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Investigation of Critical Success Factors for Construction Sector in Gaza Strip From the Contractor's Perspective

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master in Business Administration.

1429هـ – 2008م

بسم الله الرحمن الرحيم

{ مَنْ عَمِلَ صَالِحاً مِنْ ذَكرٍ
أوْ أُنثى وَهو مُؤمنٌ
فلنُحيينه حياةً طيبةً
ولنجزينهُم أجرَهم بِأحسن
ما كانُوا يَعملُون }

صدق الله العظيم

"النحل، 97"

Abstract

The major objective of this study was to identify, categorize, and prioritize a general set of critical success factors for construction sector in Gaza strip. Also, this research aimed to highlight the characteristics of construction sector, as well as its role in the economical development in Gaza strip; check the effect of some personal and organizational characteristics on the level of critical success factors; examine the difference in the impact of the critical success factors at the contracting companies and examine the relation between the level of success in construction sector in Gaza strip and CSF.

This study relied mainly on analytical, descriptive and field study methodologies. A questionnaire was designed in the light of the literature review and tested by pilot study, and then it is applied on a sample of 81 contracting companies. Collected data is manipulated by SPSS software using many statistical tools as, frequencies, percentile values, Means, Pearson coloration coefficient and One-Way ANOVA test.

The most notable findings of this research were, about 71% of contracting companies in Gaza strip have a clear description of goals and mission, financial resources is the first CSF, the second CSF is owner satisfaction. In addition, Pricing polices CSF was the third. Also the forth CSF was related to Managerial Skills for contractors. Furthermore, cost control CSF was the fifth. Finally, Mission and Goal has the sixth one.

The hypotheses verification showed that there are no a significant differences (at significant level of 0.05) in the level of critical success factors at the construction companies in Gaza strip attributed to Educational levels of contractor, Experience of contractors, Establishment period of company, and Number of employees; as well as, there is a relative significant difference(at significant level of 0.05) in the impact of the critical success factors at the construction companies in Gaza strip; and there is a significant correlation (at significant level of 0.05) between the level of success at the construction companies in Gaza strip and its critical success factors.

Finally, the study recommended the necessity for contractors in Gaza strip to be more interested in strategic planning, to formulate and apply adequate CSFs; and contractors in Gaza strip must apply modern managerial approaches and scientific tools; as well as Top manager in contracting company in Gaza strip shouldn't concentrate efforts on financial issues, but they are required to be interested in other topics as, human resource development, owner satisfaction, and cost reduction; furthermore, Contractors should conduct continues training programs with cooperation with PCU and NGOs to improve managerial and financial practices.

ملخص

هدفت هذه الدراسة والتي تم تطبيقها على قطاع المقاولات الإنشائية في قطاع غزة إلى تحديد عوامل النجاح الحرجة في قطاع المقاولات وذلك من وجهة نظر المقاولين و تصنيفها حسب الأولوية. كذلك فانه من أهداف هذه الدراسة إلقاء الضوء على قطاع الإنشاءات في فلسطين بوجه عام وفي قطاع غزة بشكل خاص، وعلى الدور الذي يقوم به في دعم الاقتصاد الفلسطيني، كذلك فحص تأثير بعض العوامل الشخصية والتنظيمية على مستوى نجاح هذه الشركات، أيضاً اختبار وجود فروق في تأثير هذه العوامل على مستوى النجاح وفحص الارتباط بين هذه العوامل ومستوى النجاح.

وقد اعتمدت هذه الدراسة على المنهج الوصفي التحليلي وأسلوب الدراسة الميدانية، حيث تم تصميم استبيان كأداة للدراسة وذلك في ضوء أدبيات البحث ونصائح الأكاديميين و الخبراء في مجال الإنشاءات. وقد تم عمل عينة استطلاع للاستبيان ثم تطبيقه على 81 شركة مقاولات في قطاع غزة، وقد استخدم البرنامج الإحصائي SPSS في معالجة البيانات وذلك بتطبيق العديد من الاختبارات الإحصائية كحساب النسب والتكرار والمتوسطات ومعامل ارتباط بيرسون وتحليل التباين الأحادي.

وكان من ابرز نتائج هذا البحث أن حوالي 71 % من المقولين في قطاع غزة لديهم رسالة وأهداف واضحة، كذلك فان توفر المصادر المالية كأحد عوامل النجاح الحرجة جاء في المرتبة الأولى، وجاء رضا الجهة المالكة ثانياً، ثم سياسات التسعير ثالثاً، والمهارات الإدارية رابعاً، والتحكم في التكاليف خامساً، وأخيراً فان رسالة المنظمة وأهدافها جاءت في المرتبة السادسة.

وأوضحت نتائج اختبار الفرضيات عدم وجود فروق ذات دلالة إحصائية بين مستوى عوامل النجاح الحرجة تعزى لبعض العوامل التنظيمية والشخصية، كذلك وجود فروق ذات دلالة إحصائية في تأثير عوامل النجاح الحرجة على مستوى النجاح، وقد أوضحت أيضاً وجود ارتباط قوي بين عناصر النجاح ومستواه.

وقد أوصت الدراسة بضرورة اهتمام المقاولين في قطاع غزة بصورة اكبر بالتخطيط الاستراتيجي ليتمكنوا من صياغة وتطبيق عوامل النجاح الحرجة بفعالية، كذلك أهمية تطبيق المقاولين في قطاع غزة لأحدث الوسائل العلمية في الإدارة، وقد أوصت الدراسة الإدارة العليا في شركات المقاولات بعدم تركيز كل الجهود في قضايا الربح المؤقت، بل يجب الاهتمام بأمور أخرى مهمة مثل الموارد البشرية ورضا المالك وتقليل التكاليف. أيضا أوصت الدراسة بضرورة عقد دورات تدريبية مستمرة للمقاولين بالتعاون مع اتحاد المقاولين والمنظمات الأهلية لتعزيز مهاراتهم الإدارية والفنية.

Dedication

Dedicated to my parents, family and friends, some things are better conveyed through sheer silence, this is one such.....

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude and appreciation to Dr. Majed El-Farra, without whom I would not be able to complete this thesis, for his unconditional guidance, support and patience at each step of the this study. It has always been a privilege to work with such academician. Also many thanks go to members of the evaluation committee for their acceptance to evaluate and discuss this thesis.

I would like to express my special thanks to the respondents of questionnaires and their respective organizations; they deserve special thanks for granting access to the required information for this work.

My special thanks and appreciation are extended to the contributions of all the teaching and administrative staff of IUG. It has been a great time and a worth while experience with all.

Last, but certainly not least, I am grateful to all those who have assisted me with this dissertation.

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Acronyms List

Acronym	Expression
CSF :	Critical Success Factors.

IR :	Information Requirements.
KD :	Key Decisions.
KPI :	key performance indicator.
PPPs :	Public-private partnerships.
VM :	Value management.
PLC :	Project life Cycle.
SPSS :	Statistical Package For The Social Sciences
GNP :	Gross National Product.
GDP :	Gross Demotic Product.
PCBS :	Palestinian Central Bureau of Statistics.
PECDAR :	Palestinian economic council for development and reconstruction
PCU :	Palestinian contractors union
PNA :	Palestinian National Authority.
IUG :	Islamic University of Gaza

CHAPTER – 1

Introduction

1.1 Preface:

The construction sector is an important economic sector and the main engine of the Palestinian national economy, the sector has witnessed remarkable activity and widening since the return of the Palestinian National Authority (PNA) to the Palestinian territories in 1994, which led to a revival of construction occupations and industries support, and encouraged capital investment in the Palestinian immigrant sector local construction, and contributed to the creation of jobs for thousands of Palestinians, and become a centre head into other sectors in attracting investment and creating new job opportunities(PCU, 2008).

Construction project is a complex and dynamic process which involves identifying and conveying clients, actual needs and requirements accurately to the project team. Therefore, this study defined a set of conditions or factors that, when thoroughly and completely applied, ensures the successful completion of the construction project. Success on a project means that certain expectations for a given participant were met, whether owner, planner, engineer, contractor, or operator. These expectations may be different for each participant. The construction industry is beset with several problems, such as lack of cooperation, limited trust, and ineffective communications. Leading to an adversarial relationship among project stockholders. This kind of relationship is reflected in project delays, difficulty in resolving claims, cost overruns and litigation. This relationship has instigates the need for a new procurement approach all the more urgent. This need is compounded by experiences of many within the industry, which in the past have resulted in arbitration proceedings or litigation processes while attempting to overcome difficulties (Chan & others, 2004).

It is agreed upon by many researchers that, although there are a relatively large number of contracting companies, divided into two types: main contractors and sub-contractors, contractors generally do not have sufficient knowledge pertinent to CSFs concept or failure reasons (PCU, 2008). Intuitively, most contractors believe better planning can lead to more successful project performance but evidence has been mostly anecdotal However, little quantitative evidence has been provided to support the claim that better planning contributes to successful performance (Cindy, 2006).

Based on knowledge published in literature and experience of experts in the construction field, the following CSFs were studied in this research: personal characteristics of contractors; organizational characteristics of companies; mission and goals; managerial skills for contractors; financial resources; cost control; pricing polices and owner satisfaction.

1.2 Problem Statement

In case of construction projects in Gaza Strip, numerous contractors from diverse socio-economic and cultural backgrounds interact to accomplish the project objectives. Therefore, it is important to assimilate the viewpoint of all interested groups about the factors which contribute to project success. Due to their distinctive interests in the project, it is also likely that different contractors in Gaza Strip have different perceptions about success factors.

Because of variable nature and discrete objectives of every other construction project, success factors are likely to be different.

In the light of the above, the research problem can be summarized as: "what are the CSFs which indemnify the level of success in the construction company in Gaza Strip"

1.3 Research Hypotheses:

1.3.1 First Hypothesis

There is no a relative significant difference (*at P-value 0.05*) in the existence of the CSFs at the construction companies in Gaza Strip.

1.3.2 Second Hypothesis

There are no significant differences (*at P-value 0.05*) in the level of CSFs at the construction companies in Gaza Strip attributed to some personal and organizational characteristics, including:

a. Educational level of contractor;
b. Experience of contractor;
c. Number of employees;
d. Age of establishment.

1.3.3: Third Hypothesis

There is a significant correlation (*at P-value 0.05*) between the level of success at the construction companies in Gaza Strip and its critical success factors.

1.4 Research Objectives:

1. Identify, categorize, and prioritize a general set of CSFs for construction sector in Gaza Strip;
2. Highlight the nature and characteristics of construction sector, as well as its role in economical development in Gaza Strip;

3. Check the effect of some personal and organizational characteristics on the level of CSFs;
4. Examine the difference in the impact of the CSFs at the contracting companies in Gaza Strip;
5. Examine the relation between the level of success in construction sector in Gaza Strip and CSF;
6. Suggest some recommendations to increase level of success in contracting companies in Gaza Strip;

1.5 Research Importance:

This study has special significance so that it is intended to complement the existing but limited research into the identification of such factors and to serve as a stepping stone to the identification and establishment of yardsticks which could be used by construction practitioners on all projects in the future in Gaza Strip. As well as, the identification of key factors for construction project success enables appropriate allocation of limited resources.

