organization. Please answer these questions to the best of your knowledge. First complete the questions from the perspective of the “REAL” conditions that existed at the initial stage of the system development by rating each of the statements by dividing 100 points between A, B, C, and D (100 is very similar and 0 is not

at all similar to this unit). Then complete the survey questions again from the perspective of what “IDEAL” conditions would have been preferred to support the success of the system development initiative by, again, rating each statement by dividing 100 points among A B, C and D. The total points for each question must equal 100 for real.

For example, in question 01 REAL, assume that you gave 75 points to A, 10 points to B, 15 points to C, and 0 points to D. This would indicate that the organization is predominantly a personal place and not at all controlled and structured.

**SAMPLE  
QUESTION  
01  
REAL  
A. 075  
B. 010  
C. 015  
D. 000  
TOTAL: 100**

**Question 1.1 What *Real* value orientations existed at the time of the initial stage of the enrollment performance management system development?**

**I. DOMINANT CHARACTERISTICS**

**1. REAL**

**A** The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.

**B** The organization is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.

**C** The organization is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.

**D** The organization is a very controlled and structured place. Formal procedures generally govern what people do.

**II. ORGANIZATIONAL LEADERSHIP**

**1. REAL**

**A** The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.

**B** The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk taking.

**C** The leadership in the organization is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus.

**D.** The leadership in the organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.

**III. MANAGEMENT OF EMPLOYEES**

### 1. REAL

**A** The management style of the organization is characterized by teamwork, consensus, and participation.

**B** The management style of the organization is characterized by risk taking, innovation, freedom, and uniqueness.

**C** The management style of the organization is characterized by hard-driving competitiveness, high demands, and achievement.

**D** The management style of the organization is characterized by security of employment, conformity, predictability, and stability in relationships.

## IV. ORGANIZATIONAL GLUE

### 1. REAL

**A** The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high.

**B** The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being on the cutting edge.

**C** The glue that holds the organization together is the emphasis on achievement and goal accomplishment.

**D** The glue that holds the organization together is formal rules and policies. Maintaining a smooth running organization is important.

## V. STRATEGIC EMPHASES

### 1. REAL

**A** The organization emphasizes human development. High trust, openness, and participation exist.

**B** The organization emphasizes acquiring new resources and creating new challenges. Trying for new things and prospecting for opportunities are valued.

**C** The organization emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are valued.

**D** The organization emphasizes permanence and stability. Efficiency, control, and smooth operations are important.

## VI. CRITERIA OF SUCCESS

### 1. REAL

**A** The organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.

**B** The organization defines success on the basis of the most unique or newest products. It is a product leader and innovator.

**C** The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.

**D** The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low-cost production are critical.

**Assessment of Organizational Culture Value Orientations -- 2010  
Characteristics - IDEAL**

For the purposes of this question, the term “organization” refers to the entire organization. Please answer these questions to the best of your knowledge. Complete the survey questions again from the perspective of what “IDEAL” conditions would have been preferred to support the success of the system development initiative by, again, rating each statement by dividing 100 points among A B, C and D. The total points for each question must equal 100 for IDEAL.

For example, in question 01 IDEAL, assume you gave 50 points to A, and 0 to B and 50 to C and 0 points to D. This would mean you would prefer that this organization be more of a personal, people oriented place yet market driven.

**SAMPLE  
QUESTION  
02  
IDEAL  
A. 050  
B. 000  
C. 050  
D. 000  
TOTAL: 100**

**Question 1.2 What *Ideal* value orientations would have been preferred to support the success of the initial stage of the enrollment performance management system development?**

**I. DOMINANT CHARACTERISTICS**

**2. IDEAL**

**A** The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.

**B** The organization is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.

**C** The organization is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.

**D** The organization is a very controlled and structured place. Formal procedures generally govern what people do.

**II. ORGANIZATIONAL LEADERSHIP**

**2. IDEAL**

**A** The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.

**B** The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk taking.

**C** The leadership in the organization is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus.

D. The leadership in the organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.

### III. MANAGEMENT OF EMPLOYEES

#### 2. IDEAL

**A** The management style of the organization is characterized by teamwork, consensus, and participation.

**B** The management style of the organization is characterized by risk taking, innovation, freedom, and uniqueness.

**C** The management style of the organization is characterized by hard-driving competitiveness, high demands, and achievement.

**D** The management style of the organization is characterized by security of employment, conformity, predictability, and stability in relationships.

### IV. ORGANIZATIONAL GLUE

#### 2. IDEAL

**A** The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high.

**B** The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being on the cutting edge.

**C** The glue that holds the organization together is the emphasis on achievement and goal accomplishment.

**D** The glue that holds the organization together is formal rules and policies. Maintaining a smooth running organization is important.

### V. STRATEGIC EMPHASES

#### 2. IDEAL

**A** The organization emphasizes human development. High trust, openness, and participation exist.

**B** The organization emphasizes acquiring new resources and creating new challenges. Trying for new things and prospecting for opportunities are valued.

**C** The organization emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are valued.

**D** The organization emphasizes permanence and stability. Efficiency, control, and smooth operations are important.

### VI. CRITERIA OF SUCCESS

#### 2. IDEAL

**A** The organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.

**B** The organization defines success on the basis of the most unique or newest products. It is a product leader and innovator.

**C** The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.

**D** The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low-cost production are critical.

**Section 2: Assessment of Organizational Capacity Conditions -- 2010**  
*General Instructions*

**Note: Survey Sections 2 and 3 Copyright 2010 by Lynda Wallace-Hulecki**

Thank you for completing Section 1 of this survey. This second component of the survey consists of two Sections:

Section 2: Assessment of Organizational Capacity Conditions

Section 3: Features of the Enrollment Performance Measurement System

The second section should take about **30 minutes** to complete, and the third section about **5 minutes**. Please complete this component of the survey when you have space in your day.

**SECTION 2:**

**ASSESSMENT OF ORGANIZATIONAL CAPACITY CONDITIONS**

***Instructions:***

This is a **multi-part question** that is organized according to eight commonly identified areas associated with an organization's capacity conditions for change. Please rate the degree to which each of the following statements contributed to the success of the initial stage in the development of the enrollment performance measurement system. If the statement was not a REAL condition that existed at the time of the initial stage in the system implementation, please indicate "not applicable."

**Use the following scale in your rating:**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

***Definition of terms:***

For the purposes of this question series, the following definitions should be used:

- **Enrollment performance measurement systems** - for purposes of this study, refers to reporting, modeling, analysis, and decision-support information technologies that provide access to data and analytical tools that support operational reporting, institutional decision-making, and regulatory compliance associated with the management of enrollment performance.
- **Executive leaders** - Individuals occupying the leadership positions as a Chancellor, Vice-Chancellor, Presidents, Vice-President, Associate Vice-President/Chancellor.
- **Institutional Decision Leaders** - Individuals involved in making decisions related to program/service developments and the allocation of institutional resources (budget, staffing, space allocation).

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.1A -STRATEGIC LEADERSHIP**

**QUESTION 2.1**

**Please rate the degree to which each of the following statements related to STRATEGIC LEADERSHIP contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

**1. STRATEGIC LEADERSHIP**

- 1.1 Our Executive leaders understood the relationship between enrollment and resource management.
- 1.2 Our Executive leaders demonstrated commitment to evidence-based decision-making.
- 1.3 Our Executive leaders demonstrated commitment to making information widely available.
- 1.4 Our Executive leaders demonstrated commitment to transparent decision-making.
- 1.5 Our Executive leaders communicated to the campus community on a regular basis the importance of investing in enrollment performance measurement systems.
- 1.6 The importance of enrollment to the academic wellbeing of the institution was clearly articulated in the institution's strategic plans.
- 1.7 The importance of enrollment to the financial well-being of the institution was clearly articulated in the institution's strategic plans.
- 1.8 Enrollment planning was an integral component of the institution's strategic planning process.
- 1.9 There was a formal enrollment plan that articulated the need for improved enrollment performance measurement systems.

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

- 1.10
- 1.11

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.2A - ORGANIZATIONAL STRUCTURE AND GOVERNANCE**

**Question 2.2**

**Please rate the degree to which each of the following statements related to ORGANIZATIONAL STRUCTURE AND GOVERNANCE contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**2.ORGANIZATIONAL STRUCTURE AND GOVERNANCE**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

2.1 There was a designated enrollment management leader.

2.2 There was a designated enrollment analyst to conduct enrollment performance analyses.

2.3 An institutional committee with broad representation from across divisional boundaries was charged with the success of the system development.

2.4 The decision to implement the system was strongly supported by academic leaders at the level of the dean and higher.

2.5 The decision to implement the system was strongly supported by the President.

2.6 The decision to implement the system was strongly supported by the governing board.

2.7 The decision to implement the system was strongly supported by the Chief Information Officer.

2.8 The decision to implement the system was strongly supported by the data owners.

2.9 The decision to implement the system was strongly supported by the Chief Financial Officer.

2.10 The decision to implement the system was a stated strategic objective in the institution's strategic plans.

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

2.11

2.12



**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.3A - HUMAN RESOURCES**

**Question 2.3**

**Please rate the degree to which each of the following statements related to HUMAN RESOURCES contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**3. HUMAN RESOURCES**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

3.1 Staff had the appropriate skills to support the implementation of advanced enrollment performance measurement systems.

3.2 Training of staff in the use of enrollment performance measurement systems was an institutional priority.

3.3 Training of managers/administrators in the use enrollment performance measurement systems was an institutional priority.

3.4 Staff who were skilled in the use of enrollment performance measurement systems received more career advancement opportunities than those who were not.

3.5 New staff hires required advanced analytical skills.

3.6 New staff hires required higher order technical skills.

3.7 Managers received training in change management to support the implementation process.

3.8 Staff responsible for the integrity of data were held accountable for their performance with consequences.

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

3.9

3.10

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.4A - FINANCIAL MANAGEMENT**

**Question 2.4**

**Please rate the degree to which each of the following statements related to FINANCIAL MANAGEMENT contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**4. FINANCIAL MANAGEMENT**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

4.1 Managers of enrollment/student services were held accountable for achieving enrollment goals.

4.2 Managers of enrollment/student services were empowered to make decisions impacting enrollment performance.

4.3 There were budgetary consequences to managers of enrollment/student services for missing enrollment goals.

4.4 There were budgetary rewards to managers of enrollment/student services for exceeding enrollment goals.

4.5 Academic deans/directors were held accountable for achieving enrollment goals.

4.6 Academic deans/directors were empowered to make decisions impacting enrollment performance.

4.7 There were budgetary consequences to academic deans/directors for missing goals.

4.8 There were budgetary rewards to academic deans/directors for exceeding goals.

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

4.9

4.10

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.5A - INFRASTRUCTURE**

**Question 2.5**

**Please rate the degree to which each of the following statements related to INFRASTRUCTURE contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**5. INFRASTRUCTURE**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

5.1 The existing data and/or systems technology infrastructure was adequate to support the development of the enrollment performance measurement system.

5.2 The existing data and/or systems technology infrastructure required upgrading to mitigate institutional risk.

5.3 The introduction of new systems created opportunities for improved enrollment performance measurement capabilities.

5.4 The existing enrollment performance measurement systems did not meet the needs of institutional users.

5.5 Expanded access to more sophisticated enrollment performance information beyond transactional reports was in demand by operational departments.

5.6 Expanded access to more sophisticated enrollment performance information beyond transactional reports was in demand by faculty.

5.7 There was a lack of trust in the integrity of enrollment related data (e.g., inquiries, admissions, registrations).

5.8 Data quality was a priority of the data owners.

5.9 Adequate funding was committed to implement the enrollment performance measurement system.

5.10 Adequate funding was committed to sustain the enrollment performance measurement system.

5.11 External consultants were required to augment the skills of internal staff.

**Specify other factors, if any, that contributed to at least somewhat to the success of the initiative:**

- 5.12
- 5.13

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.6A - PROGRAM MANAGEMENT**

**Question 2.6**

**Please rate the degree to which each of the following statements related to PROGRAM MANAGEMENT contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**6. PROGRAM MANAGEMENT**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

6.1 The institution engaged in quantitative external benchmarking of its enrollment performance to inform planning and decision-making.

6.2 The enrollment/student services administrators with data management responsibilities (e.g., Registrar, Admissions Director) supported making the data widely available to others who needed access to it to make informed enrollment decisions.

6.3 There was a commitment by managers in enrollment/student services operations to use data to improve enrollment performance management.

6.4 Broader access to data was viewed by institutional decision leaders as a means to improve collaboration in decision-making.

6.5 Broader access to data was viewed by institutional decision leaders as a means to create internal competition for resources.

6.6 Broader access to data was viewed by institutional decision leaders as a means to foster shared responsibility of enrollment outcomes across operations.

6.7 Broader access to data was viewed by institutional decision leaders as a means to inform better enrollment decisions.

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

- 6.8
- 6.9

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.7A - PROCESS MANAGEMENT**

**Question 2.7**

**Please rate the degree to which each of the following statements related to PROCESS MANAGEMENT contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**7. PROCESS MANAGEMENT**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

7.1 There was a shared vision for the system development.

7.2 There were shared goals for the system development.

7.3 The campus community received information on the expected value-adding benefits of the system.

7.4 Regular communications on the status of the systems development were made to institutional decision leaders.

7.5 Assessment to demonstrate return on investment was tied to the implementation of the enrollment performance measurement system.