This research gained a special importance, because its topic wasn't widely covered by Palestinian researchers.

1.6 Research variables:

Variable of this research are divided into two types:

1. **Dependent variable:**
    - Level of CSF in contracting companies in Gaza Strip
2. **Independent variables:**
    - Personal Characteristics of contractors;
    - Organizational Characteristics of Companies;
    - Mission and Goals;
    - Managerial Skills for contractors;
    - Financial resources;
    - Cost Control;
    - Pricing polices;
    - Owner satisfaction.

1.7 Research structure:

The study is presented with the following arrangement:

Chapter 1: Introduction;

Chapter 2: Critical Success Factors;

Chapter 3: Construction Industry in Palestine;

Chapter 4: Research Methodology;

Chapter 5: Data Analysis and hypotheses testing;
Chapter 6: Conclusions and Recommendations.

1.8 Previous Studies

1. **(Dunna and Burela, 2008)**

The main objective of this research is to determine What are the influencing/threshold factors for effective implementation of 'Project controls' in construction projects?
To investigate the various factors for effective implementation of project controls this research employs a multiple case study analysis, where construction projects are studied for analysis through a questionnaire based approach. Primary data is collected using questionnaires from selected respondents. Findings are based on qualitative analysis. The research successfully identified 10 key threshold factors for effective implementation of 'control process'. Also the research attempt to identify the characteristics of the control process yielded considerable results. The work would be a beneficial for the practitioners in improving the control process. The theory developed from the research identified similarities between monitoring and evaluation stages.

Results:

From the data analysis , some of the identified influencing/threshold factors can be listed as:

- Project Monitoring starts from 'conception stage'
- Project Monitoring is both a site and centralized set-up in most organizations
- Team effort is required for monitoring
- Time being spent on data collection is on average 25%
- There is a chance of producing over documentation during monitoring process.
- Junior cadre engineers should be employed for data collections
- Primavera P3 is still a preferred choice as appropriate monitoring and control tool.
- Use of information technology is increasing and necessary for monitoring purpose.
- Use of Trend forecasting is also can be implemented for control process.
- High degree of Analytical, Relationship, Leadership, Computer Operational' are four important skills required during monitoring process.
- Project Evaluation set-up is same as monitoring set-up.
- Team effort is required for Evaluation also.
- an average of 36% is being spent by control engineers during evaluation.
- Weekly meetings are suggested for evaluation purpose.
- Same tools and techniques used for monitoring aspects are being used for evaluation stage also.
- High degree of Analytical, Computer Operational, Technical, and Risk assessment are the four important skills required during evaluation stage.

2. (KBS Building Relationships, 2008)

Founded in 1975, KBS is the largest locally owned construction firm in Central Virginia. Rated among the top 30 construction firms in the Mid-Atlantic region, KBS's work extends from its headquarters in Richmond to Lynchburg, Fredericksburg, Virginia Beach and beyond. This firm conducted an extensive survey to determine the critical factor for its success. CSFs as a result of the study: Every project, large or small, requires a consistent delivery approach. KBS measures its achievements with five Critical Success Factors:

Quality Construction

KBS builds quality into each project. We continuously inspect our work and deliver outstanding quality on every project.

Timely Delivery

We use the latest scheduling technology and provide weekly updates and look-ahead schedules to proactively manage our projects.

Job Site Safety

Our comprehensive safety program focuses on work site inspection and extensive training to ensure safe working environments for our team.

Financial Success

KBS uses its strength in the marketplace to effectively purchase goods and services and ensure value for our clients.

Client Satisfaction

We survey our clients, conduct continuous interviews and share our common goals to ensure total satisfaction.

3. (Toor and Ogunlana, 2007)

The key purpose of this study is to survey fundamental relationships among the factors that contribute to project success can provide important insights for success on future projects, and examine how these relationships can be useful to further explain success in large-scale construction projects Evidence from Thailand construction industry.

In order to elicit the perception of CSFs for large-scale construction projects, questionnaire and interview surveys were employed with construction professionals. Factor analysis was used to examine the underlying relationships of success factors which resulted in formulation of four factor groupings which were together called critical COMs of success and were labeled as COMprehension, COMpetence, COMmitment, and COMmunication, respectively. Critical COMs provide a very simple understanding of success in large-scale construction projects. These factor groupings can be easily understood and remembered by all project stakeholders. Project managers

can also use the critical COMs to evaluate their current project and compare the perceived and real success factors for knowledge management exercise.

This study shows many agreements with the assertion that Success in large-scale construction projects is a challenging matter and depends on several aspects which may include human-related factors, project-related factors, project management related factors, and factors related to external environment. However, the current study adds that comprehension, commitment, competence, and communication are fundamental essentials for project success. It also reveals that different construction stakeholders may have different perception of success factors in large-scale construction projects but to achieve success they must have an agreement, in principle, about project objectives and project implementation plan. Analysis in this study also shows that various CSFs possess important inter-relationships and can be grouped based on these underlying associations. Based of factor analysis, resulting critical COMs of success in this study entail various success factors among which many demand an active participation and positive attitude of the client during all stages of the project. Findings in this study assert that if project managers are able to keep a good track of implementing the four critical COMs throughout project life cycle, they are likely to cease success in large-scale construction projects.

4. (Yu T. W. Ann and others , 2006)

This study presents a basic frame work that includes and categorize the identified factors that affect the success of construction project briefing. Successful briefing for construction projects requires a wide range of stakeholders, resources, knowledge, and techniques. Many factors contribute to the success of briefing, and it has been found possible to rank the relative importance of these factors. Frequency values of response data from survey respondents were used to rank the relative importance of a catalogue of 37 CSFs of briefing. The 15 top critical success factors, in decreasing order of importance, were found to be open and effective communication; clear and precise briefing document; clear intention and objective of client; clear project goals and objectives; through understanding of client requirements; experience of brief writer; team commitment; identification of client requirements; agreement of brief by all relevant parties; sufficient consultation from stakeholders; holding workshops with stakeholders; control of the briefing process; realistic budget program; consensus building; and honesty. Overall, the results appear to support the limited number of CSFs identified in the literature. The results of this study were also validated in focus group meeting. Generally, the findings of the questionnaire survey were in line with that of focus group meeting.

The set of CSFs obtained in this study can serves as a checklist for practitioners when conducting briefings in their construction projects and also be considered as the

foundation for further quantitative studies such as using factor analysis to determine the CSFs for briefing in general, as well as for specific types of projects such as hospitals or hotels. This analysis requires a larger number of responses and a more even distribution of the different group of respondents.

5. (Iyer and Jha, 2006)

This study identifies 55 attributes responsible for impacting performance of the projects. These attributes were then presented to Indian construction professionals in the form of a questionnaire. Statistical analysis of responses on the attributes segregated them into distinct sets of success attributes and failure attributes. Factor analysis of sets of success attributes and failure attributes separately grouped them into six CSFs and seven critical failure factors. In order to understand the extent of contribution these factors have on the outcome of a construction project, a second stage questionnaire survey was also undertaken. The analyses of responses of the second stage questionnaire led us to conclude that two success factors and one failure factor: *commitment of project participants; owner's competence;* and *conflict among project participants* contribute significantly in enhancement of current performance level of the project. The extent of their contribution has, however, been observed to vary for a given level of project performance.

6. (Chileshe & Haupt, 2006)

The purpose of this study is to model the CSFs of construction project management (CPM). After collecting 58 empirical observations from within the South African construction related organizations, the research tests the theoretical relationships by using the structural equation modeling (SEM) technique. The research identifies six factors which are critical for the effectiveness of CPM. The study also highlights the benefits of modeling the factors using tradition methods such as correlation and multiple regression analysis techniques to extract factors of CPM. The results indicate that correlation between the “hard” and “soft” skills is necessary for the effective implementation of Construction Project Management. The proposed theoretical model not only has the potential to enhance competitive success but can act as a valuable diagnostic tool in addressing the effectiveness of construction project management.

7. (Hui and others, 2006)

The purpose of this paper is to report a study investigating the success stories of six entrepreneurs in the Hong Kong construction and property field. **Design/methodology/approach** :

Through in-depth interviews, participants shared their experiences and the factors they perceived as contributing to their success.

Findings :
Evidence obtained from the interviews suggests what scholars mean by the Chinese entrepreneurial ethic is best understood as a combination of cultural values and strategizing behaviors.
Research limitations/implications:
Data collected in this study were restricted to the construction and property industry. However, the same combination of values and strategies would be an essential factor contributing to success in other industries, and therefore further exploration of this is encouraged.
Originality/value – This paper explores the factors which successful Hong Kong construction and property entrepreneurs regarded as contributing to their success, it adds knowledge to the discussion of whether success can sensibly be explained

8. (Roper and McLin, 2005)

Key Performance Indicators (KPIs) for General Contractors are discussed in this study, including cash demand, scheduling, WIP reporting, backlog management, and the project-delivery scorecard. Timeliness of these measures is critical since early awareness of problems provides greater opportunities for corrective actions. Equally as important is the ease of obtaining the data that flows into the timely development of these indicators. While the numbers are quantifiable, the best practices themselves are the key to execution and driving these numbers into superior performance. All KPIs need to be viewed in the aggregate total to properly assess organizational performance. One KPI alone does not provide the total picture. KPIs are also not a substitute for a firm's financial statements or the traditional ratio analysis. The intent of KPIs is to provide meaningful indicators that contractors can see and use to effectively communicate the day-today operations of the business, supported by the best practices of general construction. A typical firm's set of disparate systems makes capturing and disseminating critical information difficult at best. The implementation of a fully integrated system that captures and disseminates KPIs throughout all appropriate levels of the organization allows an organization to make more informed decisions. Fully integrated systems establish processes by which information will be captured. Therefore, systems drive behavior within an organization. All too often, excuses are provided as justification for lack of accomplishment. With so much risk and so many variables, what construction firm cannot justify capturing and disseminating information to the right parties, at the right time, to ensure intelligent decision making? Recognizing the value of and need for a fully integrated solution is only the first step. The commitment to implementation is the next. The system is not only a long-term solution, but also a long-term investment that is required to allow a firm to capture the

associated benefits. The commitment will be significant in time, effort, and capital; however, the ROI will be substantial and ensure the success of your organization well into the future.

9. (Xueqing Zhang, 2005)

Various success factors have been identified through case studies, literature review and interview. These success factors are further analyzed, distilled, coded and finally classed into five main CSF aspects:

1. Economic viability.
2. Appropriate risk allocation via reliable contractual arrangement.
3. Sound financial package.
4. Reliable concessionaire consortium with strong technical strength.
5. Favorable investment environment.

The relative significance and ranking of the CSFs have been determined based on a questionnaire survey shows that there is a good in the ranking for the CSFs between respondent from the industrial sector and those from the academic sector.

10. (Chan and others , 2004)

This research program initiated a comprehensive investigation of project partnering in Hong Kong construction industry. It provide an overview of foreign studies in terms of significant success ingredients for partnering and an industry- wide questionnaire survey to glean local information and personal perception of various parties relating to the success of the partnering process in Hong Kong. The research findings were confirmed to be applicable and influential to the majority of local partnering projects.

Ten CSFs were by factor analysis on 41 variables developed through a synthesis of empirical studies and opinions from industry practitioners on project partnering. These factors formed a sound basis for the performance evaluation of partnering project.