7.6 The design of the system was driven by the functionality of the technology.

7.7 The design of the system was driven by the functional needs of institutional users.

7.8 Data managers (e.g., Registrar, Admissions Director) demonstrated a willingness to accept change in relation to data process management responsibilities.

7.9 Faculty were actively involved in defining the functional specifications for the system.

7.10 Data managers (e.g., Registrar, Admissions Director) were actively involved in defining the functional specifications for the system.

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

7.11

7.12

**Assessment of Organizational Capacity Conditions -- 2010**  
**QUESTION 2.8A - INTER-ORGANIZATIONAL LINKAGES**

**Question 2.8**

**Please rate the degree to which each of the following statements related to INTERORGANIZATIONAL LINKAGES contributed to the success of the initial stage in the development of the enrollment performance measurement system.**

**8. INTER-ORGANIZATIONAL LINKAGES**

1. Not at all
2. Very little
3. Somewhat
4. To a great degree
5. Not applicable

8.1 The system was designed in consideration of the need for compliance with regulatory reporting requirements.

8.2 The system was designed in consideration of the information needs of research granting bodies.

8.3 The system was designed in consideration of the information needs of accrediting bodies.

8.4 The system was designed in consideration of the information needs of educational partners (e.g., other institutions, business and industry)

**Specify other factors, if any, that contributed at least somewhat to the success of the initiative:**

- 8.5
- 8.6

**Section 3: Assessment of Organizational Capacity Conditions -- 2010**  
**FEATURES OF THE ENROLLMENT PERFORMANCE**  
**MEASUREMENT SYSTEM**

***Instructions:***

Please answer each of the following questions from the perspective of your role and involvement at the time of the initial stage in the development of the enrollment performance measurement system.

3.1 Which of the following was the primary driver for initiating the development of the enrollment performance measurement system? (Select **one** only)

- A. Improving the institution's ability to compete for qualified students.
- B. Improving the operational efficiency/effectiveness of enrollment/student service operations.
- C. Improving the sophistication of decision-support information to inform resource allocations (e.g., space allocation, course scheduling, faculty workload, net revenues).
- D. Improving the institution's ability to proactively support student success (e.g., early alert of at-risk students).
- E. Improving accountability reporting on the institution's enrollment goals.
- F. Don't know
- G. Other (please specify)

3.2 In what year was the enrollment performance measurement system development project initiated?

3.3 The institutional enrollment context during the three year period preceding the initial development of the enrollment performance measurement system could be best described as (Select **one** only):

- A. Healthy
- B. Stable
- C. Unstable
- D. Crisis
- E. Don't know

3.4 At the time of the initial development of the enrollment performance measurement system, was there an enrollment management committee that provided strategic leadership to the development and implementation of a Strategic Enrollment Management plan? (Select **one** only)

- A. Yes (go to Question 3.5)
- B. No (skip to Question 3.6)
- C. Don't know

**Assessment of Organizational Capacity Conditions -- 2010**  
**Features of the Enrollment Performance Measurement System3.5**

3.5 If yes to Question 3.4, what involvement, if any, did the committee have in the initial stages of the development and implementation of the enrollment performance measurement system (Select **one** only):

- A. Sponsored the system development
- B. Informed the development of the system requirements as a user group
- C. None
- D. Don't know
- E. Other (please specify)

**Assessment of Organizational Capacity Conditions -- 2010**  
**Features of the Enrollment Performance Measurement System3.6**

3.6 What reporting capabilities did the enrollment performance measurement system designed to provide at the completion of the initial stage in its development? (Select **all** that apply)

- A. Scheduled periodic reports (e.g., monthly)
- B. On-demand reports (e.g., generated when the user requires it)
- C. User-defined reports (e.g., user can build their own reports)
- D. Drill-down reports (e.g., users receive summary information that can be disaggregated to lower levels of detail)
- E. Ad hoc reports
- F. Performance management 'dashboard'(a management tool to track 'real-time' operational activity using key performance indicators e.g., admissions yields)
- G. Executive-style 'balanced scorecard' (e.g., a reporting system that demonstrates performance progress on the institution's strategic plan using key performance indicators)
- H. Data extracts to off-line tools (e.g., Excel, Access)
- I. On-line Analytical Processing (OLAP) tools
- J. Alerts generated by monitoring tools
- K. Other (please specify)

3.7 What analytical capabilities was the enrollment performance measurement system designed to provide? (Select **all** that apply)

- A. Extracting and reporting of transaction-level data
- B. Analysis and monitoring of operational performance (e.g., dashboard)
- C. What-if decision support (e.g., scenario planning)
- D. Predictive modeling and simulations
- E. Automatic alert notification (e.g., at-risk students)
- F. Automatic alert business response (e.g., at-risk students automatically scheduled an appointment with an advisor)



3.8 What enrollment management functionality was the enrollment performance measurement system designed to provide? (Select **all** that apply)

- A. Automatic alert when an enrollment performance metric falls outside of a desired range
- B. Automatic alert when a revenue metric falls outside of a desired range
- C. Early identification of students academically at-risk
- D. Automatic alert to an appropriate official that an academic intervention with a student is warranted
- E. Forecast future enrollment
- F. Forecast demand for courses
- G. Identify potential students who are the strongest
- H. Tailor recruitment strategy for an individual prospective student
- I. Identify optimum resource allocation (e.g., course timetabling)
- J. Other (Please specify)

3.9 Which of the following constituent groups best describes your role at the time of the initial development of the enrollment performance measurement system? (Select **one** only)

- A. Systems developers - individuals who occupied professional information technology related positions within a central systems group, institutional research, or an administrative/school-based department
- B. Enrollment managers - individuals who occupied professional roles in enrollment management or student affairs administration (e.g., recruitment, admissions, marketing, registrar, financial aid, bursar, academic advising, and related student or enrollment management functions)
- C. Institutional users - individuals who were an intended primary user of the enrollment performance measurement system from outside of an enrollment/student affairs operation (e.g., Executive leaders, faculty, deans, academic chairs, administrative staff)

3.10 Who were the intended primary users of the enrollment performance measurement system? (Select **all** that apply)

- A. Enrollment management/student services staff as defined in Question 3.9
- B. Business/finance/administrative staff - central office and/or school-based
- C. Human resources staff - central office and/or school-based
- D. Institutional research
- E. Fund-raising/advancement staff- central office and/or school-based
- F. Research/grants administration staff - central office and/or school-based
- G. Deans and Deans' staff
- H. Department Chairs and Chairs' staff
- I. Executive leaders (e.g., at the level of an associate vice-chancellor/vice-president or higher)
- J. Other (please specify)

3.11 Who was the initial champion of the institution's efforts to develop the enrollment performance measurement system? (Select **one** only)

- A. Enrollment Management/ Student Affairs leader (as defined in Question 3.9)
- B. Information Technology leader (as defined in Question 3.9)
- C. President
- D. Divisional Leader from Academic Affairs
- E. Divisional Leader from Finance/ Business Administration
- F. Institutional Research
- G. Other (please specify)

3.12 The decision-making structures associated with the initial development of the enrollment performance measurement system could be best described as (Select **one** only):

- A. One or more department(s) working in partnership with IT
- B. Task team of institutional users and systems developers led by IT
- C. Steering committee involving institutional decision leader(s) and IT
- D. Other (please specify)

3.13 Were you a sponsoring or co-sponsoring leader of this systems initiative?

- A. Yes
- B. No

3.14 Were you a member of a task team or committee guiding the system development and/or implementation?

- A. Yes
- B. No

3.15 Are you willing to be involved in a follow-up 90-minute interview if your institution is selected as a host site for an in-depth case study?

- A. Yes
- B. No

**Thank you for completing this questionnaire!**  
**The time and effort you invested in this process are greatly appreciated.**

## Appendix B1. Panel of Experts Members

### **Jim Black, Ph.D.**

President/CEO

SEM Works

<http://www.semworks.net/>

[jblack@semworks.net](mailto:jblack@semworks.net)

The president and CEO of SEM Works, Dr. Jim Black, is an internationally recognized expert in enrollment management as well as in change management. He has published a monograph titled, *Navigating Change in the New Millennium: Strategies for Enrollment Leaders*, and three books, *The Strategic Enrollment Management Revolution*, considered to be a groundbreaking publication for the enrollment management profession, *Gen Xers Return to College*, and *Essentials of Enrollment Management: Cases in the Field*. Black is currently working on his fourth book, *Strategic Enrollment Intelligence*. Among his other published works are numerous articles and book chapters including a feature article in *College & University*, *Creating Customer Delight*; a chapter, *Creating a Student-Centered Culture*, for a book on best practices in student services published by SCUP and sponsored by IBM; a chapter on enrollment management in a Jossey-Bass book on student academic services; as well as a bimonthly feature in *The Greentree Gazette*.

Dr. Black is the founder of the National Conference on Student Retention in Small Colleges and cofounder of the National Small College Admissions Conference and the National Small College Enrollment Conference. He formerly served as the director of AACRAO's Strategic Enrollment Management Conference.

Black was honored as the recipient of the 2005 AACRAO Distinguished Service Award. He has been interviewed by publications such as *The Chronicle of Higher Education*, *Converge Magazine*, *The Enrollment Management Report*, *The Lawlor Review*, and was interviewed for AACRAO's Data Dispenser. Black also was featured in an international teleconference on enrollment management sponsored by The Center for the Freshman Year Experience at the University of South Carolina, and a PBS broadcast on "Blending High Tech and High Touch Student Services." Since 1999, Jim Black has been an IBM Best Practices Partner, one of only twenty-three in the world. He was invited by The College Board to Heidelberg, Germany, to evaluate the APIEL Exam and most recently was invited to lead conferences on enrollment management and student services in the United Kingdom and the Netherlands.

Dr. Black has served on the boards of several technology companies and has consulted with companies such as Microsoft, Blackboard, and the SAS Institute. Higher education clients have included over 300 two-year, four-year, public, and private institutions.

Black earned a B.A. in English education and M.A. in higher education administration from the University of South Carolina, as well as a Ph.D. in higher education curriculum and teaching from The University of North Carolina at Greensboro. His doctoral experience provides our clients with unique perspectives into innovative pedagogical, curricular, and program opportunities that impact enrollment outcomes. Leveraging his educational background along with his many years as an associate provost, dean, and faculty member in a higher education environment, Dr. Black will provide your institution with strategic insights that are grounded in theory and are actionable.

**Charles Lusthaus, Ph.D.**

Universalial Management Group

Secretary-Treasurer

[www.universalial.com](http://www.universalial.com)

[clusthaus@universalial.com](mailto:clusthaus@universalial.com)

Charles Lusthaus is one of the two founders of Universalial, the Chairman of its Board of Directors, and a shareholder in the firm. An expert in management, organizational theory, and institutional evaluation and change, Charles has over 35 years of experience in organizational development and evaluation in Canada and internationally.

Charles retired from the Faculty of Education at McGill University after 33 years of service as an Associate Professor. He has published numerous books and articles on management and evaluation and has made over 100 presentations at international conferences and workshops. He is one of the authors of *Organizational Assessment: A Framework for Improving Organizational Performance*, (IDRC, IDB, 2002), which was the culmination of over 20 years of fieldwork and research on this topic. Charles continues his research activities at Universalial, and is exploring approaches to the evaluation of new organizational forms such as international partnerships and networks.

**Charles Lusthaus**

**Co-Founder and Chairman of the Board of Directors, Senior Consultant, and Shareholder**

Ph.D., Administration and Policy Studies, McGill University, 1974

M.A., Mathematics Education, Canisius College, 1970

B.Sc., Accounting and Economics, State University of New York at Buffalo, 1967

**Donald M. Norris, Ph.D.**

President

Strategic Initiatives, Inc.

[www.strategicinitiatives.com](http://www.strategicinitiatives.com)[stratinit@aol.com](mailto:stratinit@aol.com)

**Donald M. Norris, Ph.D.**, is President and Founder of **Strategic Initiatives, Inc.**, a management consulting firm in Herndon, Virginia, that specializes in leading and navigating change, crafting and executing strategy, and enhancing enterprise performance. He is recognized as a thought leader and expert practitioner whose clients have included a blue-chip roster of corporations, colleges and universities, and associations and other non-profit organizations.

**A Distinguished Consulting Career.** Dr. Norris has been consulting for 35 years, the last 25 as a full-time consultant and thought leader. He founded **Strategic Initiatives, Inc.** 18 years ago. Driven by the emergence of the Knowledge Economy and its higher standards of performance, he has guided dozens of client organizations in realigning their visions, strategies, and plans to face fundamental changes in their industries. Strategies have included inventing groundbreaking approaches to strategic planning, the leveraging of technology to enhance performance and reduce costs, and focusing on value as a key performance indicator.

Consulting, Thought Leadership, and Trail-Blazing Publications. Dr. Norris has blended consulting with thought leadership, as reflected in 20 books and monograph, plus dozens of articles and presentations. His publications are recognized as having shaped thinking and practice in a variety of fields: organizational transformation, distance education and e-learning, and practices and tools to enhance performance and build value. His most impactful works have been *Transforming Higher Education: A Vision for Learning in the 21st Century*, *A Guide to Planning for Change*, *Transforming e-Knowledge: A Revolution in Knowledge Sharing*, “Action Analytics: Measuring and Enhancing Performance That Matters in Higher Education,” and “Competence 2.0: Education, Training, and Workforce Development for the Post-Recession Economy.”

**Action Analytics ®: Measuring and Enhancing Performance in Higher Education.**

In particular, Dr. Norris has pioneered new methodologies for measuring and enhancing performance in higher education and demonstrating value to higher education’s stakeholders. He has led the way in leveraging technology to reinvent academic and administrative processes that improve productivity, reduce costs, and foster innovations that improve student success and competitive positioning. Strategic Initiatives provides *Action Analytics* ®, a trail-blazing consulting service that enables institutions and their partners and stakeholders to reap the benefits of Web 2.0-enabled analytics that optimize the institution’s data, information, and analytic resources in the pursuit of enhanced performance. *Action Analytics* ® provides “analytics for the masses” that enable institutions to extract and utilize data from the full spectrum of data sources (ERP – Student, Finance, Finance Aid, Human Resources, and Advancement – LMS, third-party

operational systems, Assessment, Shadow systems, and external data sources) and to “mashup” analytic comparisons that have never been possible.

**Strategic Planning, Executing Strategy, and Building Organizational Capacity.** Drs. Donald Norris and Nick Poulton recently wrote *A Guide to Planning for Change*, published by the Society for College and University Planning (SCUP). This book is the “go-to” resource for planners at all levels and of all types. In this book, Norris and Poulton provide graphics and examples of how to conduct strategic, aligned, integrated planning that depends on analytics and alignment tools to frame and execute institutional strategies. Dr. Norris has been working with a wide range of software providers to mashup new, software-enabled solutions that allow institutions to align strategies, actions, resources, measurement, and performance management at the institutional, college, and departmental levels.

**Competence 2.0 ®: Reimagining Learning, Training and Workforce Development for the Post-Recession Economy.** Over the past few months, Dr. Norris and his colleagues have advanced their tools and practices to deal with the challenges of navigating and lifting out of the current recession, in the process preparing for success in the post-recession economy. Dr. Norris and his colleagues have created a new approach, *Competence 2.0* ®, which deploys the perspectives, tools, and practices of Web 2.0. Dr. Norris has founded the *Competence 2.0 Community of Practice*, a by-invitation social network attracting leading practitioners of Competence 2.0 practices from enterprises including Michigan State University, Oregon State University, Minnesota State Colleges and Universities, George Mason University, KTH University in Stockholm, the European Hematology Competence Network, Project Target (a European Union-funded project), the Virginia Tech Cooperative Leadership, Intel, and a variety of state workforce networks in the USA and the UK. Competence 2.0 provides fast, fluid, flexible and affordable approaches to developing and refreshing competence that will be critical to reimagining all industries for the “Big Shift” in practices coming post-recession.

**Seasoned Campus Planner and Administrator.** Prior to his consulting career, Dr. Norris served a succession of universities for 13 years as a researcher and administrator: University of Houston, the University of Texas at Austin, the University of Michigan, and Virginia Tech. These experiences culminated in his serving for six years in the position of Director of Planning and Policy Analysis at the University of Houston. In 1995, he became a Senior Fellow at the Institute for Educational Transformation at George Mason University in Fairfax, Virginia. In 1997, he became a Senior Fellow at the La Jolla Institute. In 1994, Dr. Norris was awarded the Distinguished Service Award by the Society for College and University Planning.

**Education and Honors.** Dr. Norris received a B.S. degree in Engineering Mechanics and an M.B.A. degree from Virginia Tech. He earned a Ph.D. from the Center for the Study of Higher Education at the University of Michigan. He is a member of the following honorary societies: Phi Eta Sigma, Tau Beta Pi (Engineering), Omicron Delta Kappa

(Leadership), Phi Kappa Phi, Beta Gamma Sigma (Business), and Who's Who in American Colleges and Universities.

## B2 Letters of Permission

### B2A. Use of Cameron and Quinn Culture Survey

Campbell, Brenton - Hoboken

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**From:** Goldweber, Paulette - Hoboken on behalf of Permissions - US  
**Sent:** Tuesday, January 05, 2010 4:15 PM  
**To:** Campbell, Brenton - Hoboken  
**Subject:** FW: Permission Request Form Canada

Paulette Goldweber | Associate Manager, Permissions | Global Rights - John Wiley & Sons, Inc.  
 Ph: 201-748-8765 | F: 201-748-6008 | [pgoldweb@wiley.com](mailto:pgoldweb@wiley.com)

---

**From:** Lynda Hulecki [mailto:[lhulecki@shaw.ca](mailto:lhulecki@shaw.ca)]  
**Sent:** Tuesday, January 05, 2010 1:10 PM  
**To:** Permissions - US  
**Subject:** FW: Permission Request Form Canada

Hello;

I am follow-up as advised by Permissions-CA to inquire about the status of my request (see below emails). As you will note, I am a doctoral student seeking permission to use the survey, model and methodology for assessing organizational culture as defined by Cameron and Quinn in their book Diagnosing and Changing Organizational Culture (2006) in my dissertation research and associated presentations and publications. I have contacted both authors and received their personal support for the use of their instrument and model. I have confirmed with them that I will ensure they and Wiley Publishers are afforded appropriate credit in my research and associated publications/presentations.

Please advise me of the status of my request and of any restrictions in the use of their published works.

Best regards for the New Year,  
 Lynda

Lynda Wallace-Hulecki, B.Sc, M.Ed.  
 Senior Consultant, SEM WORKS  
[lw Wallace-hulecki@semworks.net](mailto:lw Wallace-hulecki@semworks.net)

250-213-5119 (direct)  
 See website @ <http://www.semworks.net>

Principal, JL Research & Systems Design Ltd.  
[lhulecki@shaw.ca](mailto:lhulecki@shaw.ca)  
 Office: 250-704-0317/Fax: 250-704-0318

<hr size=2 width="100%" align=center tabindex=-1>

**From:** Permissions - CA [mailto:[permissionsca@wiley.com](mailto:permissionsca@wiley.com)]  
**Sent:** Friday, January 01, 2010 4:04 PM  
**To:** [lhulecki@shaw.ca](mailto:lhulecki@shaw.ca)  
**Subject:** RE: Permission Request Form Canada

Dear Ms. Wallace-Hulecki:

Thank you for your recent inquiry regarding permission. Rights to this publication are controlled by our U.S. office to whom we are forwarding your request.

~~PERMISSION GRANTED,~~  
 BY: \_\_\_\_\_  
 Global Rights Dept., John Wiley & Sons, Inc.

NOTE: No rights are granted to use content that appears in the work with credit to another source



To follow up on the status of this request please contact [permissionsus@wiley.com](mailto:permissionsus@wiley.com).

Kind regards,

Sara

---

Sara Tinteri  
 Editorial Assistant/Permissions Coordinator  
 John Wiley & Sons Canada Ltd.  
 Higher Education Division  
 T: 416-236-4433 ext. 56070  
 F: 416-236-4446  
[stinteri@wiley.com](mailto:stinteri@wiley.com)  
[permissionsca@wiley.com](mailto:permissionsca@wiley.com)

-----Original Message-----

From: [permissionsca@wiley.com](mailto:permissionsca@wiley.com) on ca.wiley.com [mailto:[webmaster@wiley.com](mailto:webmaster@wiley.com)]  
 Sent: Tuesday, December 01, 2009 11:56 PM  
 To: Permissions - CA  
 Subject: Permission Request Form Canada

A01\_First\_Name: Lynda  
 A02\_Last\_Name: Wallace-Hulecki  
 A03\_Company: Graduate Student  
 A04\_Address: 4657 Boulderwood Dr  
 A05\_City: Victoria  
 A06\_Province: BC  
 A07\_Zip: V8Y 2P8  
 A08\_Country: Canada  
 A09\_Phone: (250) 213-5119/ 704-0317  
 A10\_Fax: (250) 704-0318  
 A11\_Email: [lhulecki@shaw.ca](mailto:lhulecki@shaw.ca)  
 A12\_Reference\_Number:  
 A13\_Requestor\_Name:  
 A14\_Requestor\_Phone:  
 A15\_Requestor\_Fax:  
 A16\_Product\_Title: Diagnosing and Changing Organizational Culture  
 A17\_ISBN:  
 A18\_Author\_Name: Cameron and Quinn  
 A19\_Page\_Number: p. 26-29 survey  
 A20\_Number\_of\_Copies: TBD  
 A21\_Semesters:  
 A22\_Professor\_Name: Dr. Joekel  
 A23\_Course\_Name: doctoral dissertation research  
 A24\_Organization\_Name: University of Nebraska-Lincoln  
 A25\_Purpose\_Reproduction: use in doctoral dissertation  
 A26\_Title\_Your\_Work: Building Organizational Capacity for Enrollment Performance Measurement: A Mixed Methods Investigation  
 A26A\_Resale:

A27\_Print\_Run:  
A28\_Publication\_Date:  
A29\_World\_Rights:  
A30\_Medium:  
A31\_Password:  
32\_Users:  
A33\_Duration\_Posted\_Web:  
A34\_CD\_Print\_Run: ,

**B2B. Use of the ECAR Survey Questions  
Permission Granted by e-Mail**

**From:** Richard N. Katz [mailto:rkatz@educause.edu]  
**Sent:** Monday, November 30, 2009 2:40 PM  
**To:** Lynda Hulecki; Phil Goldstein  
**Cc:** Ron Yanosky  
**Subject:** RE: Permission to Access Research Questions for Dissertation

Lynda,

Hello. Best wishes on your work. The short answer is yes, you are herewith permitted to use the ECAR survey questions - all of which can be found in surveys on the ECAR site at [www.educause.edu/ecar](http://www.educause.edu/ecar). My only admonition (aside from acknowledging us, as you have already agreed to do) is that our use of these questions does not per se either pre-tested or valid. They have simply been used before. Assuming this standard of prior use is acceptable for your purposes, you are free to use any of our surveys that will help you.

You may wish to look also at our soon-to-be (next week) study of data management. This study - by Ron Yanosky - looked again at analytics - albeit only in one chapter. Ron's findings do not vary a great deal from the 2005 data from Phil Goldstein. This offers both a measure of validation - and also a discouraging note with regard to higher education's uptake of and outcomes with this important class of activities.

Again, many good wishes for your dissertation research.,

Sincerely,

Richard

**Richard N. Katz**  
*Vice President*  
<http://educause.edu>  
[rkatz@educause.edu](mailto:rkatz@educause.edu)  
(boulder) 1-303-939-0318  
(mobile) 1-303-882-8895  
4772 Walnut Street, Suite 206, Boulder, CO 80302

**B2C. Use the IOA Framework and Schematic Representation of the Model  
Permission Granted by e-Mail**

**From:** Charles Lusthaus [mailto:clusthaus@universalialia.com]  
**Sent:** Saturday, December 05, 2009 2:41 PM  
**To:** Lynda Hulecki  
**Subject:** RE: Dissertation Research Request for Permission

Lynda, I will give you permission to use it--Since I am the lead author and IDRC has placed it in the Public Domain.

Charles Lusthaus, Ph.D

**Universalialia Management Group**  
 5252 de Maisonneuve Blvd. W.  
 Suite 310, Montreal, Quebec  
 Canada H4A 3S5  
 Tel: 514.485.3565 x 203  
 Fax: 514.485-3210  
[www.universalialia.com](http://www.universalialia.com)  
[clusthaus@universalialia.com](mailto:clusthaus@universalialia.com)

---

**From:** Lynda Hulecki [mailto:lhulecki@shaw.ca]  
**Sent:** December 5, 2009 3:14 PM  
**To:** Charles Lusthaus  
**Subject:** Dissertation Research Request for Permission

Dr. Lufthaus.

I am writing to request your advice about how best to seek appropriate permission(s) to use the IOA framework in my dissertation research, as well as to include the schematic representation of the framework taken from p. 10 of the 2002 book, *Organizational Assessment: A Framework for Improving Performance*, and from p. 46 of the 1999 handbook, *Enhancing Organizational Performance: A Toolbox for Self-Assessment*.

Could you please advise me of what process I should apply through? I am presently refining my proposal (chapters 1-3) and will be forwarding a draft for your review by the new year of earlier. At that point, I will be seeking advice on the instrument.

Hope you are well and have had safe travels.

Best regards,

Lynda Wallace-Hulecki, B.Sc, M.Ed.

**B2D. Use of the OCAI Survey Instrument and CVF Model  
Permission Granted by e-Mail**

**From:** Quinn, Robert [mailto:requinn@bus.umich.edu]  
**Sent:** Monday, December 14, 2009 10:10 AM  
**To:** Lynda Hulecki  
**Subject:** RE: Permission for Dissertation

Permission is granted and best of luck with your work.

---

**From:** Lynda Hulecki [lhulecki@shaw.ca]  
**Sent:** Monday, December 14, 2009 11:09 AM  
**To:** requinn@umich.edu; kim\_cameron@umich.edu  
**Subject:** Permission for Dissertation

Dr. Quinn and Dr. Cameron;

By way of introduction, my name is Lynda Wallace-Hulecki. I am a seasoned higher education administrator in Canada who is working on my doctoral degree at the University of Nebraska-Lincoln. The topic of my research is on 'building organizational capacity for enrollment performance measurement.' One aspect of the research I intend to do involves the application of the OCAI survey to a purposeful sample of higher education institutions. I am seeking permission to reproduce the instrument in print and electronic forms for distribution at the institutions, as well as to include appropriate representations of the OCAI instrument and CVF interpretative model within my dissertation proposal and results. I wrote John Wiley and Sons as the copyrighters of the book, *Diagnosing and Changing Organizational Culture*, to seek appropriate permission, but have not received a response in some time. I also wrote to Dr. Quinn previously, but am unsure I used the correct email address. I would appreciate advice on how to obtain appropriate permissions.

If you would be willing to chat with me or advise me on the process via return email, I would be most appreciative.