Five of the success factors were identified as critical in explaining the personal perception of partnering success from multiple regression results:

1. Establishment and communication of conflict resolution strategy.
2. Willingness to share resources among project participants.
3. Clear definition of responsibilities.
4. Commitment to win-win attitude.
5. Regular monitoring of partnering process.

11.(Chan and Chan, 2004).

The purpose of this study is to develop a framework for measuring success of construction projects. In this research, a set of key performance indicators (KPIs), measured both objectively and subjectively are developed through a comprehensive literature review. The validity of the proposed KPIs is also tested by three case studies. Then, the limitations of the suggested KPIs are discussed. With the development of KPIs, a benchmark for measuring the performance of a construction project can be set. It also provides important insights into developing a general and comprehensive base for further research.

12. (Alkhathami, 2004)

This study extracted seven of the most important success and delay factors , and then examined correlations between them to determine which were the most influential in preventing project delays. Two surveys were distributed throughout the Kingdom of Saudi Arabia. The first examined how project owners and contractors that collaborated on the same project perceived success and delay factors, while the second examined the perceptions of engineers in general. Data was collected and evaluated by statistical methods to measure the strength and direction of the relationship between critical success and delay factors, to examine owners' and contractors' evaluations of projects' critical success and delay factors, and to evaluate the influence of CSFs on critical delay factors. Additionally, one and two-way analysis of variance (ANOVA) has been used to examine how the group or groups evaluated the influence of the CSFs in avoiding or preventing each of the delay factors, and which success factors were perceived as most influential in avoiding or preventing critical delay factors. The research found that sound organization planning efforts and a competent and experienced project manager helped to avoid many critical delay factors, while adherence to safety precautions and procedures and a project team's motivation and goal orientation were the least influential among the seven success factors.

13. (Egbu, 2004)

This study explores the importance of knowledge management (KM) and intellectual capital (IC) in organizations. It also considers the critical factors that lead to successful innovations and the role of KM and IC in this regard. The research argues that effective management of knowledge assets involves a holistic approach to a host of factors. It is also suggested that there are a host of factors that combine in different ways to produce successful organizational innovations. It recommends that more is needed on the education and training of construction personnel and that these education and

training programmes should reflect the nature of innovation and KM dimensions as very complex social processes.

14. (Adnan, 2003)

This study presents part of a three-year programme of research to identify those success factors which need to be achieved in a construction joint venture if success is to be assured (particularly in Malaysia). Twenty-one main factors crucial to joint venture success were identified from a wide literature review. A questionnaire survey administered to local and foreign construction organizations in Malaysia identified twelve factors as the most critical factors using mean responses.

The perception of local and foreign contractors taken from in-depth interviews conducted in Malaysia early 2003 is discussed. Factors such as agreement of contract terms, commitment, management control, inter-partner trust, cooperation, financial stability, criteria partner selection, profit, equity control, mutual understanding, partner's experience and cultural understanding were considered critical and were significant from this research.

15. (Henzelmann and others, 2003)

This extensive study is conducted from November to December 2002, surveying managers in the construction and construction supply industries in Europe (Germany, France, Italy, the United Kingdom, Spain, the Netherlands, Belgium, Sweden, and Portugal).

In this analysis, each of the interviewed companies gave their assessment of the past and future conditions, their importance for the construction and construction supply industries, their success factors and the extent to which they have been achieved.

Companies within the industry rated key success factors according to their importance over the last five years and the next five years. And all of the success factors mentioned in the study will become increasingly important.

In addition to their importance in the future, the European companies surveyed indicated the current extent to which the success factors have been achieved. The following are the Success factors over the last five years and the next five years:

- More long-term partnerships with customers
- Effective risk management
- Specialization (e.g. business streamlining)
- Innovation
- Cost-cutting
- More long-term partnerships with subcontractors
- Lean organizational structure

- Establishing new contract models
- More long-term partnerships with materials suppliers
- Diversification (e.g. adding new business areas)
- Pulling out of unprofitable regions
- Performance-based pay for management
- Marketing/PR work
- Producing less in-house/outsourcing more
- Establishing operator models as a segment
- Organic growth
- Expanding into new countries
- Growth through acquisition
- More long-term partnerships with competitors

16. (Jaana Koota, 2003)

The goal of this study is to provide case stories on successfully implemented new operations and business concepts in construction companies in the United States for encouraging Finnish construction companies in their development and moving towards new innovative business opportunities. The project results are based on confidential interviews in selected U.S. companies, and information and research results published in the American literature.

In this study, information of success characteristics in the construction industry is mainly based on interviews in selected U.S. companies and experts at Texas A&M University, Department of Construction Science. Information was collected from seven companies, whose fields of activities covered industrial construction, residential construction, HVAC services and design and planning.

Results:

The success characteristics that are presented in this study are common for most of these case companies. These include:

1. **Differentiation on the market**: it is typical for companies to specialize in a few sectors of horizontal or vertical construction.
2. **Partnerships and alliances**: it has gained popularity among large companies that do continuous construction. Some companies eschew the term "partnering" due to inferred legal implications and even have a problem with the word "alliance", and thus say, "Preferred supplier".
3. **Safety performance:** Cultural differences between Finland and the United States can clearly be seen in the safety aspect of construction business. In Finland, safety is a self-evident truth in business and it encompasses working ergonomics, mental health and safety throughout all construction project phases.

4. **Environmental aspects:** In the United States the cultural heritage of buildings is different from that in Europe. This can be seen from the value of renovation and modernization of buildings, which is minor in American construction business. In Finland, sustainability and energy efficient building have been part of the business for several years.
5. **Labor relations:** The interviewed companies think that the construction market continues to be a strong market, because people need structures to be built. The limitation remains in the ability to find qualified craft people and labor to build those facilities. Companies pointed out that their ability to grow is based on the ability to recruit, train and maintain a qualified workforce.

17. (Morledge, 2003)

This study looks into the CSFs towards the successful implementation of JV's within the Malaysian construction industry, and it presents part of a three-year programme of research to identify those success factors which need to be achieved in a construction joint venture if success is to be assured (particularly in Malaysia). Twenty-one main factors crucial to joint venture success were identified from a wide literature review. A questionnaire survey administered to local and foreign construction organizations in Malaysia identified twelve factors as the most critical factors using mean responses. The perception of local and foreign contractors taken from in-depth interviews conducted in Malaysia early 2003 is discussed. Factors such as agreement of contract terms, commitment, management control, inter-partner trust, cooperation, financial stability, criteria partner selection, profit, equity control, mutual understanding, partner's experience and cultural understanding were considered critical and were significant from this research.

Results

Perception of Malaysian and Foreign Contractors towards Potential Success Factors from the in-depth interviews:

- Agreement of Contract.
- Commitment.
- Cooperation.
- Management Control.
- Inter-Partner Trust.
- Financial Stability.
- Criteria For Partner Selection.
- Profit.
- Equity Control.
- Cultural Understanding.

- Partner's Experience.
- Mutual Understanding.
- Compatibility of Objectives.
- Motivation.
- Knowledge Transfer.
- Communication.
- Effective Human Resource Management.
- Coordination.
- Organizational structure.
- Conflict.
- Size compatibility of partner firms.

18. (Hallaq, 2003)

This study is carried out in Gaza Strip to find out the reasons of construction business failure and to investigate the severity of these causes from the contractor's perspective. And its aims have been achieved by interviewed questionnaires. The collected data include the sample characteristics of the study population and the five main groups; managerial, financial, expansion, environment and political.

The results of analyzing 53 causes of failure showed that the main cause of contractors failure are: delay in collecting dibs from clients, closure, depending on banks and paying high profits, lack of capital, cash flow management, lack of experience in the line of Gaza Strip, absence of construction regulation, low margins of profit due to competition, award contract to lowest price, and lack of experience in contract.

The results of this research recommended that the Palestinian national authority must take the risk when donors delay the dibs, modify and improve the construction regulations, connect price with index, introduce coherent polices towards groups suffered people injured by failure, perform training programs to explain the external and internal factors affecting the construction industry, and award tenders to accurate estimate cost and not necessary to the lowest bidders. The study also recommended the contractors to avoid bank loan, react to political and environment changes, not to increase number and volume of project, make sure that top management must to be same knowledge and experience, and to calculate and consider political and environmental risks in costing and estimating contracts.

19. (Albert and others ,2001)

This study aimed to identify a set of project success factors for design and build (D&B) projects and examine the relative importance of these factors on project

outcome. Six project success factors (project team commitment, contractor's competences, risk and liability assessment, client's competences, end-user's needs and constraints imposed by end users) were extracted from factor analysis of data provided by 53 participants of public sector D&B projects through a questionnaire survey. Project team commitment, client's competences and contractor's competences were found to be important to bring successful project outcome from the multiple regression findings. Contractor's competences also contributed to project time performance. Project team members should also recognize that time and cost performance as well as quality of design and workmanship represents the key elements of overall success of D&B projects. Practitioners are advised to focus on teamwork and partnering for successful project completion.

20. (Chua and others, 1999)

The study seeks to distinguish key factors for construction project success according to the project objectives of budget, schedule, and quality. The analytic hierarchy process is adopted to determine the relative importance of success-related factors. A hierarchical model for construction project success is presented. Sixty-seven success-related factors are considered. These factors are grouped under four main projects aspects, namely, project characteristics, contractual arrangements, project participants, and interactive processes in the hierarchical model for project success. A questionnaire was developed to facilitate systematic data collection in this study. Experts with an overall average of 20 years of experience in the construction industry were invited to participate in the survey. CSFs addressing budget performance, schedule performance, quality performance, and overall project success are identified. Some pertinent findings of the study are discussed. Comparisons with findings of previous studies using neural network approach are also presented.

1.10 Previous Studies Analysis

CSF concept is widely used in research related to construction all over the world, so there are large no. of researches provide details for this topic. On the other hand, it is clear that there is small no. of Arabic studies for CSF in construction that means this concept is narrowly used in Arabic researches. Some of previous studies are deeply related to this research, and others have some correlation.

Previous studies presented many types of CSFs, and these factors are grouped under main groups. The next are the most notable and common CSFs as they concluded by previous studies:

- Projects aspects and characteristics;
- Contractual arrangements and management control;

- Project team commitment, communication and cooperation;
- Contractor's competences;
- Risk and liability assessment;
- Client's competences;
- End-user's needs and constraints imposed by end users;
- Financial stability, profit and equity control;
- Quality construction, timely delivery and job site safety
- Clear project goals and objectives;
- Economic viability and favorable investment environment;
- Sound organization planning efforts and a competent and experienced project manager; and
- Cultural understanding and flexible organizational structure.

Many of CSFs mentioned in this study were formulated based on the previous studies, but different CSFs were added according to experts and academicians recommendations. The additional CSFs were attributed to local environment characteristics and requirements from experts and academicians point's views, such as, cost control, pricing process and managerial skills of contractors.

CHAPTER - 2

Critical Success Factors

2.1 Introduction

To apply the CSF method and to use CSFs as an analysis tool, it is important to understand how they relate to the organization's strategic drivers and competitive environment.

This chapter provides a foundation for understanding CSFs and defines these important relationships, and then the researcher's definition for CSF will be provided.