Best regards,

Lynda

**Lynda Wallace-Hulecki, B.Sc, M.Ed.**

**Appendix C.**  
**Consent from Presidents**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

[**Name of institution**] has been identified as one of only a very few institutions across North America reputed as a leading-edge college in the development of an advanced enrollment performance measurement system. In fact, a panel of experts comprised of internationally recognized professionals in the field of Strategic Enrollment Management and in the application of enrollment performance analytics identified your institution as a potential host site for this best practices study. I am writing to invite your participation in this study.

The purpose of the study is to identify the organizational capacity conditions and culture value orientations that existed at the time of the initial stages in the development of an advanced enrollment performance measurement system at ‘leading-edge’ public North American colleges from the perspectives of the primary systems developers, enrollment managers, and institutional users. An anticipated outcome of this study is the development of a set of best practice guidelines for conducting a self-assessment of an organization’s capacity for developing an advanced enrollment performance measurement system. This study is being conducted by Lynda Wallace-Hulecki, a doctoral student in the Department of Educational Administration at the University of Nebraska-Lincoln (UNL) in partial fulfillment of her Doctoral degree.

*What does participation in this study involve?* By consenting to participate in this research, you will be agreeing to the following:

- To nominate at least **ten institutional representatives** for inclusion in an web-based survey. The nominated individuals should include individuals who were significantly involved in the initial development of the enrollment performance measurement system, and who represent three constituent groups: the primary systems developers, enrollment managers, and institutional users. Nominated individuals will be invited on a ‘voluntary’ basis to complete a structured survey that will be administered in two parts and require about 50-minutes of their time in total.

- To potentially serve as a **host institution** for a case study involving 90-minute interviews with select survey respondents. A host institution will be selected on the basis of the results from the survey research.

The identity of participating institutions and individuals will *not* be revealed in the final research report. The use of identifier codes in the survey and the collection of participant information in the interview process will be solely for data analysis purposes; and will not be connected to an individual or to an institution in the reporting or presentation of the research results. Therefore, there are no known risks for participating in this research. A copy of the summary findings will be forwarded to you following approval of the dissertation research by the University of Nebraska [**expected date**]. Research results will be presented to the UNL graduate supervisors, and the supervisory review committee. Research results may also form the basis of conference presentations, published articles, or professional workshops/seminars at some future point in time.

This study has been approved by the Institutional Review Board (IRB) at UNL and has been designed to comply with ethical research standards. Your signature below indicates that you agree to the conditions of participation in this study as outlined in this letter. **If prior IRB approval is required at your institution for participation in the ‘survey’ component of this research, please contact me at the number below with details of the information required for their review. It is requested that required IRB approval be confirmed within a timeframe of no more than one month in order to ensure participation in this study.**

The graduate supervisor overseeing this research project is Dr. Ron Joekel in the Department of Educational Administration at the University of Nebraska-Lincoln. For more information on this research project, please contact either the Principal Investigator (refer to contact information below), or Dr. Ron Joekel at (402) 472-0971 or by e-mail at [rjoekel2@unl.edu](mailto:rjoekel2@unl.edu). You may also contact the Institutional Review Board (IRB) at the University of Nebraska-Lincoln if you have any concerns or questions about your rights or treatment as a participant in this research at (402) 472-6965. Please refer to IRB#20100210571 EX when contacting the IRB office.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Please sign and date this document in the space provided below in order to signify your acceptance of the terms of the study described above.**

---

*Name of President*

*Signature*

*Date*

**Nominated Institutional Representatives:** At least **ten** institutional representatives who were significantly involved in the initial development of the enrollment performance measurement system, and who represent three constituent groups: the primary systems developers, enrollment managers, and institutional users.

Name of Representative by Constituent Group* <i>See definitions below</i>	Position Title	Email Address	Phone Number
<b>System developers</b>			
1.			
2.			
3.			
4.			
<b>Enrollment managers</b>			
5.			
6.			
7.			
8.			
<b>Institutional users</b>			
9.			
10.			
11.			
12.			

*Definitions:*

- a. **North American College** –includes medium-sized colleges and universities with an enrollment between 2,000 and 30,000 students.



- b. **System developers** - individuals who occupied professional information technology related positions within a central systems group, institutional research, or an administrative operations /school-based department.
- c. **Enrollment managers** - individuals who occupied professional roles in enrollment management or student affairs administration within a central or school-based operation (e.g., recruitment, admissions, marketing, registrar, financial aid, bursar, academic advising, and related student services functions often associated with enrollment management organizational structures).
- d. **Institutional users** – individuals who were employees of the institution and were an intended primary user of the enrollment performance measurement system from outside of an enrollment/student affairs operation (e.g., Executive leaders, faculty, deans, academic chairs, administrative staff and officers from HR, finance, facilities, fund-raising/advancement, etc.).

*Note:* Individuals who may have left the institution since the system was implemented will be considered for inclusion in the study.

**Fax your signed statement to: (250) 704-0318.** Retain a copy of this consent letter for your records. A copy will also be retained by the researcher.

**Appendix D.**  
**Follow-up Telephone Script to the Presidents**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

Date of Contact(s): \_\_\_\_\_

Hello \_\_\_\_\_ (participant's name);

My name is Lynda Wallace-Hulecki. I am calling in follow-up to a letter sent earlier this week inviting your institution's participation in a best practices study as a leading-edge institution in the development of an advanced enrollment performance measurement system. [**Name of institution**] has been identified as one of only a very few institutions across North America reputed as a leading-edge college in this regard. The purpose of my telephone call is to answer any questions or concerns you may have regarding the purpose of the study and your institution's participation.

As indicated in the letter, a panel of experts comprised of internationally recognized professionals in the field of Strategic Enrollment Management and in the application of enrollment performance analytics identified your institution as a best practice institution. The purpose of the study is to identify the organizational capacity conditions and culture value orientations that existed at the time of the initial stages in the development of an advanced enrollment performance measurement system at 'leading-edge' public North American colleges from the perspectives of the primary systems developers, enrollment managers, and institutional users. An anticipated outcome of this study is the development of a set of best practice guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system. This study is being conducted in partial fulfillment of my Doctoral degree in Educational Leadership at the University of Nebraska-Lincoln (UNL).

Are you willing to have your institution participate in the study?

- **IF YES-** Do you have any questions or concerns regarding the study or your participation?

- ***IF YES***- Is this a convenient time to take 5 minutes to describe the study and the nature of your involvement in the process?
- ***If No***- what would be a more convenient time?

Rescheduled Time \_\_\_\_\_, Date \_\_\_\_\_, Preferred Contact  
Number \_\_\_\_\_

- ***IF NO***- It would be appreciated if you would share your reasons.

Thank you for your consideration of this invitation.

**Appendix E.**  
**Introductory email to Survey Participants**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

[Name of institution] has been identified as one of only a very few institutions across North America reputed as a leading-edge college in the development and implementation of an advanced enrollment performance measurement system. Your President, [name], has agreed to have the institution participate in this study. You have been nominated to be a participant in the research because of the role you served in the initial stages in the development of the system. Your participation will involve the completion of a web-based survey and possible participation in a follow-up in-person or telephone interview (if warranted), both which are described in more detail below.

This study is being conducted by Lynda Wallace-Hulecki, a doctoral student in the Department of Educational Administration at the University of Nebraska-Lincoln (UNL) in partial fulfillment of her Doctoral degree. The purpose of the study is to identify the organizational capacity conditions and culture value orientations that existed at the time of the initial stages in the development of an advanced enrollment performance measurement system at 'leading-edge' public North American colleges from the perspectives of the primary systems developers, enrollment managers, and institutional users. An anticipated outcome of this study is the development of a set of best practice guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system.

Given your involvement in the initial stages in the development of the system you understand the complex factors involved in introducing a major change initiative, engaging campus constituents in adopting change, building campus-wide collaboration and coordination in the process, and in creating the conditions for shared responsibility in its deployment. Therefore, your insights and perspectives are invaluable to this study, the outcomes of which will be to create a set of best practice guidelines that will set a standard for other institutions to follow.

The web-based survey will be administered in two parts. The following link will take you to the first part of the survey which should take about 15 minutes to complete

**[Insert survey *link*]**. Following completion of this part of the survey, a second survey will be administered within one or two days, and consist of two additional sections that should take about 35 minutes to complete in total. Please plan to complete this component of the survey when you have a space of time in your day.

Following submission of the completed survey, you *may* be contacted by me in order to arrange a follow-up 90-minute in-person or telephone interview as part of a case study at one or more select institutions. The purpose of the interview will be to discuss your survey answers in more depth in order to develop a more in-depth understanding of your institutional experience in the systems development initiative. Interviews will be scheduled at a date and time of mutual convenience. The interviews will be audio-taped and field notes will be taken during the interview process. You will have the opportunity to review the interview transcripts for purposes of clarifying the accuracy of the information provided. Audio-tapes will be erased upon verification of the accuracy of information provided. The survey data collected in this research project will be secured at the researcher's home, and will only be reported in aggregate.

Your participation in this study is voluntary. Please note that the identity of participants involved in this study as well as the institutions with which they are (have been) affiliated will not be revealed in the final research report. Therefore, your survey and interview responses will be confidential, as no identifying information about you will be connected with your responses. The use of identifier codes in the survey and in the collection of participant information in the interview process will be solely for data analysis purposes; and will not be connected to an individual or to an institution in the reporting or presentation of the research results. Should you feel unsure in answering some of the survey questions, please respond to the best of your ability and recall of the situation at the time of the initial stages of the system development. You may end the survey at any time without consequence or explanation, and without harming your relationship with the researchers, the University of Nebraska-Lincoln, or your institution. If you choose to withdraw, you will be given the option of having the information you provided to that point in time excluded from the analysis. Therefore, there are no known risks for participating in this research.

Your participation is essential to the inclusion of your institution in this study. Your participation is also important to reflect as accurately as possible the experiences of your institution in a ‘leading-edge’ initiative that sets the stage for others to follow.

Please submit your completed two-part survey by **[date]**. The graduate supervisor overseeing this research project is Dr. Ron Joekel in the Department of Educational Administration at the University of Nebraska-Lincoln. For more information on this research project, please contact either me directly (refer to contact information below), or Dr. Ron Joekel at (402) 472-0971 or by e-mail at [rjoekel2@unl.edu](mailto:rjoekel2@unl.edu). You may also contact the Institutional Review Board (IRB) at the University of Nebraska-Lincoln if you have any concerns or questions about your rights or treatment as a participant in this research at (402) 472-6965. Please refer to IRB#20100210571 EX when contacting the IRB office.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119/ [lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix F.**  
**Follow-up email to Survey Participants**

Date: \_\_\_\_\_

Subject: **Building Organizational Capacity for Enrollment Performance**

**Measurement: A Mixed Methods Investigation**

Dear \_\_\_\_\_ (participant);

I am writing in follow-up to the email you received on \_\_\_\_\_ inviting your participation in a best practices study of leading-edge colleges in the development and deployment of an advanced enrollment performance measurement system. Your institution has been identified as one of only a very few institutions across North America of exemplary practice in the area, and your President, [**name**], has agreed to have the institution participate in this study. You are one of only a select few nominated institutional representatives for inclusion in this study based upon your involvement in the initial system development process. Several of your colleagues have already completed the survey. Your participation is essential to the inclusion of your institution in this study, as well as to reflect as accurately as possible the experiences of your institution in a 'leading-edge' initiative that sets the stage for others to follow.

The first part of the web-based survey will take about **15 minutes** of your time to complete, and the second part which will be administered thereafter will take about **35 minutes**. Please plan to complete the second part when you have a space of time in your day. For your convenience, the following link will take you directly to the first part of the survey. [**Insert web link**].

Please feel free to contact me directly should you have any questions regarding the survey or research process. Thank you for your willingness to participate in this study.

Sincerely;

Lynda Wallace-Hulecki

Principal Investigator

University of Nebraska-Lincoln

(250) 213-5119

[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix G.**  
**Final Telephone Follow-up With Survey Participants- Telephone Script**

Date: \_\_\_\_\_

Subject: **Building Organizational Capacity for Enrollment Performance**  
**Measurement: A Mixed Methods Investigation**

Dear \_\_\_\_\_ (participant);

I am calling in follow-up to two previous communications inviting your participation in a best practices study of leading-edge colleges in the development and deployment of an advanced enrollment performance measurement system. Your participation is essential to the inclusion of your institution in this study, as well as to reflect as accurately as possible the experiences of your institution in a ‘leading-edge’ initiative that sets the stage for others to follow. Do you require more time to complete the survey, or more information on the research project in order to make an informed decision about participating?

If *Yes* – confirm additional timeframe or provide clarifications required.

If *No* – request clarification of reasons for choosing not to participate, and confirm that there will be no consequence associated with their decision.

Thank you for your willingness to participate [**consider participation**] in this study.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)



**Appendix H**  
**H. 1 Status Report for Presidents**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

Dear President -----;

I am writing to thank you for your participation to date in the above-named study, and to provide you with an interim status report on progress to date.

A few months ago, you agreed to an invitation for -----to participate in a study of best practices in the development of advanced enrollment performance measurement systems. As you may recall, the study involves a two-stage research process. In stage one, two on-line surveys were administered to nominated institutional representatives. Results from the surveys will inform the selection of one (or more) institution(s) for participation in stage two of the study, involving an in-depth case study.

The first component of the research has now concluded. Within the next few weeks, you will be notified by me whether -----has been identified as a preferred host site for participation in stage two of the research. By copy of this email, I would like to extend my personal appreciation to-----, who served as the institutional contact person and facilitated the logistics of the survey administration process.

Thank you once again for your continued support of this research.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix H.2**  
**Consent by the President to Host Case Study**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

I am writing to advise you that [**Name of institution**] has been identified as the preferred case study host institution in the best practices study on leading-edge North American colleges in the development of advanced enrollment performance measurement systems. The results stemming from the survey research in which your institution participated suggested that your institution would provide the greatest depth of understanding of how the predominant factors derived from the survey research contributed to or impeded the success of your institution in the initial development of the advanced enrollment performance measurement system.

This process will involve a possible site visit by me for purposes of conducting 90-minute in-person interviews with select institutional representatives who participated in the survey. Alternatively, the interviews will be conducted via telephone. The identity of your institution and individuals will *not* be revealed in the final research report. A copy of the summary findings will be forwarded to you following approval of my dissertation research by the University of Nebraska [**expected date**]. Research results will be presented to the UNL graduate supervisor, and the supervisory review committee. The research results may form the basis of conference presentations, published articles, or professional workshops/seminars at some future point in time.

Please confirm your willingness to serve as the host institution for the case study by signing and dating this document below. **If you require prior approval of the Institutional Review Board (IRB) at your institution, please contact me at the number below with details of the information required for their review. It is requested that required IRB approval be confirmed within a timeframe of no more than one month in order to ensure participation in this study.**

**Please sign and date this document in the space provided below in order to signify your acceptance of the terms of the study described above.**

---

*Name of President*

*Signature*

*Date*

**Please Fax your signed statement to: (250) 704-0318.** Retain a copy of this consent letter for your records. A copy will also be retained by the researcher.

Sincerely;

Lynda Wallace-Hulecki

Principal Investigator

University of Nebraska-Lincoln

(250) 213-5119

[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix H.3**  
**Communication to Institutions Not Selected as Host Institutions**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

Dear President [**name**];

Further to my email below, I am writing to advise you that based upon the survey results from Phase I of the study in which your institution was a participant, [**Institution**] has *not* been identified as a potential host site for participation in Phase II of the research. However, the information provided by representatives from your institution in the Phase I quantitative surveys has provided valuable insights on the culture and capacity conditions associated with the development of advanced enrollment performance measurement systems at exemplary institutions and will be included in the final study results. Each institution participating in this research will receive a copy of the summary findings following approval of the dissertation research by the University of Nebraska [expected date: December 2010].

Thank you once again for your participation in this study.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix I.**  
**Interview Participant Consent**  
**(e-mail Invitation and Interview Participant Letter of Consent)**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

I am writing to advise you that **[institution]** has been identified as one of two preferred case study host institutions in the best practices study on leading-edge North American colleges in the development of advanced enrollment performance measurement systems. The President of your institution, **[name]**, has agreed to have your institution serve as the host site for the case study. As a participant in the initial web-based survey, you are being invited to be a participant in the follow-up interview process. If you agree to voluntarily participate in this research, your participation will involve a 90-minute telephone interview with the principal researcher, Lynda Wallace-Hulecki. More details regarding the interview process is provided in the attached Letter of Consent. If you require further information about the research or your participation in the study, please contact the Principal Researcher, Lynda Wallace-Hulecki, using the contact information below.

To confirm your agreement to the conditions of participation, please sign and date the Letter of Consent and return it to **[contact person information]** who will forward your signed consent to the Principal Investigator and coordinate the scheduling of the interview with you.

You will subsequently receive an electronic invitation to attend a **WebEx** meeting under the banner of **[xxx]**. WebEx is an online web-based service that provides a platform on which we can hold a meeting on the phone while you can view my desktop computer. In this way, you will be able to view a few Power Point slides that will assist in focusing our discussion on the survey findings. **[xxx]** is a company that is allowing me to use their WebEx account for my graduate research, and is not material to the interview process. At the appointed time of our scheduled meeting, please just click on the computer link that is presented in the email. You will be asked for your name and ID which is also contained in the email. Once you login, use a LAND LINE telephone (preferably not a cell phone) to call the number that is presented and follow the prompts. You will then be connected to my system where I can facilitate the meeting.

Thank you for your continued support of this research.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)



**Interview Participant Letter of Consent**  
**Building Organizational Capacity for Enrollment Performance Measurement:**  
**A Mixed Methods Investigation**

Thank you for agreeing to participate in the interview process for the above-named study. As explained during our recent telephone discussion, [**name of institution**] has been selected as a case study site for a more in-depth investigation of the results from an earlier web-based survey in which you were a participant. The President of your institution [**insert name**] has agreed to have your institution serve as the host site for the case study. As a participant in the initial web-based survey, you are being invited to be a participant in the follow-up interview process. If you agree to voluntarily participate in this research, your participation will involve an interview with the principal researcher, Lynda Wallace-Hulecki via telephone.

As you may recall from prior correspondence, this study is being conducted by Lynda Wallace-Hulecki, a doctoral student in the Department of Educational Administration at the University of Nebraska-Lincoln (UNL) in partial fulfillment of her Doctoral degree. The purpose of the study is to identify the organizational capacity conditions and culture value orientations that existed at the time of the initial stages in the development of an advanced enrollment performance measurement system at 'leading-edge' public North American colleges from the perspectives of the primary systems developers, enrollment managers, and institutional users. An anticipated outcome of this study is the development of a set of best practice guidelines for conducting a self-assessment of an organization's capacity for developing an advanced enrollment performance measurement system.

The focus of the interview process is to discuss your survey answers in more depth in order to develop an understanding of how the predominant factors derived from the survey research contributed to or impeded the success of your institution in the initial development of the advanced enrollment performance measurement system. Your

participation in the interview process is essential to reflect as accurately as possible the experiences of key constituents in a 'leading-edge' initiative that sets the stage for others to follow.

The interview will require about 90-minutes of your time. The interview will be audio-taped and field notes will be taken during the interview process. You will have the opportunity to review the interview transcripts for purposes of clarifying the accuracy of the information provided. Audio-tapes will be erased upon verification of the accuracy of information provided. You may end the interview at any time without consequence or explanation, and without harming your relationship with the researchers, the University of Nebraska-Lincoln, or your institution. If you choose to withdraw, you will be given the option of having the information you provided to that point in time excluded from the analysis. Therefore, there are no known risks for participating in this research.

The information collected in this research will be secured at the researcher's home. Audio-tapes will be erased upon verification of transcripts. Detailed transcripts will be destroyed once the research paper has been accepted by the Department of Graduate Studies at the University of Nebraska-Lincoln. The collection of participant information in the interview process will be solely for data analysis purposes, and will not be connected to an individual or to an institution in the reporting or presentation of the research results. Therefore, the identity of your institution and you as a participant will *not* be revealed in the final research report. Summary results from the study will be made available to your institution as well as the other participating institutions in the survey research, and may form the basis of conference presentations, published articles, or professional workshops/seminars at some future point in time.

This study has been approved by the Institutional Review board at the University of Nebraska-Lincoln and has been designed to comply with ethical research standards. Your signature below indicates that you agree to the conditions of participation in this study as outlined in this letter.

For more information on this research project, please contact either the Principal Investigator directly (refer to contact information below), or Dr. Ron Joekel at (402) 472-0971 or by e-mail at [rjoekel2@unl.edu](mailto:rjoekel2@unl.edu). You may also contact the Institutional Review



Board at the University of Nebraska-Lincoln if you have any concerns or questions about your rights or treatment as a participant in this research at (402) 472-6965.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Please sign and date this document in the space provided below in order to signify your acceptance of the terms of the study described above, including the audio-taping of the interview.**

---

*Name of Participant*

---

*Signature*

---

*Date*

**Please return your signed statement to: [name]** who has agreed to coordinate the logistical arrangements related to the scheduling of the interviews with your institution. Retain a copy of this consent letter for your records. A copy will also be retained by the researcher.

**Appendix J.**  
**Interview Questions and Protocols**

Date and Time: \_\_\_\_\_

Participants: \_\_\_\_\_

Interview Participant: \_\_\_\_\_

Thank you for agreeing to meet with me today for this interview. The interview will take no more than the 90-minutes scheduled. The purpose of this interview was outlined in prior communications when your agreement for participation in this process was sought. In brief, **institution** has been selected as the preferred case study host institution in the best practices study on leading-edge North American institutions in the development of advanced enrollment performance measurement systems. You have been selected for participation in this interview process because of your involvement in the initial stages of the development of the system. The perspectives you share with me today are vital to developing an in-depth understanding of understanding of how the predominant factors derived from the survey research contributed to or impeded the success of your institution in the initial development of the advanced enrollment performance measurement system.

In order to ensure that I understand the information you share with me today, I will be audio-taping the interviews for future transcription. Within two weeks of the interview, I will e-mail you a copy of the transcript for your review and confirmation of its accuracy by return e-mail.

The information you share will be combined with information gleaned from interviews with other campus constituents. A summary report of the results from this research will be forwarded to the president of your institution as well as other institutions that participated in the research following approval of the dissertation research by the University of Nebraska [**December 2010**].

Do you have any questions for me before we get started?

## Questions Related to Culture Value Differences

### *Preamble:*

Results from the culture survey indicated that at the time of the initial systems development, the REAL culture varied across participating institutions in relation to the emphases placed on four competing values associated with a Competitive, Collaborative, Creative, and Controlling cultures, as well as in relation to whether there was a dominant culture among these four. However, all participating institutions indicated that the IDEAL culture would have been a dominant COLLABORATIVE culture, described as a culture that values people who are “committed,” “engaged,” “willing to change,” “collaborative,” “empowered decision-makers,” “open communicators.” While some degree of balance among all four types of cultures are valuable, your institution along with one other institution showed “very unbalanced” ‘real’ culture at the time of the initial systems development, as follows. **Interviewer to describe the nature of institutional Visual Culture Map specific to the institution as a point of reference**

### *FSC Culture Profile*

- Competing cultural types of COLLABORATIVE AND COMPETITIVE
- No dominant culture
- Desire to shift significantly to more of an “internal” focus
- Desire to remain COLLABORATIVE but to be MUCH LESS COMPETITIVE, MORE CREATIVE, and MUCH MORE CONTROLLED

### *VU Culture Profile*

- a. A dominant culture of COLLABORATIVE (the ideal) but to an extreme, whereby there was a diminution of the other values (CONTROL, CREATE, COMPETE)
- b. Desire to be MORE COMPETITIVE, MORE CREATIVE, LESS CONTROLLED, and SOMEWHAT LESS COLLABORATIVE
- c. An “internal” focus, with a desire to shift to a more “external” focus

**INTERVIEW QUESTIONS**  
**FABULOUS SMALL COLLEGE (FSC) AND**  
**VISIONARY UNIVERSITY (VU)**

Primary Research Questions	FSC Interview Questions	VU Interview Questions
<p>5. What factors contributed to the "very unbalanced" 'real' culture at each of the two case study institutions at the time of the initial systems development?</p>	<p>3. What were the factors that contributed to the <i>Collaborative</i> culture?</p> <p>a. Which factor was <i>most</i> important to the success of the initiative? Provide examples.</p> <p>b. Which factor was <i>least</i> important to the success of the initiative? Provide examples.</p> <p>1.2. What were the factors that contributed to the <i>Competitive</i> culture?</p> <p>1.1 Which factor was <i>most</i> important to the success of the initiative? Provide examples.</p> <p>1.1 Which factor was <i>least</i> important to the success of the initiative? Provide examples.</p> <ul style="list-style-type: none"> <li>• In what ways did culture value differences among key stakeholders <i>positively</i> and <i>negatively</i> impact the success of the initiative?</li> </ul> <p>a. What strategies needed to be employed to mitigate the negative impacts (if any)?</p>	<ul style="list-style-type: none"> <li>• What were the factors that contributed to the <i>Collaborative</i> culture?</li> </ul> <p>2. Which factor was <i>most</i> important to the success of the initiative? Provide examples.</p> <p>3. Which factor was <i>least</i> important to the success of the initiative? Provide examples.</p> <p>1.2 What were the factors that contributed to a <i>Competitive</i> culture?</p> <p>a. Which factor was <i>most</i> important to the success of the initiative? Provide examples.</p> <p>b. Which factor was <i>least</i> important to the success of the initiative? Provide examples.</p> <p>1.3 In what ways did culture value differences among key stakeholders <i>positively</i> and <i>negatively</i> impact the success of the initiative?</p> <p>1.1 What strategies needed to be employed to mitigate the negative impacts (if any)?</p>
<p>1. What strategies needed to be employed in order to address the gap between the <i>real</i> and <i>ideal</i> culture profiles?</p>	<p>a. What three strategies would you recommend to change the culture to be <i>less competitive, more creative and more controlled</i>?</p>	<p>a. What three strategies would you recommend to change the culture to be <i>more competitive, more creative, and less controlled</i>?</p>

Primary Research Questions	FSC Interview Questions	VU Interview Questions

### Questions Related to Capacity Conditions

#### *Preamble:*

Results from the capacity survey indicated that there was considerable consistency among four of the five participating institutions in which capacity conditions were most and least important to the success of the systems development initiative. **FSC was an outlier in its rating of many of these conditions, whereas VU was more typical. Provide tables specific to the institution to show which areas and associated statements of capacity conditions were rated highest and lowest in importance.**