Moreover, in order to be familiar with CSF method, this chapter presents concept history, evolution of the CSF method, CSF analysis and identification, and sources of CSFs. Furthermore, to support strategic concept of CSF approach, the relationship between goals and CSFs and hierarchy of CSFs will be discussed in this chapter.

Furthermore, as a core issue of this thesis, this chapter gives details about CSFs in construction, CSFs and project management, project CSF, and CSFs across the project life cycle.

In order to evaluate CSF method, general advantages and weaknesses of a CSF approach will be provided in the end of this chapter.

2.2 Key Definitions

Before commencing the literature review, it is necessary to clarify the terminology "critical success factors":

The term" Critical " means " is to work with creating joint pictures of where you are heading, what goals and visions you have, also means creating an ability to think together, no matter what background you have and what personal goals you have "(David, 2006, 38). Fang and Patrecia see that the best success refers to the best results the organizations could possibly get with enterprise systems, relating to with its business situation, measured against a portfolio of project, early operational and long-term business metrics. And optimal success can be dynamic, in a sense that what is possible for an organization to attain may change eventually, as business conditions also may change (Fang, 2005).

The expression "critical success factor" has been adapted for many different uses (Caralli, 2004,). And CSFs will likely vary from company to company and from on business unit to another. People in the business unit probably identified the (CSF) when they were gendering business strategy for their units (Wheeler & Hunger, 1998). So, CSFs can be defined as the following:

CSFs “are those handfuls of things that within someone’s job must go right for the organization to flourish. They are the factors that the manager wishes to keep a constant eye upon” and CSFs analysis is “the quintessential business aliening tool” (Robson, 1994, 159).

Another description for CSFs is “those issues which are deemed important to the organization, with regard to its present and future performance, and also to its stakeholders (Gallen, 2004). Reynolds (1992, P.238) sees that “CSFs in any operation are those few essential activities that must go right if the operation is to be successful". Also, O'Brien thinks that “CSFs are small number of key factors that executives consider critical to the success of the enterprise. They are key areas where successful performance will assure the success of organization and the attainment of its goals" (O'Brien, 1991, 426). Laudon says that (CSF) are “A small number of easily identifiable operational goals shaped by the industry, the firm, the manager, and the boarder environment that are believed to ensure the success of an organization" (Laudon, 1998, 389). CSF can be described as the key factors that are critical to a accomplishing an organization strategic objectives (O'Brien, 2002). Turban and others see that CSF “are the key activates for any organization in which performance must be satisfactory if the business is to survive and flourish. CSF differs among industries and for individual firms within a particular industry" (Turban and others, 1996, 381).Rockart defined CSFs as: "The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They

are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired "(Mind Tools, 2008). Fang and Patrecia believe that CSFs are frequently used to discover and state the key components needed for the success of a business operation. And CSF can be expressed in more details as a small number of easily identifiable operational goals shaped by the industry, the firm, the manager, and the environment that assures the success of an organization (Fang, 2005). But Thuy Vu Nga and Kamolrat defined CSF as "the set of circumstances, facts, or influences which contribute to the project outcomes" (Vu Nga, 2007, 18).

In view of the above, the researcher introduces the following explanation for critical success factors:

The fact that CSFs can be defined in so many different ways because of their elusive nature. Firstly, CSFs assist us to spotlight our attention on major concerns; and they can be used in concert with strategic planning methodologies. And the key success factors of a project are those few aspects which, if done well, guarantee project success and deliver above-average results. Their identification ensures concentration on the essential. As well as they define what factors are needed for a successful implementation.

2.3 Business Definition for Critical Success Factor

The Dictionary of business (2008) defines CSF as" an element of organizational activity which is central to its future success. CSFs may change over time, and may include items such as product quality, employee attitudes, manufacturing flexibility, and brand awareness. Also, any of the aspects of a business that are identified as vital for successful targets to be reached and maintained. CSFs are normally identified in such areas as production processes, employee and organization skills, functions, techniques, and technologies. The identification and strengthening of such factors may be similar to identifying core competences, and is considered an essential element in achieving and maintaining competitive advantage".

2.4 Concept history and Evolution of the CSF Method

CSFs have been one of the central themes of project management research in the past few decades (Khang and Moe, 2004).

"The concept of identifying and applying CSFs to business problems is not a revolutionary new field of work. It dates back to the original concept of "success factors" put forth in management literature by D. Ronald Daniel in the1960s. However, the CSF concepts and approach are still very powerful today and are applicable to many of the challenges being presented in the information technology and security fields" (Caralli, 2004, 9). In addition, " the topic of CSFs has received growing interest in the

project management field since1960s.The development of CSFs in the beginning is primarily based on theoretical studies and then turns into empirical studies. During the 1970s-1980s, many literatures mainly approach critical success factor requirements in response to the indicators of project success at the implementation phase, which are time, cost, and quality as well as stakeholder satisfaction"(Vu Nga, 2007, 21). And about the period during the 1990s-2000s, Vu Nga says “emerging literatures address the stakeholder issue and interactions between internal and receiving organizations associated with the project success. Many CSFs categorizations and frameworks are approached and integrated with the project success criteria in order to provide a comprehensive framework for evaluating the project based on CSFs" (Vu Nga, 2007, 22). In addition, he observe that " CSFs developed later are more complex than those of the previous decade since more recent CSFs cover both hard and soft aspects of project management such as the competence of the project manager and the project team members, leadership, behavior, and address all perspectives of project management such as quality management, risk management, stakeholder management, project portfolio management, and programme management" (Vu Nga, 2007, 23). “Now during 21st century, the concept took a rationale on the agreement on CSF’s before start of the work and empowerment of the project manager to achieve goals" (Dunna and Burela, 2007, 15). In addition, Caralli think that most of the work in success factors performed by Rockhart and Daniel was focused on refining the information needs of executives (Caralli, 2004). But, as a logical result of this effort, Rockhart hinted at the value of the method as a element of strategic planning for information systems or technology. The CSF method has found its way into many formalized information or business systems and technology planning methodologies that are still being used today. Also, Caralli deduces that the CSF method and the analysis of CSFs have been used in many ways outside of the information technology planning field (Caralli, 2004).

2.5 CSF Determination

CSFs cannot be specially determined for the groups since success can be defined quite differently by each individual, and for the goal at hand. Therefore, in order to identify critical success factors, it is first necessary to come to terms with your own personal definition of success. Each individual’s own definition of will be influenced by several key factors:

- Success is subject to individual understanding based on upbringing, past experiences, role models, personal motivations and goals. Your own definition of personal success directly influences critical factors leading to that success.

- Your view of success will change at various times throughout your life. Your definition of success will continue to change, so don't make the error of pursuing an outdated version of it.
- Success factors will change over time.
- Personal success is sometimes measurable and sometimes not.
- Very few people achieve success accidentally. Most people who achieve success first defined it then planned for it; they set a goal to achieve it. Critical success factors change with the goal.

After that, once the key areas are identified, the next step is to ensure sufficient resources to the cause to put the company in a higher competitive plane. It is common sense for companies to first concentrate resources early on a single strategically significant aspect and become most competitive at it and then consolidate their position with respect to other factors also. In the long run, effective and persistent execution in these critical areas may prove to be the only differentiating factor between successful and also-ran companies. In order to create an intense focus around the critical success factors, the company must not only establish clear metrics but also design fool-proof measurement systems for these factors. Review of performance against the set norms will help maintain the focus on the critical issues. Point to remember is that clarity of CSFs depends on the understanding of the goals or objectives the company is pursuing. CSFs are meaningful when the goals set are challenging. Furthermore, Lynch proposes three principles areas that need to be analyzed in order to CSF Identifying (Lynch, 2000):

1. Customers.
2. Competition.
3. Corporation.

2.6 How Many CSFs?

Even as there is no hard and fast rule, it's useful to limit the number of CSFs to five or fewer absolute essentials (Mind Tools, 2008). This helps to maintain the impact of CSFs, and so give good direction and prioritization to other elements business or project strategy. Also, Williams and Ramaprasad (1996) noted that "there are about six or seven CSFs in any particular context". To be sure that all types of possible CSFs are considered, Rockart's CSF types as a checklist can be used (Mind Tools, 2008):

- ***Industry:*** These are the things that the organization must do to remain competitive. These factors result from specific industry characteristics.

- ***Environmental:*** these factors result from macro-environmental influences on an organization. Things like the business climate, the economy, competitors, and technological advancements are included in this category.
- ***Strategic:*** these factors result from the specific competitive strategy chosen by the organization. The way in which the company chooses to position themselves, market themselves, whether they are high volume low cost or low volume high cost producers, etc.
- ***Temporal:*** these factors result from the organization's internal forces. Specific barriers, challenges, directions, and influences will determine these CSFs.

2.7 Dimensions of CSFs

Caralli explained different dimensions of CSFs. They are listed below (Caralli, 2004):

- ***Internal:*** are those CSFs that are within the span of control for a particular manager.
- ***External:*** are those over which a manager has very little control.
- ***Monitoring:*** emphasize the continued scrutiny of existing situations.
- ***Adapting:*** are focused on improving and growing the organization.

2.8 Using the CSF Tool:

To apply the CSF method as an analysis tool, it is important to understand how they relate to the organization's strategic drivers and competitive environment (Caralli, 2004).

CSFs have been used significantly to present or identify a few key factors that organizations should focus on to be successful. In actuality, identifying CSFs is a very iterative process. Mission, strategic goals and CSFs are basically linked and each will be refined as they are developed. Steps to identify the CSFs for business or project are listed below (Mind Tools, 2008):

1. Create businesses or project's mission and strategic goals.
2. For each strategic goal, ask "what area of business or project activity is essential to attain this goal?" the answers to the question are candidate CSFs.
3. Evaluate the list of candidate CSFs to find the absolute essential elements for achieving success – these are Critical Success Factors.
4. Identify how to monitor and measure each of the CSFs.
5. Communicate CSFs along with the other important elements of business or project's strategy.

6. Keep monitoring and reevaluating CSFs to ensure you keep moving towards your aims. Indeed, whilst CSFs are sometimes less tangible than measurable goals, it is useful to identify as specifically as possible how you can measure or monitor each one.

In addition, Turban and others suggest the following steps in the CSFs approach (Turban, 1996, 383):

1. What objectives are central to your organization?
2. What CSFs are essential to meeting these objectives?
3. What decisions or actions are key to these critical success factors?
4. What variables underlie these decisions, and how are they measured?
5. What information systems can supply these measures?