### Capacity Conditions of Highest Contribution to the Success of the Initiative

Primary Research Questions	FSC Interview Questions	VU Interview Questions
2. What factors contributed to the differences in capacity conditions that were rated as the two <i>most important</i> to the success of the initiative at each of the two case study institutions?	<p>2.1 What factors contributed to why “<i>Infrastructure</i>” was rated among the top two most important conditions?</p> <p><i>Potential Probing Questions</i></p> <p>3.1 What “data and/or systems technology institutional risks” needed to be mitigated? (item 5.2)</p> <p>3.2 In what ways were “external consultants used to augment the skills of internal staff”? (item 5.11)</p> <p>2.2 What factors contributed to why “<i>Program Management</i>” was rated among the top two most important conditions?</p> <p><i>Potential Probing Questions</i></p> <p>2 How was commitment demonstrated by enrollment/student services managers to “use” and “share” enrollment data to improve enrollment performance</p>	<p>1.1 What factors contributed to why “<i>Strategic Leadership</i>” was rated among the top two most important conditions?</p> <p><i>Potential Probing Questions</i></p> <p>a. What strategies were most impactful in demonstrating the commitment of executive leadership to the initiative?</p> <p>1.2 What factors contributed to why “<i>Organizational Structure &amp; Governance</i>” was rated among the top two most important conditions?</p> <p><i>Potential Probing Questions</i></p> <p>3. What strategies were used to foster cross-functional communication and collaboration? What were the strengths and weaknesses?</p> <p>4. What strategies were used to</p>

Primary Research Questions	FSC Interview Questions	VU Interview Questions
	<p>management? (items 6.2 and 6.3)</p> <p>3.1. What factors contributed most to why “<i>Strategic Leadership</i>” was rated of relative lower importance?</p> <p><i>Potential Probing Questions</i></p> <p>a. Given that the importance of “enrollment to the academic wellbeing of the institution was articulated in the institution’s strategic plans,” why were the roles of the following senior leaders (executives, enrollment manager, academic leaders) rated of relatively lower importance? (items 1.6, 2.1, 2.4)</p> <p>3.2. What factors contributed most to why “<i>Organizational Structure &amp; Governance</i>” was rated of relative lower importance?</p>	<p>encourage commitment of key stakeholders (e.g., data owners, academic leaders)?</p> <p>1.3 What factors contributed most to why “<i>Infrastructure</i>” was rated of relative lower importance?</p> <p>1.4 What factors contributed most to why “<i>Program Management</i>” was rated of relative lower importance?</p>

### Capacity Conditions of Lowest Contribution to the Success of the Initiative

#### *Preamble:*

Results from the capacity survey indicated that the two capacity areas of *Human Resources* and *Finance* were consistently identified by all five participating institutions as the lowest rated capacity conditions of importance to the success of the initiative. FSC was the only institution to identify *Inter-organizational Linkages* as among the lowest importance areas as well as the aforementioned two; whereas all other institutions rated *Inter-organizational Linkages* as third or fourth highest in importance.

Primary Research Questions	FSC Interview Questions	VU Interview Questions
3. What factors contributed to the differences in	a. What factors contributed most to why “ <i>Human Resources</i> ” was rated among the two least	1.1 What factors contributed most to why “ <i>Human Resources</i> ” was rated among the two least

Primary Research Questions	FSC Interview Questions	VU Interview Questions
<p>capacity conditions that were rated as the two <i>least important</i> to the success of the initiative at each of the two case study institutions?</p> <p>(Consider cultural factors here)</p>	<p>important capacity conditions?</p> <p><i>Potential Probing Questions</i></p> <p>4. What factors contributed to why training of staff and managers was rated of relatively <i>low</i> importance?</p> <p>5. What factors contributed to why staff accountability for data integrity was rated of relatively <i>low</i> importance?</p> <p>b. What factors contributed most to why “<i>Financial Management</i>” was rated among the two least important capacity conditions?</p> <p><i>Potential Probing Questions</i></p> <p>a. What factors contributed to why the empowerment of academic deans to make enrollment decisions was rated of relatively <i>low</i> importance?</p> <p>c. What factors contributed most to why “<i>Inter-organizational Linkages</i>” was rated among the two <i>least important</i> capacity conditions?</p>	<p>important capacity conditions?</p> <p><i>Potential Probing Questions</i></p> <p>4. What factors contributed to why training of staff and managers was rated of relatively <i>high</i> importance?</p> <p>5. What factors contributed to why staff accountability for data integrity was rated of relatively <i>high</i> importance?</p> <p>1.2 What factors contributed most to why “<i>Financial Management</i>” was rated among the two least important capacity conditions?</p> <p><i>Potential Probing Questions</i></p> <p>a. What factors contributed to why the empowerment of academic deans to make enrollment decisions was rated of relatively <i>high</i> importance?</p> <p>1.3 What factors contributed most to why “<i>Inter-organizational Linkages</i>” was rated as a relatively <i>high important</i> capacity condition?</p>

### General Questions

Primary Research Questions	FSC Interview Questions	VU Interview Questions
<p>4. What were the greatest risks to the success of the initiative?</p>	<p>5.1 What three risks presented the greatest challenges to the success of the initiative?</p> <p>5.2 What strategies needed to be employed to mitigate the risks?</p>	<p>5.1 What three risks presented the greatest challenges to the success of the initiative?</p> <p>5.2 What strategies needed to be employed to mitigate the risks?</p>
<p>5. In what ways did the differences in drivers for the system</p>	<p>6.1 In what ways did the focus on <i>efficiency and effectiveness</i> as a driver to the system development contribute most and least to the</p>	<p>6.1 In what ways did the focus on <i>enrollment and student success</i> as a driver to the systems development contribute most and</p>

Primary Research Questions	FSC Interview Questions	VU Interview Questions
development impact the success of the initiative?	success of the initiate?	least to the success of the initiate?
6. What lessons were learned that would be recommended to others before they embark on the development of an advanced performance measurement system?	7.1 What lessons were learned from your experiences with this initiative?  7.2 Based upon what you learned, what three recommendations would you offer others before they embark on the development of an advanced performance measurement system?	7.1 What lessons were learned from your experiences with this initiative?  7.2 Based upon what you learned, what three recommendations would you offer others before they embark on the development of an advanced performance measurement system?
7. How was success defined for the systems development initiative?	8.1 What outcomes measures defined success of the systems development initiative?  8.2 From your perspective, what was the single most important impact the enrollment performance measurement system has had on enrollment performance management to date?	8.1 What outcomes measures defined success of the systems development initiative?  8.2 From your perspective, what was the single most important impact the enrollment performance measurement system has had on enrollment performance management to date?
8. Information about the participant	9.1 What was your involvement in the initial stages of the development and implementation of the enrollment performance measurement system?  <i>Potential Probing Questions</i> 1. What <b>internal versus external environmental forces</b> served as a catalyst for change?  9.2 What was your greatest contribution to the initiative?	9.1 What was your involvement in the initial stages of the development and implementation of the enrollment performance measurement system?  <i>Potential Probing Questions</i> 2. What <b>internal versus external environmental forces</b> served as a catalyst for change?  9.2 What was your greatest contribution to the initiative?

That concludes the formal questions I have of you. Is there other information you believe is important to be considered in this review? (If, yes, please explain). Do you have any other questions of me?



Please feel free to contact me directly if you have other information you wish to share with me outside of this meeting. Should I have further questions of you, may I call you directly to ensure I have accurately captured the information you shared?

Again, thank you very much for being part of this review process.

**Appendix K.**  
**e-Mail Confirmation of Interview Transcript**

Date: \_\_\_\_\_

Subject: **Building Organizational Capacity for Enrollment Performance  
Measurement: A Mixed Methods Investigation**

Dear \_\_\_\_\_(participant);

I am writing in follow-up to the audio-taped telephone interview conducted on \_\_\_\_\_(date) as part of the above-named research project. As you will recall, each interview participant is being invited to confirm the accuracy of the information transcribed from the interview process. Attached to this e-mail is a copy of the transcript from your interview.

Please review and confirm the accuracy of the attached transcript by return e-mail. I would appreciate receiving your feedback by \_\_\_\_\_(**date**). For ease of reference, it would be appreciated if you would highlight any changes made to the attached transcript in **bold**.

Please do not hesitate to contact me should you have any questions or concerns with the information presented. Thank you for your time and attention to this request.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix L.  
Final Communication to President**

**Building Organizational Capacity for Enrollment Performance Measurement:  
A Mixed Methods Investigation**

[**Name of President**] I am writing to thank you for your participation in this study, and to advise you that I have concluded my research involving the nominated representatives from your institution.

Given the nature of the responses, the criteria for inclusion of your institution in the final study results have been met [**not met**]. Each institution participating in this research will receive a summary of the research results. A copy of the summary findings will be forwarded to you following approval of my dissertation research by the University of Nebraska [**expected date**].

Thank you once again for your participation in this study.

Sincerely;

Lynda Wallace-Hulecki  
Principal Investigator  
University of Nebraska-Lincoln  
(250) 213-5119  
[lhulecki@huskers.unl.edu](mailto:lhulecki@huskers.unl.edu)

**Appendix M.****Confidentiality Agreement  
Points West Transcription Services****BETWEEN:**

Shelley Forrest  
Principal  
Points West Transcription Services

**AND:** Lynda Wallace-Hulecki

I hereby agree that I and all of my staff will maintain strict confidentiality with respect to all information and all matters pertaining to any transcription we do for you.

We are familiar with and will honour the relevant provisions of the *Personal Information Protection Act*.

Once the project has been completed and you have verified that you have received all of our transcripts, we will delete all digital audio files that you have provided to us and will delete any electronic and/or paper documents that have we have produced for the purposes of transcribing this project.

Dated in Vancouver this 9th day of September 2010.

Shelley Forrest<sup>✓</sup>  
Principal  
Points West Transcription Services

**Appendix N.**  
**Institution Specific CVF Culture Visual ‘Radar’ Maps**

**Based upon the Competing Values Framework (Cameron and Quinn, 2006)**

A visual depiction of the ‘real’ and ‘ideal’ organizational culture profiles (i.e., culture type, degree of balance, and differences between the ‘real’ and ‘ideal’ culture) for each of the five participating institutions is presented below.

*Figure A.1 Fabulous Small College (FSC) Visual Culture Map*

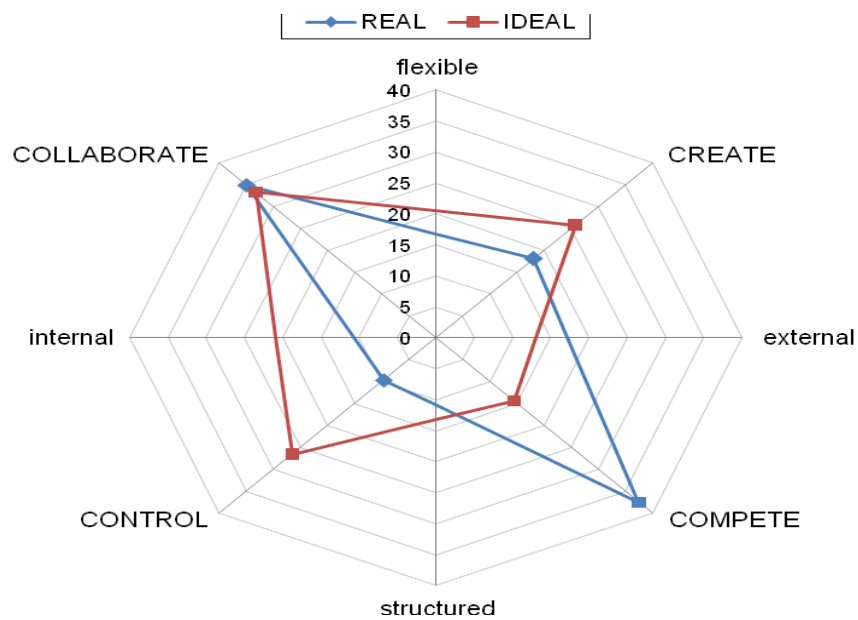


Figure A.2 Visionary University (VU) Visual Culture Map

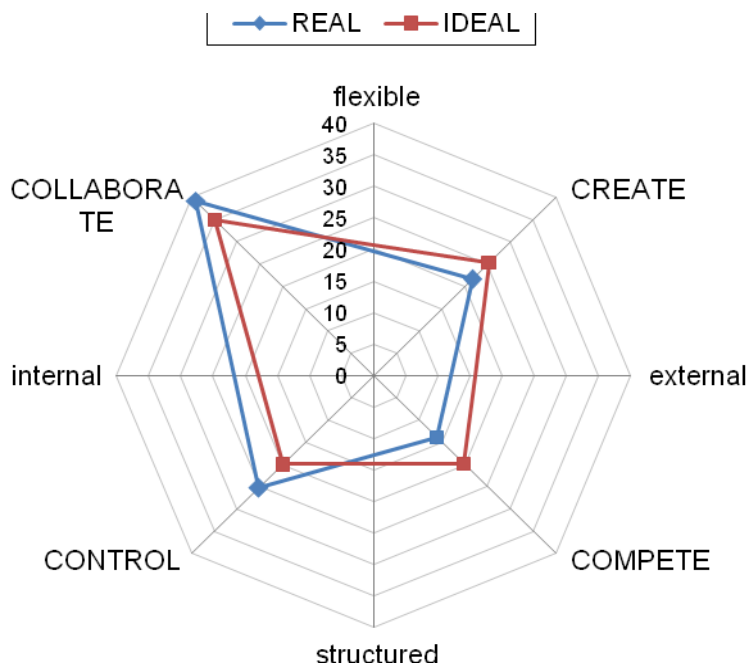


Figure A.3 Skillful College (SC) Visual Culture Map

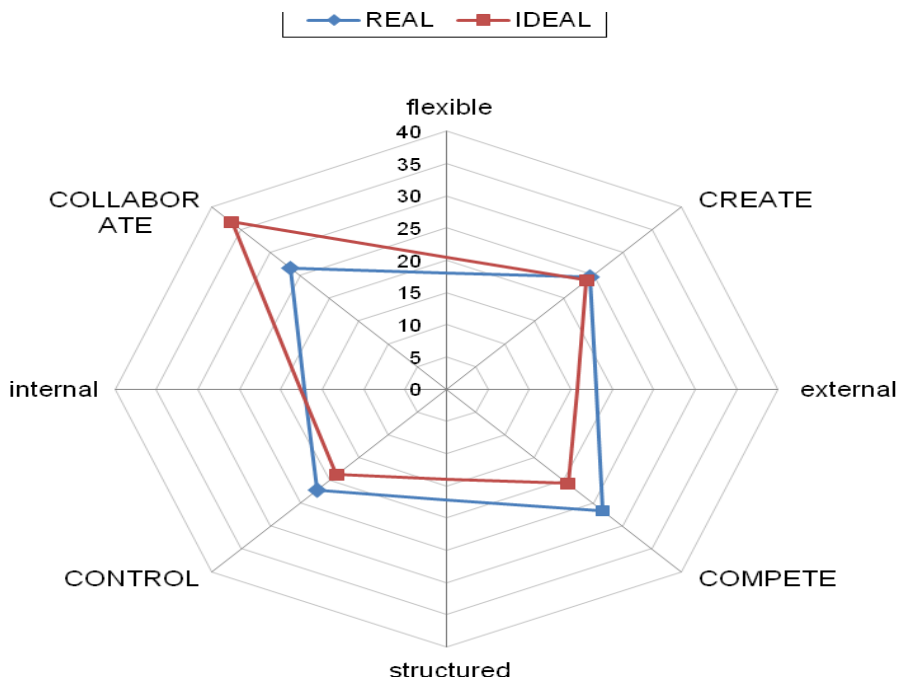


Figure A.4 Celebrated College (CC) Visual Culture Map

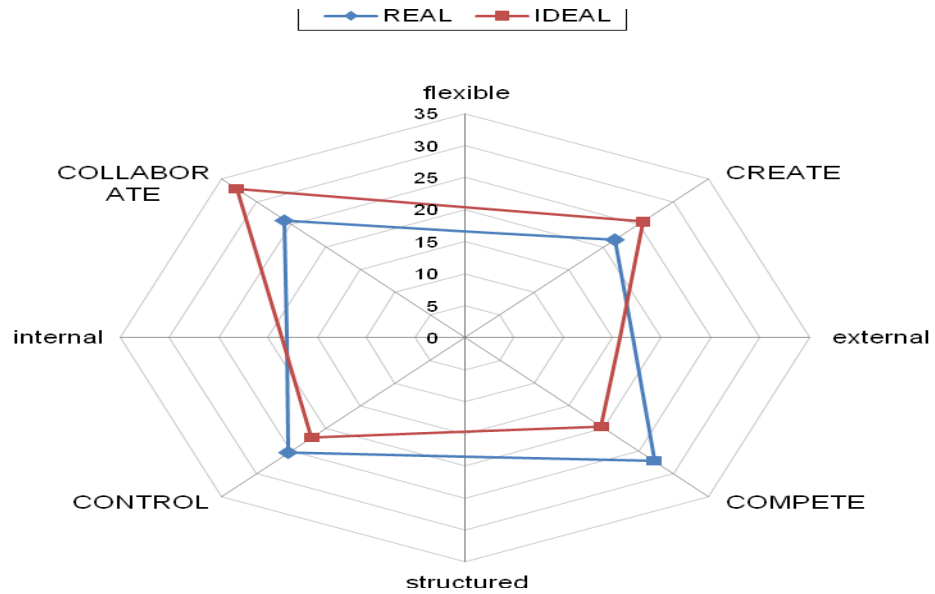
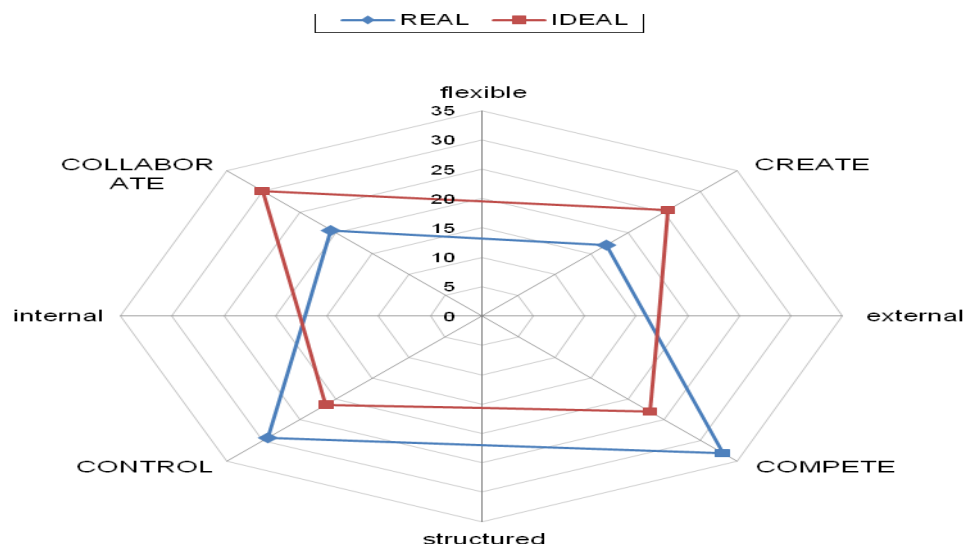


Figure A.5 Distinguished College (DC) Visual Culture Map



**Appendix O.**  
**Frequency Distribution of Organizational Capacity Survey Results**  
**by Question Item and Composite Capacity Categories**

**1. Strategic Leadership (Q1.1-1.9)**

Q1.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	0	0	0	1
2	Very little	3	1	1	0	1	6
3	Somewhat	3	1	2	6	2	14
4	To a great degree	0	9	5	3	4	21
5	Not applicable	0	0	0	0	0	0
Grand Total		6	12	8	10	7	43

Q1.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	0	0	0	0	0
2	Very little	2	1	1	0	0	4
3	Somewhat	4	2	1	4	5	16
4	To a great degree	0	8	6	5	2	21
5	Not applicable	0	1	0	1	0	2
Grand Total		6	12	8	10	7	43

Q1.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	0	0	0	0	1
2	Very little	1	3	0	1	0	5
3	Somewhat	1	3	4	6	1	15
4	To a great degree	3	6	4	2	6	21
5	Not applicable	0	0	0	1	0	1
Grand Total		6	12	8	10	7	43

Q1.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	0	0	0	0	1
2	Very little	2	0	2	1	2	7
3	Somewhat	2	3	2	6	2	15



4	To a great degree	1	9	4	3	3	20
5	Not applicable	0	0	0	0	0	0
Grand Total		6	12	8	10	7	43

Q1.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	1	0	0	0	2
2	Very little	1	1	1	2	3	8
3	Somewhat	1	6	4	6	1	18
4	To a great degree	3	4	3	1	3	14
5	Not applicable	0	0	0	1	0	1
Grand Total		6	12	8	10	7	43

Q1.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	0	0	0	0	1
2	Very little	0	2	0	0	1	3
3	Somewhat	2	3	2	2	2	11
4	To a great degree	3	6	6	7	4	26
5	Not applicable	0	1	0	1	0	2
Grand Total		6	12	8	10	7	43

Q1.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	0	0	0	0	0
2	Very little	0	2	0	0	0	2
3	Somewhat	3	3	1	3	1	11
4	To a great degree	3	6	7	6	5	27
5	Not applicable	0	1	0	1	1	3
Grand Total		6	12	8	10	7	43

Q1.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	0	0	0	1	3
2	Very little	0	1	0	0	0	1
3	Somewhat	3	5	3	4	2	17
4	To a great degree	1	6	5	4	4	20
5	Not applicable	0	0	0	1	0	1
Grand Total		6	12	8	10	7	43

Q1.9		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	0	0	0	1	3
2	Very little	2	2	1	3	2	10
3	Somewhat	2	7	2	3	1	15
4	To a great degree	0	3	4	3	3	13
5	Not applicable	0	0	1	0	0	1
Grand Total		6	12	8	10	7	43

Composite Q1.1-1.9		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	3	0	3
1	Not at all	8	2	0	0	2	12
2	Very little	11	13	6	7	9	46
3	Somewhat	21	33	21	40	17	132
4	To a great degree	14	57	44	34	34	183
5	Not applicable	0	3	1	6	1	11
Grand Total		54	108	72	90	63	387

## 2. Organizational Structure and Governance (Q2.1-2.10)

Q2.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	2	0	0	0	0	2
2	Very little	1	0	0	0	0	1
3	Somewhat	1	2	0	0	3	6
4	To a great degree	2	9	8	9	4	32
5	Not applicable	0	1	0	1	0	2
Grand Total		6	12	8	10	7	43

Q2.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	0	1	0	1	2
2	Very little	0	2	2	0	0	4
3	Somewhat	3	5	0	3	0	11
4	To a great degree	3	5	4	6	6	24
5	Not applicable	0	0	1	1	0	2
Grand Total		6	12	8	10	7	43

Q2.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	0	0	0	2	3
2	Very little	1	3	3	1	1	9
3	Somewhat	2	3	1	5	1	12
4	To a great degree	2	5	2	2	3	14
5	Not applicable	0	1	2	1	0	4
Grand Total		6	12	8	10	7	43

Q2.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	0	0	0	0	1
2	Very little	2	1	1	1	1	6
3	Somewhat	1	7	1	5	3	17
4	To a great degree	0	4	6	4	3	17
5	Not applicable	2	0	0	0	0	2
Grand Total		6	12	8	10	7	43

Q2.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	0	0
2	Very little	1	0	1	0	1	3
3	Somewhat	2	2	0	2	0	6
4	To a great degree	3	8	7	6	6	30
5	Not applicable	0	2	0	1	0	3
Grand Total		6	12	8	10	7	43

Q2.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	0	0	0	0	2
2	Very little	1	1	1	0	2	5
3	Somewhat	0	4	1	3	1	9
4	To a great degree	0	3	4	5	4	16
5	Not applicable	3	4	2	1	0	10
Grand Total		6	12	8	10	7	43

Q2.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	0	0	0	1
2	Very little	1	1	1	0	1	4
3	Somewhat	0	1	0	2	3	6
4	To a great degree	5	8	6	5	2	26
5	Not applicable	0	1	1	2	1	5
Grand Total		6	12	8	10	7	43

Q2.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	0	0	0	0	0
2	Very little	1	0	1	1	1	4
3	Somewhat	0	4	0	4	2	10
4	To a great degree	5	8	6	4	4	27
5	Not applicable	0	0	1	1	0	2
Grand Total		6	12	8	10	7	43

Q2.9		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	1	0	0	1	3
2	Very little	3	0	1	0	1	5
3	Somewhat	0	4	0	2	2	8
4	To a great degree	0	4	6	5	3	18
5	Not applicable	2	3	1	2	0	8
Grand Total		6	12	8	10	7	43

Q2.10		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	2	0	0	0	1	3
2	Very little	2	2	2	0	0	6
3	Somewhat	2	5	2	3	2	14
4	To a great degree	0	5	3	6	4	18
5	Not applicable	0	0	1	1	0	2
Grand Total		6	12	8	10	7	43

Composite Q2.1-2.10		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	5	0	5
1	Not at all	9	2	1	0	5	17
2	Very little	13	10	13	3	8	47
3	Somewhat	11	37	5	29	17	99
4	To a great degree	20	59	52	52	39	222
5	Not applicable	7	12	9	11	1	40
Grand Total		60	120	80	100	70	430

### 3. Human Resources (Q3.1-3.8)

Q3.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	0	1	0	1	2
2	Very little	2	1	0	3	0	6
3	Somewhat	3	4	4	4	1	16
4	To a great degree	1	7	2	0	5	15
5	Not applicable	0	0	1	3	0	4
Grand Total		6	12	8	10	7	43

Q3.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	3	2	0	1	7
2	Very little	3	0	1	3	1	8
3	Somewhat	2	5	2	4	4	17
4	To a great degree	0	4	2	2	1	9
5	Not applicable	0	0	1	0	0	1
Grand Total		6	12	8	10	7	43

Q3.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	2	3	3	0	2	10
2	Very little	1	1	1	4	0	7
3	Somewhat	2	4	2	4	3	15
4	To a great degree	1	4	1	2	1	9
5	Not applicable	0	0	1	0	1	2
Grand Total		6	12	8	10	7	43

Q3.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	3	4	2	2	2	13
2	Very little	2	3	1	2	1	9
3	Somewhat	0	5	3	1	0	9
4	To a great degree	0	0	0	1	2	3
5	Not applicable	1	0	2	3	2	8
Grand Total		6	12	8	10	7	43

Q3.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	5	2	1	0	1	9
2	Very little	0	4	2	3	4	13
3	Somewhat	0	4	2	2	0	8
4	To a great degree	0	1	0	2	1	4
5	Not applicable	1	1	3	2	1	8
Grand Total		6	12	8	10	7	43

Q3.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	1	2
1	Not at all	5	2	1	0	2	10
2	Very little	0	2	2	3	3	10
3	Somewhat	0	5	1	2	0	8
4	To a great degree	0	2	1	2	1	6
5	Not applicable	1	1	3	2	0	7
Grand Total		6	12	8	10	7	43