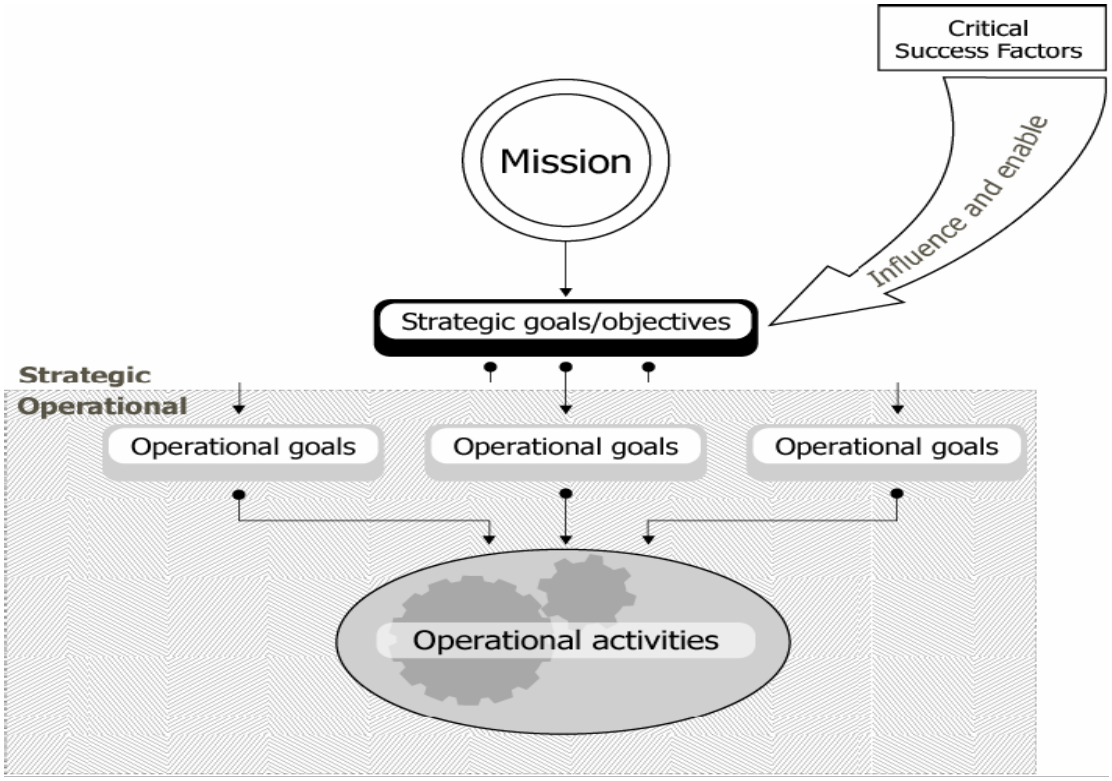
2.9 Relationship between CSF and Key Performance Indicator

Identifying CSF's is important as it allows firms to focus their efforts on building their capabilities to meet the CSF's, or even allow firms to decide if they have the capability to build the requirements necessary to meet CSFs. A critical success factor is not a key performance indicator (KPI). CSFs are elements that are vital for a strategy to be successful. KPIs are measures that quantify objectives and enable the measurement of strategic performance. Furthermore, Rautiainen suppose that for each critical success factor there must be a related key indicator that gives the measure and a standard of performance or acceptable variance from planned performance. The most effective key indicators are those designed into the process in such a way as to provide a readily available or continuous reading of performance (Rautiainen, 2001).

2.10 Relationship between Goals and CSFs

In usual strategic planning and management, the definition of a goal or an objective is quite well known; but, defining a CSF is much less obvious. Therefore, CSFs are often confused with organizational goals. So, to avoid this interruption, Caralli describes organizational goals as" targets that are established to achieve the organization’s mission and Goals can be decomposed into operational activities to be performed throughout the organization "(Caralli, 2004, 13). For more understanding to this concept, figure 2.1 shows goals versus CSF.

Figure 2.1: Goals vs. CSFs



Source: Caralli, 2004, 13

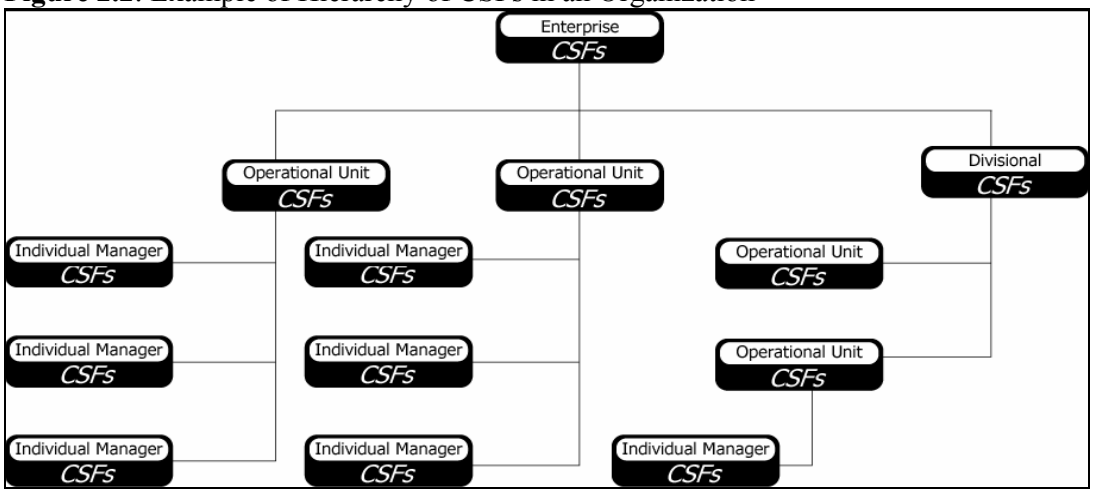
Finally, the strong relationship between goals and CSFs results from the fact that managers are the origin of both goals and CSFs. When managers set goals, they also implicitly consider what they need to do to be successful at achieving the goals. Thus, it is likely that managers consciously consider their CSFs during goal setting and consequently create the bond between goals and CSFs that is needed to contribute to accomplishing the organization's mission. In this way, the influence of CSFs on goal achievement is made explicit, even if the actual CSFs are not. Organizations that have been successful at achieving their goals have also likely achieved their CSFs, albeit in a less observable way. Thus, goals sometimes resemble CSFs because they embody the importance of a key performance area (Caralli, 2004).

2.11 Hierarchy of CSFs

CSFs exist throughout all levels of the organization and can come from many sources. CSFs at higher levels of the organization are related to (or dependent on) those at lower levels in the organization. Higher level CSFs cannot generally be achieved unless lower level CSFs are achieved as well.

Higher level CSFs influence lower level CSFs. In fact, if lower level CSFs differs significantly from higher level CSFs, the organization must consider whether there is proper alignment between the activities of lower level management and the strategic direction of the organization (Caralli, 2004). Figure 2.2 provides a clear picture for CSF hierarchy.

Figure 2.2: Example of Hierarchy of CSFs in an Organization



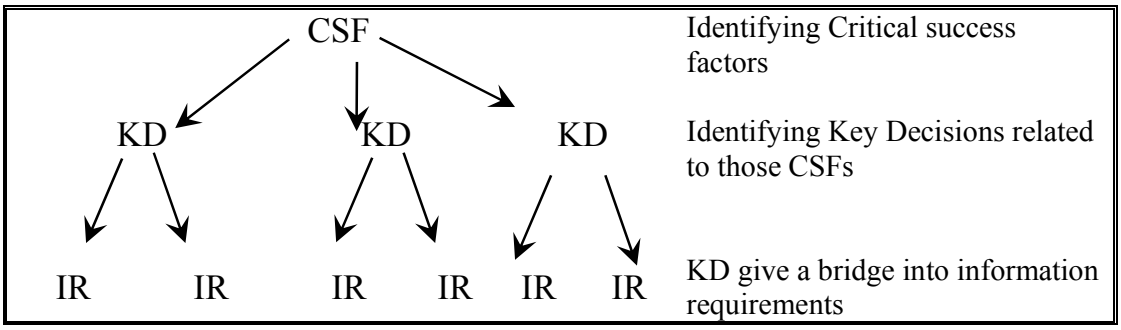
Source: Caralli, 2004, 24

2.12 CSFs Analysis

The outcome of a CSF analysis often includes results such as "organizational structure and process that support the venture", "project management able to focus on reducing uncertainties", or "a high-quality new product process" and " a clearly defined new product strategy for the business unit"(Rautiainen, 2001).

This technique suggests that strategic information requirements (IR) can be uncovered by a three stages process: firstly identifying of a number of critical success factors, secondly the critical decisions to be made, and hence finally the information required supporting those decisions (Robson, 1994). Figure 2.3 shows the relationship between Critical success factors, Key Decisions and Information Requirements.

Figure 2.3: relationship between Critical success factors, Key Decisions and Information Requirements



Source: Robson, 1994

Robson sees that there are five important factors to consider when eliciting a manager's handful of CSFs (Robson, 1994)

1. ***The industry:*** all organizations within an industry will share these.
2. ***The competitive strategy/ industry position:*** large players may determine these for the smaller players.
3. ***Environmental Factors:*** the economy, country or policies, etc.
4. ***Temporal factors:*** those not normally of concern but are so "for a time".
5. ***Managerial position:*** the CSFs will vary with the level in the hierarchy; the higher up the management triangle the more likely it is that CSFs will be of the "building" verity-tracing the progress of changes. Lower levels of management have CSFs relating to "monitoring of current operations.

In addition, Dory (2005) determined the main CSFs for all business organizations to be used in analysis process as listed in table 2.1:

Table 2.1: Main CSFs for Industry:

S.N	Critical success factors
1-	**Technological Critical Success factors:** a) Scientific research experiences. b) Innovation capabilities for process. c) Innovation capabilities for product. d) Experiences in a specific technology.
2-	**manufacture Critical Success factors:** a) Production efficiency. b) Product types. c) Fixed asset utilization. d) Skill Labors. e) High productivity. f) Product design. g) Manufacture Flexibility.
3-	**Distributional Critical Success factors:** a) Strong network.

	b) Wide area in retailing. c) Low cost. d) Speed.
4-	**Marketing Critical Success factors:** a) Effective training . b) Product line extension. c) High skills. d) Attractive envelops. e) Guarantee.
5-	**Skills Critical Success factors:** a) Ideal skill. b) High experience in design field. e) Experiences in a special technology. c) High achievement.
6-	**Organizational Critical Success factors:** a) Suitable information system. b) Flexibility. c) Wide experience and knowledge.
7-	**Other Critical Success factors:** a) Good Image. b) Low total cost. c) Availability of Financial resources.

Source: Dory, 2005

2.13 Appling a CSF analysis

The analysis of main CSFs of industry and competencies is a necessary process, as it is on of the basis of strategy formulation in enterprises (Dory, 2005).

CSFs allow managers, initially senior ones, to articulate their needs in terms of the information that is absolutely critical to them. These areas Rockart defined as "the limited number of areas in which results, if they are satisfactory, will enable successful competitive performance.

These CSFs can come from the industry structure, competitive strategy, industry position, business environment. CSFs are not information needs for strategic planning, which would probably be far too unpredictable, but the information needs for management control, so the data needed to monitor and thus improve business areas – this can be defined.

Prior to the use of CSFs there was a chasm between the consumers of information, i.e. user management, and the providers of information services, i.e. IS. So CSFs can give some guidance on needs in such a way that reflect the effect of this chasm is minimized. CSFs are needs and not development plans, or requests for specific systems. CSFs must be:

- Intelligible to senior managers.
- Intelligible to IS/DP managers.
- Possible to act on.

CSFs have been widely used, their purpose is to identify the most important ingredients for the IS strategy since they define the most important ingredients of the business success. They keep a firm focus upon strategic issues, but obviously their weakness is that it needs very skilled and very perceptive interviewers to do the abstracting of CSFs from senior managers.