Q3.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	5	2	3	0	2	12
2	Very little	0	4	1	4	2	11
3	Somewhat	1	3	2	4	3	13
4	To a great degree	0	2	1	1	0	4
5	Not applicable	0	1	1	0	0	2
Grand Total		6	12	8	10	7	43

Q3.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	3	2	3	1	11
2	Very little	1	0	1	1	3	6
3	Somewhat	2	6	4	2	1	15
4	To a great degree	0	3	0	2	1	6
5	Not applicable	1	0	1	1	1	4
Grand Total		6	12	8	10	7	43

Composite Q3.1-3.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	6	1	7
1	Not at all	23	19	15	5	12	74
2	Very little	9	15	9	23	14	70
3	Somewhat	10	36	20	23	12	101
4	To a great degree	2	23	7	12	12	56
5	Not applicable	4	3	13	11	5	36
Grand Total		48	96	64	80	56	344

#### 4. Financial Management (Q4.1-4.8)

Q4.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	2	1	1	1	7
2	Very little	0	1	1	2	1	5
3	Somewhat	1	5	3	4	2	15
4	To a great degree	3	4	3	1	2	13
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	8	10	7	43

Q4.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	0	1	1	3
2	Very little	1	1	1	2	1	6
3	Somewhat	2	3	2	2	2	11
4	To a great degree	3	7	5	3	2	20
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	8	10	7	43

Q4.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	6	6	3	3	20
2	Very little	1	3	0	4	0	8
3	Somewhat	0	1	2	1	2	6
4	To a great degree	0	1	0	0	1	2
5	Not applicable	3	1	0	1	1	6
Grand Total		6	12	8	10	7	43

Q4.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	5	5	5	7	2	24
2	Very little	0	4	0	1	1	6
3	Somewhat	0	1	1	1	3	6
4	To a great degree	0	1	1	0	0	2
5	Not applicable	1	1	1	1	1	5
Grand Total		6	12	8	10	7	43

Q4.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	3	5	3	2	2	15
2	Very little	1	2	1	5	1	10
3	Somewhat	1	1	3	1	1	7
4	To a great degree	0	3	1	2	2	8
5	Not applicable	1	1	0	0	1	3
Grand Total		6	12	8	10	7	43

Q4.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	3	0	3	1	0	7
2	Very little	0	1	0	1	0	2
3	Somewhat	1	4	2	5	2	14
4	To a great degree	1	5	3	3	4	16
5	Not applicable	1	2	0	0	1	4
Grand Total		6	12	8	10	7	43



Q4.7		Institution					
CatCode	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	3	7	6	4	2	22
2	Very little	0	3	0	3	2	8
3	Somewhat	1	0	2	1	1	5
4	To a great degree	0	2	0	0	1	3
5	Not applicable	2	0	0	1	1	4
Grand Total		6	12	8	10	7	43

Q4.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	4	5	5	6	1	21
2	Very little	1	3	0	2	2	8
3	Somewhat	0	1	1	1	3	6
4	To a great degree	0	2	1	0	0	3
5	Not applicable	1	1	1	1	1	5
Grand Total		6	12	8	10	7	43

Composite Q4.1-4.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	4	0	4
1	Not at all	22	31	29	25	12	119
2	Very little	4	18	3	20	8	53
3	Somewhat	6	16	16	16	16	70
4	To a great degree	8	25	14	9	12	71
5	Not applicable	8	6	2	6	8	30
Grand Total		48	96	64	80	56	344

### 5. Infrastructure (Q5.1-5.11)

Q5.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	0	0	0	1	2
2	Very little	0	0	1	2	0	3
3	Somewhat	2	5	4	7	1	19
4	To a great degree	3	6	3	0	4	16
5	Not applicable	0	1	0	0	1	2
Grand Total		6	12	8	10	7	43

Q5.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	2	0	1	4
2	Very little	0	4	2	1	1	8
3	Somewhat	3	3	3	5	2	16
4	To a great degree	3	2	1	3	1	10
5	Not applicable	0	2	0	0	2	4
Grand Total		6	12	8	10	7	43

Q5.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	0	0
2	Very little	0	1	0	2	0	3
3	Somewhat	0	4	1	2	1	8
4	To a great degree	6	6	5	4	4	25
5	Not applicable	0	1	2	1	2	6
Grand Total		6	12	8	10	7	43

Q5.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	1	1	1	0	4
2	Very little	2	3	3	1	2	11
3	Somewhat	1	4	2	5	2	14
4	To a great degree	1	2	2	1	2	8
5	Not applicable	1	2	0	2	1	6
Grand Total		6	12	8	10	7	43

Q5.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	0	0	0	1
2	Very little	2	0	2	0	2	6
3	Somewhat	4	1	1	5	1	12
4	To a great degree	0	10	4	3	3	20
5	Not applicable	0	0	1	1	1	3
Grand Total		6	12	8	10	7	43

Q5.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	3	2	3	1	2	11
2	Very little	2	2	1	3	1	9
3	Somewhat	1	3	0	4	0	8
4	To a great degree	0	5	3	0	3	11
5	Not applicable	0	0	1	1	1	3
Grand Total		6	12	8	10	7	43

Q5.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	1	3	3	3	11
2	Very little	1	6	0	1	1	9
3	Somewhat	1	3	3	2	1	10
4	To a great degree	3	2	2	3	1	11
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	8	10	7	43

Q5.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	0	1	0	0	1
2	Very little	0	0	1	0	0	1
3	Somewhat	3	1	1	3	3	11
4	To a great degree	3	11	5	6	3	28
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	8	10	7	43

Q5.9		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	2	0	1	4
2	Very little	0	1	1	0	1	3
3	Somewhat	1	5	1	4	0	11
4	To a great degree	5	5	4	5	3	22
5	Not applicable	0	0	0	0	2	2
Grand Total		6	12	8	10	7	43

Q5.10		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	1	0	1	3
2	Very little	2	0	1	1	1	5
3	Somewhat	1	6	3	6	0	16
4	To a great degree	3	5	3	2	3	16
5	Not applicable	0	0	0	0	2	2
Grand Total		6	12	8	10	7	43

Q5.11		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	3	3	0	2	8
2	Very little	1	2	4	3	1	11
3	Somewhat	2	2	0	3	0	7
4	To a great degree	3	3	0	2	1	9
5	Not applicable	0	2	1	1	3	7
Grand Total		6	12	8	10	7	43

Composite Q5.1-5.11		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	8	0	8
1	Not at all	6	11	16	5	11	49
2	Very little	10	19	16	14	10	69
3	Somewhat	19	37	19	46	11	132
4	To a great degree	30	57	32	29	28	176
5	Not applicable	1	8	5	8	17	39
Grand Total		66	132	88	110	77	473

### 6. Program Management (Q6.1-6.7)

Q6.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	1	1	1	0	4
2	Very little	2	0	2	1	0	5
3	Somewhat	2	4	1	5	3	15
4	To a great degree	1	6	3	1	3	14
5	Not applicable	0	1	0	1	1	3
Grand Total		6	12	7	10	7	42

Q6.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	0	0
2	Very little	0	0	0	0	0	0
3	Somewhat	0	2	2	4	1	9
4	To a great degree	6	9	5	2	5	27
5	Not applicable	0	1	0	3	1	5
Grand Total		6	12	7	10	7	42

Q6.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	0	0
2	Very little	1	0	0	1	0	2
3	Somewhat	1	2	3	5	1	12
4	To a great degree	4	9	4	2	5	24
5	Not applicable	0	1	0	1	1	3
Grand Total		6	12	7	10	7	42

Q6.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	1	0	0	0	2
2	Very little	1	1	1	0	0	3
3	Somewhat	2	3	3	5	2	15
4	To a great degree	2	6	3	3	4	18
5	Not applicable	0	1	0	1	1	3
Grand Total		6	12	7	10	7	42

Q6.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	3	3	2	1	11
2	Very little	1	4	1	2	2	10
3	Somewhat	1	1	1	3	1	7
4	To a great degree	0	4	2	0	2	8
5	Not applicable	2	0	0	2	1	5
Grand Total		6	12	7	10	7	42

Q6.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	1	2	0	0	0	3
2	Very little	0	1	2	2	0	5
3	Somewhat	2	4	1	4	4	15
4	To a great degree	3	5	4	2	2	16
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	7	10	7	42

Q6.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	0	1	0	0	0	1
2	Very little	1	1	1	1	0	4
3	Somewhat	3	2	1	4	2	12
4	To a great degree	2	8	5	4	4	23
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	7	10	7	42

Composite Q6.1-6.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	6	0	6
1	Not at all	5	8	4	3	1	21
2	Very little	6	7	7	7	2	29
3	Somewhat	11	18	12	30	14	85
4	To a great degree	18	47	26	14	25	130
5	Not applicable	2	4	0	10	7	23
Grand Total		42	84	49	70	49	294

### 7. Process Management (Q7.1-7.10)

Q7.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	1	1
2	Very little	0	3	1	3	1	8
3	Somewhat	2	2	2	3	3	12
4	To a great degree	4	7	4	2	2	19
5	Not applicable	0	0	0	1	0	1
Grand Total		6	12	7	10	7	42

Q7.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	0	0	1	2
2	Very little	0	1	1	3	1	6
3	Somewhat	4	3	1	3	2	13
4	To a great degree	2	7	5	2	3	19
5	Not applicable	0	0	0	1	0	1
Grand Total		6	12	7	10	7	42

Q7.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	0	0	0
1	Not at all	1	1	1	0	1	4
2	Very little	3	3	1	2	1	10
3	Somewhat	2	4	2	7	3	18
4	To a great degree	0	4	3	0	1	8
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	7	10	7	42

Q7.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	1	0	0	1	4
2	Very little	2	1	2	2	2	9
3	Somewhat	1	6	4	6	2	19
4	To a great degree	1	4	1	0	1	7
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	7	10	7	42

Q7.5		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	2	1	0	1	6
2	Very little	0	2	1	3	3	9
3	Somewhat	3	5	3	4	1	16
4	To a great degree	1	2	2	1	0	6
5	Not applicable	0	1	0	1	2	4
Grand Total		6	12	7	10	7	42

Q7.6		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	1	0	0	1	2
2	Very little	1	1	2	1	0	5
3	Somewhat	0	2	1	6	2	11
4	To a great degree	5	8	3	2	3	21
5	Not applicable	0	0	1	0	1	2
Grand Total		6	12	7	10	7	42

Q7.7		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	1	1
2	Very little	1	2	1	3	0	7
3	Somewhat	3	1	1	3	4	12
4	To a great degree	2	9	4	2	1	18
5	Not applicable	0	0	1	1	1	3
Grand Total		6	12	7	10	7	42

Q7.8		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	1	1
2	Very little	0	0	0	1	0	1
3	Somewhat	2	5	1	5	1	14
4	To a great degree	4	6	6	2	4	22
5	Not applicable	0	1	0	1	1	3
Grand Total		6	12	7	10	7	42

Q7.9		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	6	5	1	2	2	16
2	Very little	0	3	1	4	1	9
3	Somewhat	0	3	3	2	2	10
4	To a great degree	0	1	1	0	1	3
5	Not applicable	0	0	1	1	1	3
Grand Total		6	12	7	10	7	42



Q7.10		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	0	0	0	0	1	1
2	Very little	0	1	0	2	1	4
3	Somewhat	0	2	2	6	3	13
4	To a great degree	6	9	5	0	1	21
5	Not applicable	0	0	0	1	1	2
Grand Total		6	12	7	10	7	42

Composite Q7.1-7.10		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	9	0	9
1	Not at all	11	11	3	2	11	38
2	Very little	7	17	10	24	10	68
3	Somewhat	17	33	20	45	23	138
4	To a great degree	25	57	34	11	17	144
5	Not applicable	0	2	3	9	9	23
Grand Total		60	120	70	100	70	420

### 8. Inter-organizational Linkages (Q8.1-8.4)

Q8.1		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	0	0	0	2	4
2	Very little	0	2	0	0	0	2
3	Somewhat	3	1	5	5	2	16
4	To a great degree	0	8	2	3	2	15
5	Not applicable	1	1	0	1	1	4
Grand Total		6	12	7	10	7	42

Q8.2		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	1	1	1	2	7
2	Very little	0	1	1	1	0	3
3	Somewhat	1	5	3	3	3	15
4	To a great degree	0	3	2	3	1	9
5	Not applicable	3	2	0	1	1	7
Grand Total		6	12	7	10	7	42

Q8.3		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	0	0	0	2	4
2	Very little	0	2	1	0	0	3
3	Somewhat	4	1	2	5	2	14
4	To a great degree	0	8	4	4	3	19
5	Not applicable	0	1	0	0	0	1
Grand Total		6	12	7	10	7	42

Q8.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	1	0	1
1	Not at all	2	0	0	1	2	5
2	Very little	2	1	2	1	0	6
3	Somewhat	1	6	3	4	3	17
4	To a great degree	0	4	2	3	2	11
5	Not applicable	1	1	0	0	0	2
Grand Total		6	12	7	10	7	42

Composite Q8.1-8.4		Institution					
Code	Category	FSC	VU	SC	CC	DC	Total
0	Missing	0	0	0	4	0	4
1	Not at all	8	1	1	2	8	20
2	Very little	2	6	4	2	0	14
3	Somewhat	9	13	13	17	10	62
4	To a great degree	0	23	10	13	8	54
5	Not applicable	5	5	0	2	2	14
Grand Total		24	48	28	40	28	168