The main strengths of CSF analysis are that it provides effective support to planning since the consideration of critical activities develops management insights and CSFs analysis serves as the effective top level for a subsequent structured analysis.

CSF receives an enthusiastic welcome from senior management. By contrast, another major weakness of the manager is that the more removed from the management apex a specific manager is the harder it is to apply CSF analysis; many managers who are not already involved in strategy planning activities find CSF analysis too conceptual additionally impossible to build a true picture of the organization's information requirements using only CSFs.

The managerial in dependence means that CSFs work very well in this segment and the central issues for IS may be to identify what to share and how to support the remote access to systems.

2.14 CSFs in Construction

CSFs are those activities that a company must do well in order to handle with the competitive forces within its industry. Furthermore, Success on a project means" that certain expectations for a given participant were met, whether owner, planner, engineer, contractor, or operator. These expectations may be different for each participant" (Sanvido and others, 1992, 1). And In construction, the ultimate goal is to deliver a quality facility that meets, or exceeds, owner expectations, while eliminating as much stress as possible for the customer. To do so, there are many areas that are directly linked to the success of every project: Preconstruction Excellence, Scheduling, Safety, Change Management, Zero Defects and Project Closeout.

But, KBS, a leading construction company, measures its achievements with five Critical Success Factors: Quality Construction, Timely Delivery, Job Site Safety, Financial Success and Client Satisfaction (KBS, 2008).

"There are many pervious studies in construction regard to identify critical success factors CSFs analysis. Factor analysis concerned about value management (VM) in construction was adopted to find out the factors of VM according to their degrees of importance in relation to success. Cheng et al proposed a partnering framework to

identify the CSFs for construction parties implementing parties implementing partnering arrangements. The identified CSFs for construction projects were also broad strategic principles, which would definitely require further refinement to identify lower level factors that can be implemented as project strategies Different types of public-private partnerships (PPPs) are identified, analyzed, and categorized various CSFs for PPPs in general based on public-private win-win principle and systematic research approach . The approach includes cast studies, literature review, and interviews with experts Chua et al. adopted a hierarchical model for construction project success to determine the relative importance of success-related factors "(Cheng Lin and Kuo Lin, 2006). In addition, Brewer and others deduce that CSFs in the construction industry are categorized into six dimensions, table 2.2 illustrates this configuration.

Table 2.2: Critical Success Factors/participant type matrix:

CSFs	Participant type
1. Organizational commitment	Client
2. Organizational attitude	Head contractor
3. Industry regulation	Head contractor
4. Investment drive	Consultant
5. Rights and duties	Consultant
6. Guarantee/ protection/ assurance	Sub contractor

Source: (Brewer & Others, 1)

Where as, Chua et al. suggest hierarchical model for construction project success with budget, schedule, and quality are key measures. Also, Iyer and Jha indicate that CSF for a construction projects are: project manager competence, owners & top management support and monitoring, feedback, and coordination. As well as, Chau et al. divided CSF in construction projects into four groups: project characteristics, project participants, contractual arrangements, and interactive process (Dunna and Prasad, 2007). In addition, Iyer and Jha concluded two success factors and one failure factor in Indian Construction Projects : commitment of project participants; owner's competence; and conflict among project participants contribute significantly in enhancement of current performance level of the project (Iyer and Jha, 2006).

In view of the above mentioned details, the researcher intends to study the ‘success factors’ from the perspective of contractors.

2.15 CSFs and Project Management:

CSFs are a helpful approach for identifying information requirements for the management. And CSFs can be controlled and affected by the management's action and participation before attain wanted outcomes. So, CSFs can be viewed as a useful outline of project management to support project manager in achieving, but not excellent to totally confirm, successful outcomes. Even if all critical factors are present, a project can fail from uncontrollable factors. However, if the CSFs are adequately identified and controllable, the chance of a successful project will be greatly increased (Vu Nga, 2007). As well as, Khang and Moe observed the need to differentiate two different perceptions of success for a project (Khang and Moe, 2004):

- Project management success is concerned with the traditional time, cost and quality aspects at the completion of the project. The concept is process oriented and involves the satisfaction of the users and key stakeholders' at the project completion.
- Project success is measured against the achievement of the project owner's strategic organizational objectives and goals, as well as the satisfaction of the users and key stakeholders' needs where they relate to the project's final product.

2.16 Project Critical Success Factors:

The advantages of identifying CSFs are that they are simple to understand; they help focus attention on major concerns; they are easy to communicate to coworkers; they are easy to monitor; and they can be used in concert with strategic planning methodologies. Using CSFs as an isolated event does not represent critical strategic thinking. But when used in conjunction with a planning process, identifying CSFs is extremely important because it keeps people focused. Clarifying the priority order of CSFs, measuring results, and rewarding superior performance will improve the odds for long-term success as well. Studies shown that to complete a project successfully the following CSFs apply:

1. Match Changes to Vision.
2. Define Crisp Deliverables.
3. Business Need Linked to Vision.
4. Have a Formal Process to Define Vision.
5. Organizational Culture Supports Project Management.

In the light of the above, Critical factors can be perceived as facilitated or impeded conditions which influence the project outcome. Furthermore, "some researchers

observe CSFs as independent variables and project success criteria as dependent variables" (Vu Nga, 2007, 18). It means that CSFs can improve the project outcomes, which in turn can be assessed by a set of measurements as indicated in the project success criteria. In order to provide an apprehensible snapshot of the above review on the complex matter of CSFs, the results of various studies on project CSFs are summarized in Table 2.3:

Table 2.3: Summary of literature review on CSFs for projects

Pinto and Slevin (1987), Field study	Belassi and Tukel (1996), Field study	Cooke-Davies (2002), Empirical research
1. Project Mission: Clearly defined goals and directions **2. Top management support**: Willingness of top management to provide necessary resource and authority **3. Project schedule/Plan:** Detailed action plans **4. Client consultation:** Communication, consultation and active listening to all impacted parties **5. Personnel:** Recruitment, selection and training **6. Technical Tasks:** Availability of required technology and expertise **7. Client acceptance:** The act of "selling" the final projects **8. Monitoring and feedback:** Timely provision of comprehensive control information at each stage in the implementation process **9. Communication:** Provision of appropriate communication networks and necessary data to all key actors **10.Troubleshooting:** Ability to handle unexpected crises and deviations from plan	**Factors related to the project manager and project team members:** a. Manager: ability to delegate authority, ability to trade-off, ability to coordinate, perception of his role, competence, commitment b. Project team members: technical background, communication skills, trouble shooting, commitment 2. **Factors related to the project**: size, value, uniqueness of project activities, density, life cycle, urgency 3. **Factors related to the organization**: top management support, organizational structure, functional managers' support 4. **Factors related to the external environment:** political environment, economical environment, client, competitors, etc.	**Critical factors to project management success:** 1. Adequate company-wide education on risk management concept 2. Assign risk ownership 3. Adequate visible risk register 4. Updated risk management plan 5. Adequate documented project responsibilities 6. Keeping project as far below 3 years as possible 7. Allowing changes to scope only through a mature scope change process 8. Maintaining the performance measurement baseline 9. Existence of effective benefit delivery and management process 10. Portfolio and Programme management 11. Project, programme and portfolio performance and feedback system 12. Learning organization

Source: Vu Nga, 2007

In addition, table 2.4 demonstrates CSFs of a project.

Table 2.4: CSFs of a biopharmaceutical project

Internal Success Factors	Human resources
	Products
	Networking
	Company climate
External Success Factors	Clusters
	Infrastructure
	National policies

Source: Rautiainen, 2001

Moreover, Shehnar and Widerman generally categorized success factors as project efficiency, impact on customer , business success and preparing for the future. Also, Chan et al. mentions that CSF can be grouped into five main categories namely project related, procurement related, project management and project participant related factors. And, Trop et al. listed 'Project planning and controlling' as the third most import aspect for CSF for Project performance after project organization and contract strategy (Dunna and Prasad, 2007).

2.17 CSFs across the Project Life Cycle:

The project implementation process is complex. It usually involves attention to a broad Varity of human, budgetary, and technical variables (Pinto and Prescott, 1988). Niclas& Marcus concluded the most important CSFs within the Project life cycle as the following (Niclas& Marcus, 2005):

- Infusion stage: Careful selection of package
- Adoption stage: Top management support
- Adaptation stage: Project champion
- Acceptance stage: Project champion

Also, Dunna and Prasad mentioned that "project success is a complex and ambiguous concept and it changes over the project and product life cycle" (Dunna and Prasad, 2007, 15).

In addition, Pinto and Prescott found out the following CSFs across PLC (Pinto and Prescott, 1988):

1. ***Conceptualization stage:*** mission and client consultation.
2. ***Planning Stage:*** mission, top management support, and client acceptance.
3. ***Execution stage*:** mission, trouble shooting, schedule, technical tasks, and client consultation.
4. ***Termination stage:*** technical tasks, mission, and client consultation.

Writing a good Critical Success Factor:

To write good CSF's, a number of principles are listed below:

- Ensure a good understanding of the environment, the industry and the company.
- Build knowledge of competitors in the industry.
- Develop CSF's which result in observable differences.
- Develop CSF's that have a large impact on an organization's performance.

2.18 General Advantages of a CSF Approach

Regardless of how CSFs are used, there are several advantages to having this type of common focus for the organization (Caralli, 2004).

- CSFs can reduce organizational ambiguity. Developing and communicating a set of CSFs can reduce the dependence on the *perceived* aims of the organization. CSFs reflect the implicit, collective drivers of key managers and as a result are a more dependable and independent articulation of the organization's key performance areas.
- CSFs are more dependable than goals as a guiding force for the organization. An organization can set good goals that, in theory, will move the organization toward its mission. However, if the goals are poorly articulated or developed, this is not guaranteed. CSFs are reflective of what good managers do well to move the organization toward its mission, regardless of the quality of the goals that have been set.
- CSFs are more likely to reflect the current operating environment of the organization. Goal setting tends to be a cyclical (i.e., yearly) activity that is seldom revisited until performance measurement. Used properly, CSFs are likely to be more dynamic and to reflect current operating conditions (particularly because of the many sources of CSFs).
- CSFs provide a key risk-management perspective for the organization to consider. The risk perspective of executive-level managers is built into CSFs, so their "radar screen" is exposed to the organization as a whole.
- CSFs can be valuable for course correction. When CSFs are made explicit, managers often realize that their perception of what is important to the organization may not match reality or they may realize that they don't fully understand the current operational climate. Thus, they can use CSFs to realign their operating activities.

Besides, Laudon see that a unique strength of the CSF method is that it takes into account the changing environment with which organizations and managers must deal. Also, CSF is especially suitable for top management and for the development of DSS. Last, the method produces a consensus among top mangers about what is important to measure in order to gauge the organizations success (Laudon, 1998).

2.19 General Weaknesses of a CSF Approach:

Laudon concludes that the weakness of CSF method is that the aggregation process and the analysis of the data are art forms. And there is often confusion among interviewees (and interviewers) between individual and organizational CSF. Moreover, this method is clearly biased toward top managers because they are the ones

interviewed. Finally, CSF method does not necessarily overcome the impact of changing environment or changing in managers (Laudon, 1998).

In addition, Lynch sees that “Criticism of the key factors for success has concentrated on four issues" (Lynch, 2000, 255):

1. ***Identification:*** it is difficult to pick out the important factors.
2. ***Causality of relationship:*** even though they have been identified, it may not be clear how they operate or interact.
3. ***Dangers of generalizing:*** the competitive advantage of a single organization, by definition, can not be obtained by seeking what is commonly accepted as bringing success to all organizations in an industry.
4. ***Disregard of emergent perspectives:*** success may come from change in an industry, rather than the identification of the current key factors for success.

CHAPTER- 3

Construction Industry in Palestine

3.1 Introduction

Construction is a process that consists of the building or assembling of infrastructure and it is one of the largest global employment sectors, providing work for a significant proportion of the labour market and accounting for a significant share of the world Gross Domestic Product (GDP).

Initially, construction industry background is shown to indemnify good understanding of next covered topics, including types of constructions, value of construction work, failure of construction strategic management in construction, the dynamism of the construction sector, management levels of construction, key performance indicators in construction and communication in construction.

then, to accept the important role of construction in the economy, characteristics of Palestinian economy are explained including economic conditions during 2007, construction industry in Palestine, overview of the construction sector, the contribution of the construction sector to the gross domestic product, labor force volume employed in the construction sector, expansion of the construction sector and its contribution to industrial and productive sectors, parties related to the construction sector and donor countries and international financing institutions.

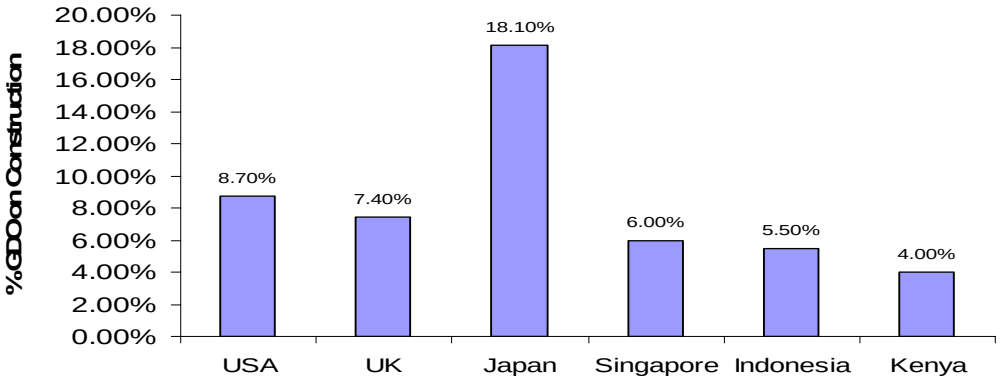
finally, this chapter displays figures and facts about construction contracting sector in Palestine including contractors and main indicators of construction industry.

3.2 Construction Industry Background

The Construction sector comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems). Establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in subdividing land for sale, as building sites also are included in this sector (Kincannon, 2004).

Engineering and construction are unique combination of a specific need and design in a process that yields an engineering works. The construction profession offers the opportunity to create works for the benefits of mankind, but in turn those that work in the profession accept substantial responsibilities (Schexnayder and Mayo, 2004). Also, Construction has many characteristics common to both manufacturing and service industries. Surely, as in other manufacturing, there are physical products. But in other ways, construction is more like a service industry because it does not accumulate significant amounts of capital when compared with industries such as steel, transportation, petroleum, and mining (Barrie & Paulson, 1992). There is no doubt that construction industry is a key activity in any economy; it influences and it is influenced by the gross domestic product of that nation. But construction industry share of GDP in developed countries is more than construction industry share of GDP in developing countries (Cox et al, 1998, cited in Abu Mostafa, 2003). Along with the construction industry is a vital part of the U.S. economy. Also, construction spending worldwide in the year 2000 was $3.41 trillion and the U.S. market ranked first (Levy, 2002). Figure 3.1 shows the percentage of construction industry share of GDP in three developing countries and three developed countries.

Figure 3.1*:* International compressions of construction industry share of GDP, (Cox et al, 1998, cited in Abu Mostafa, 2003).



The construction industry is a paradox, in many ways. It is the largest industry, but the vast majority of its hundreds of thousands of participants are small business (Barrie & Paulson, 1992).

In addition, Clough and Sears see that the construction projects are complex and time consuming undertaken. The structure must be designed in accordance with applicable codes and standards, culminating in working in drawings and specifications that describe the work in sufficient details for its accomplishment in the filed (Clough and Sears, 1994).

Harris & McCaffer mentioned that the successful construction industry executives have two distinct phases in their careers. One phase is the first 10 to 20 years which are spent on site; the other is the remainder of a career which involves head office activities (Harris & McCaffer, 1998).

Also, the field of construction is as diversified as the uses and forms of the many types of structures it produces. However, construction is commonly divided into four main categories: residential construction, building, engineering, and industrial construction. Although there is some overlap among these divisions and certain projects do not fit nearly into any one of them (Clough and Sears, 1994). Furthermore, Kincannon observes that Production responsibilities for establishments in construction sector are usually specified in (Kincannon, 2004):

- Contracts with the owners of construction projects (prime contracts).
- Contracts with other construction establishments (subcontracts).

As well as, the construction industry is inherently an uncertain industry. This uncertainty arises from the nature of industry itself- the competitive tendering process, the company's turnover, site production rates and the weather are all variable (Harris & McCaffer, 1998).

Ritz thinks that a short analysis of construction history informs a small number of things about the construction industry (Ritz, 1994):

- Construction has a long tradition of creating structures and facilities promoting the advance of humanity.
- Construction has provided a world civilization with a huge infrastructure, ranging from basic shelter to facilities in outer space.
- Construction productivity and efficiency have improved greatly over the countries.

As a result of the above, Barrie & Paulson concluded that "there is no clear definition as to just what the construction industry is. Certainly it must include the hundreds of thousands of general and specialty construction contractors. But to understand the industry really, one must extend its scope to include designers of facilities, material suppliers, and equipment manufactures" (Barrie & Paulson, 1992, 6).

3.2.1 Key performance indicators in construction

Construction organizations have stated to adopt benchmarking tools such as key performance indicators to help them to measure their performance in designated areas against industry standards. In addition, construction industry KPIs are national data sets, available online, against which an organization or project can benchmark its performance against the national trend (Emmitt and Gorse, 2003).

Emmitt and Gorse recommended ten headline KPIs that show current performance being achieved across the construction industry. They are(Emmitt and gorse, 2003):

1. Client Satisfaction-product.
2. Productivity.
3. Client satisfaction-service.
4. Defects.
5. Predictability-cost.
6. Safety.
7. Predictability-time.
8. Construction cost.
9. Profitability.
10. Construction time.

3.3 The Palestinian Economy

The Palestinian economy refers to the economy of the Palestinian territories, including the West Bank, East Jerusalem and the Gaza strip. After almost four decades of occupation, the economy of the occupied Palestinian territory in the West Bank and Gaza continues to be subject to restrictive Israeli measures and five years of violent confrontations and war-like conditions. These factors have had serious ramifications on the growth, structure and functioning of the economy (UNRWA, 2006).

Prior to the Oslo Agreements, Palestine was almost totally dependent on the economy of Israel for trade and employment opportunities. This situation did not come about by accident: it was created to serve the interests of the occupying power. More than 80% of exports are directed to Israel, from which about 90% of imports originate. Palestine experiences a trade deficit with Israel because, after thirty years of neglect, it lacks a broad, competitive industrial and agricultural base. This situation is further compounded by Israeli restrictions on the volume, destination and sources of Palestinian trade (PECDAR, 2008).

The deep economic crisis in the West Bank and Gaza threatens to impoverish and alienate a generation of young Palestinians. The Palestinian recession is among the worst in modern history. Average personal incomes have declined by more than a third since September 2000, and nearly a half of Palestinians now live below the poverty line (World Bank, 2004). Recent geopolitical events have severely damaged the economy of the territories. In September 2000, the Second Intifada began. The increased Palestinian violence and checkpoint closures associated with the conflict caused a recession in 2001-02. The World Bank compared this recession to the great depression of 1929

Furthermore, Kjeilen see that The Palestinian infrastructure is mediocre, compared to the Israeli, and on the occupied territories, only Jewish settlers have a standard that can be compared to what is found in their homeland, and Palestine has over the recent years become more and more the victim of corruption and embezzlement at the highest government levels. This has had serious effects on industry and commerce and living standards of ordinary Palestinians (Kjeilen, 2008).

Above all, James Wolfensohn, The World Bank President mentioned that the key to Palestinian economic growth is private investment, which has declined dramatically since mid-2000. Since investors cannot be expected to bring capital to an area in conflict, both the PA and Israel must do their utmost to restore calm and a sense of security in the West Bank and Gaza. In addition, the PA will need to move decisively to create an environment more attractive to investors (Wolfensohn, 2004).

As well as, Siniora (2008) sees that the Palestinian economy suffers from a number of structural problems, as the next:

- The small domestic markets;
- The high levels of unemployment;
- The pressure of rapid population growth on limited land, public services and environmental resources.
- The division of the country into two geographically separated parts involves significant additional cost to the economy.

Against all odds, the Palestinian economy continues to function and defies the devastating conditions of the past five years. Three main factors explain why the economy and society as a whole was able to withstand such conditions, namely (UNRWA, 2006):

1. The resilience and cohesiveness of Palestinian society and the informal safety nets and innovative responses developed by enterprises;
2. The ability of the PA to continue functioning and employing at least 30 per cent of those who are currently working;
3. The increase in disbursements of donor support for budgetary solvency, relief and development efforts.

3.4 Construction Industry in Palestine

3.4.1 Overview for the Construction sector

Between 1931 and 1939 there was a 73% increase in the number of Arabs employed in the building trades, from 10,000 to 17,000. During that same period the Palestinian Arab total population increased by 23%. This differential shows the dramatic growth in Palestinian Arab construction. In the post-World War II era, there was a building boom in Palestine (Nakhleh, 2006).

The construction industry in Palestine has been noticeably developed since the establishment of Palestinian national Authority in 1994. This was obvious from the relatively large projects which have been executed in the last decade. These projects are progressively large in terms of their physical size and cost (Skaik, 2004). The construction sector is one of the key economic sectors and is the main force motivating the Palestinian national economy (PCU, 2008). In addition, Skaik think that any improvement in the construction industry will probably lead to a clear improvement in Palestinian economy. An improvement in the construction economy can be achieved by improving the project management functions (Skaik, 2004).

Furthermore, it is considered as one of the important economic activities, particularly in countries undergoing economic development. This activity plays a vital role in the Palestinian economy and significantly interrelated to the remaining economic activities (PCBS, 2008). In addition to subsidiary industrial and productive sectors, construction sector is the largest and most important of all other sectors. As such, the construction sector has been crucially significant, mainly in the past two years, for the role it plays in reconstruction, road rehabilitation and construction of infrastructure despite the continuous Israeli siege and aggression (PCU, 2008).

Also, Construction sector has played a crucial role in extending job opportunities for Palestinian labor force. Expansion of the construction activity has generated a lot of jobs for skilled, semi skilled and unskilled construction workers. The absolute number of domestic construction increased from 12.8 thousand in 1970 to reach 40.3 thousands in 1996. The share of this labor domestic employment has risen from 7.9% to 12% for the same period (PECDAR, 1997, cited in Madi, 2003).

Upon the establishment of the Palestinian National Authority and the assumption of its powers over the Palestinian territories in 1994, the construction sector has witnessed noticeable expansion and activities. This has resulted in the recovery of the construction contracting profession and subsidiary industries, encouraged the investment of the Palestinian expatriates' capital in the local construction sector, and contributed to the creation of jobs for thousands of Palestinians. Therefore, the construction sector has occupied the foremost position among the rest of sectors, mainly in the attraction of investments and creation of new jobs (PCU, 2008).

3.4.2 The contribution of the construction sector to the GDP:

Construction sector contributes 33% to the Palestinian GDP. This is a large proportion covered by this sector, thus positively affecting various economic, social, educational and vocational sectors in addition to other Palestinian institutions (PCU, 2003). The construction and contracting sector contributed around 10% of the Palestinian GDP prior to the Intifada. Since then, the sector's production rate has fallen sharply and over 360 factories were forced to close, causing estimated daily of US$1,400,000. The sector's overall Intifada-related losses amount to US$524 million. (PECDAR, People under Siege: Palestinian Economic Losses, April 2002).

On the other way, table 3.1 lists GDP values in West Bank and Gaza Strip by Economic Activity and Quarter for the year 2006 at Constant Prices: (1997 is the base year).

Table 3.1: GDP values in West Bank and Gaza Strip by Economic Activity and Quarter for the year 2006 at Constant Prices: (1997 is the base year) - Value in million US$:

Economic Activity	2006				
	QI	QII	QIII	Q IV	Annual Value
Mining, manufacturing, electr. and water	**62.6**	**78.4**	**71.1**	**121.9**	**334.0**
Construction	15.3	17.2	18.5	18.1	69.1
Wholesale and retail trade	**27.2**	**28.1**	**26.0**	**22.7**	**104.0**
Transport, Storage and Communications	**92.5**	**94.0**	**103.0**	**93.2**	**382.7**
Financial intermediation	**121.3**	**114.2**	**115.5**	**115.0**	**466.0**
Other services	**46.9**	**46.2**	**46.8**	**46.8**	**186.7**
Real estate, renting and business services	**256.2**	**261.2**	**229.8**	**193.0**	**940.2**
Community, social and personal services	108.1	108.5	121.1	110.1	447.8
Hotels and restaurants	10.8	10.7	10.4	11.7	43.6
Education	16.8	23.0	14.2	13.0	67.0
Health and social work	80.6	79.3	56.9	38.5	255.3
Public administration and defense	39.9	39.7	27.2	19.7	126.5
Households with employed persons	**165.5**	**151.7**	**138.0**	**97.5**	**552.7**
Less: FISIM	**2.2**	**2.1**	**2.1**	**2.3**	**8.7**
Plus: Customs duties	-34.4	-33.9	-34.7	-35.3	-138.3
Plus: VAT on imports, net	63.1	68.5	76.2	77.1	284.9
GDP	140.0	128.7	100.1	85.5	454.3

Source: PCBS, 2006, available on line at http://www.pcbs.gov.ps.

3.4.3 Labor force volume employed in the construction sector

Construction is one of the most important sectors in the assimilation of labor force throughout Palestinian cities and towns. Prior to the Israeli re-occupation of the Palestinian territories on September 28, 2000, construction sector used to employ an average of 22.3% of Palestinian labor force volume. However, the sector now employs 10.8% of the labor force volume only, thus constituting a decrease in the labor force volume as a direct consequence of the Israeli forces occupation (PCU, 2003).

Table 3.2 illustrates Selected Ratios in West Bank and Gaza Strip by Economic Activity-2006.

Table 3.2: Selected Ratios in West Bank and Gaza Strip by Economic Activity-2006

Economic Activity	Annual Compensation per Paid Employee in ($)	Output per Engaged Person in ($)	Output per Paid Employee in ($)	Value Added per Engaged Person in ($)	Value Added per Paid Employee in ($)	Value Added to Output %	Compensation of Employees to Value Added %	Depreciation to Output %
Industrial Activities	4328.0	29493.2	46144.5	13334.7	20863.2	45.2	20.7	4.3
Construction Activities	**5269.0**	**41063.2**	**49930.0**	**34731.4**	**42231.0**	**84.7**	**12.3**	**1.8**
Internal Trade Activities	4066.2	9141.2	34362.3	6934.2	26066.2	75.9	15.6	3.0
Services Activities	5354.9	9053.8	13905.9	6174.1	9483	68.2	56.5	9.8
Transport, storage & communications Activities	12021.8	50409.4	60215.2	39293.6	46937.1	77.9	25.6	7.3
Total	**5079.9**	**16214.7**	**32779.3**	**9924.2**	**20062.5**	**61.2**	**25.3**	**5.0**

Source: (PCBS, 2006)

3.4.4 Expansion of the construction sector and its contribution to industrial and productive sectors:

Construction sector contributes largely to different sectors of investment, such as manufacturing of construction materials. In addition, it provides materials needed for construction, such as stone, marble, brick, floor tiles, etc. Further, the sector is one of the main resources of the commercial sector in Palestine (PCU, 2008).

3.4.5 Parties related to the Construction sector:

Through a complementary process, several parties contribute to the Construction sector. Such stakeholders are the public and private sectors, universities and institutes, donor countries, international financing institutions and banking sector. Stakeholders make available necessary services, provide necessary materials, fund construction

projects, and organize the construction contracting profession according to the laws and regulations enacted by governmental institutions (PCU, 2008).

3.5 Construction Contracting Sector in Palestine

Construction contracting is considered the core for construction sector in Palestine. so, Palestinian contractors have proved their national role and outstanding ability in construction and reconstruction. In addition, construction sector proficiency has been enhanced following the establishment of the Palestinian National Authority in 1994. The Palestinian contractors' role has been noticeable during Israeli incursions when they have worked hard to maintain and reconstruct the infrastructure and buildings damaged by Israeli armed forces (PCU, 2008).

The Contractor

PCU defines the contractor as "the individual or company operating in the construction sector and who or which shall be registered and classified at the Palestinian Contractor's Union (PCU, 2008). Also, As per PCU by-law, the contractor is "any natural or legal person who shall have the right to practice construction contracting profession in accordance with operative laws and regulations" (PCU, 20008). Also Schexnayder and Mayo believe that the term contractor comes from the legal arrangement or contract that is negotiated and executed between the owner and the builder (Schexnayder and Mayo, 2004).

PCU identifies Construction contracting profession as "any work pertaining to the construction of buildings, roads, installations, various engineering projects in addition to the operation and maintenance of such construction projects" (PCU, 20008). As well as, PCU defines its member as" the contractor registered at the Palestinian Contractor's Union and who acquires a classification grade according to the standards specified in the "Instructions of Contractor Classification" issued by the National Classification Committee according to PCU reconstructions, Contractors shall be classified according to specialty as follows (PCU, 2008):

1. Building contractors.
2. Road Construction contractors.
3. Water and sewer contractors.
4. Electro-mechanics contractors.
5. Public works and maintenance contractors.

The distribution of Gaza strip contractors among the major field of work and with respect to their classification category in the construction industry in Gaza strip is illustrated in table 3.3.

Table: 3.3 distribution of contracting companies with respect to field of works and class

Field of work	Classification						Total
	First-A	First- B	Second	Third	Forth	Fifth	
Building	18	23	31	27	9	11	119
Roads	2	8	25	19	9	34	97
Water and Sewage	17		16	15	13	6	67
Electro mechanic	11		9	11	1	-	32
General	1		3	9	-	-	13

Source: Palestinian contractors' union data base, 2008.

Table 3.3 shows that the greatest amount for contracting companies is operated in Building and Roads fields with a numbers of 119 and 96; this reflects the reconstruction development processes which are executed after the Israeli occupation in Gaza strip. The field of water and sewage was the third ratio with a number of 67 companies, and Electro mechanic was the fourth with a number of 32 companies. Finally, a number of 13 companies are operated in various works.

Furthermore, Contracting companies are registered according to their locations in Gaza strip areas. Table 3.4 shows the distribution of contracting companies into Gaza strip regions specialized in the field of construction in the Gaza Strip and officially registered with the Commission's classification of the Palestinian contractors union.

Table 3.4: Distribution of contracting companies with respect to location

Governorate Name	No. of Construction Companies	Percentage
Northern of Gaza	11	9%
Gaza City	65	55%
The middle region	6	5%
Khan younis	29	24%
Rafah	8	7%
Total	**119**	**100%**

Source: Palestinian contractors union data base, 2008

Table 3.4 shows that Gaza city has the greatest number of contracting companies with a number of 65 companies. Also, Khan Younis city contains the second quantity with a number of 29 companies. And the region of Northern of Gaza was the third with 11

companies, and Rafah city was the fourth with 8 companies. Finally the middle region was the last with 6 companies.

Main Indicators of Construction industry

According to PCBS statistics, the main findings of the Construction-Contractors survey for 2006 are as follows (PCBS, 2006):

- The total number of enterprises in the construction-contractors sector amounted to 460.
- The total number of persons engaged in the construction-contractors sector amounted to 3908.

CHAPTER-4

Research Methodology

4.1 Introduction:

This chapter details the methodology and procedures which are used in the field study. This chapter deals with the research method, research population and sample, sample characteristics, research tools, Internal Consistent Validity, Questionnaire Reliability, as well as list of statistical procedure used in the study.

4.2 Methodology

This research used descriptive analytical method. Also primary and secondary data were used.

4.2.1 Secondary Data:

This type of data is gathered from:

1. Books and references;
2. Periodicals, papers and master thesis;
3. Palestinian statistic center and Palestinian contractors union;
4. Internet and its electronic versions.

4.2.2 Primary Data:

The researcher collected this type of data in the following steps:

1. Interviews with contracting firm's managers in Gaza strip to find out the crucial factors success.
2. Interviews with experts, academics and professionals to enrich the research results.
3. Questionnaire setting up through the following steps:
    - Primary design in the light of knowledge published in literature
    - Relevance test by research's supervisor.
    - Questionnaire adjustment as per supervisor's instruction.
    - External experts and specialists judgment.
    - Pilot study.
    - Modifications according to pilot study.
    - Questionnaire in a final format which was used in the field study (See appendix -2). The following are the basic dimensions of questionnaire:

1. Personal Characteristics of contractors;
2. Organizational Characteristics of Companies;
3. Mission and Goals;
4. Managerial Skills for contractors;
5. Financial resources;
6. Cost Control;
7. Pricing polices;

8. Owner satisfaction.

In addition, the degree of acceptance of question is expressed by placing number from 1 to 10 in specified table in the questionnaire. The closer to 10, the more acceptances, and vice versa. Figure 4.1 shows acceptance scale.

1	2	3	4	5	6	7	8	9	10
Absolute Disagreement	←								Absolute Agreement

Figure 4.1: Acceptance Scale.

4.3 Research Framework

The specific methodology of this research study undertaken in Gaza strip follows the concept of walker's model (Chan & others, 2004), as shown in figure 4.2. This model was adjusted by adding CSFs mentioned in this study.

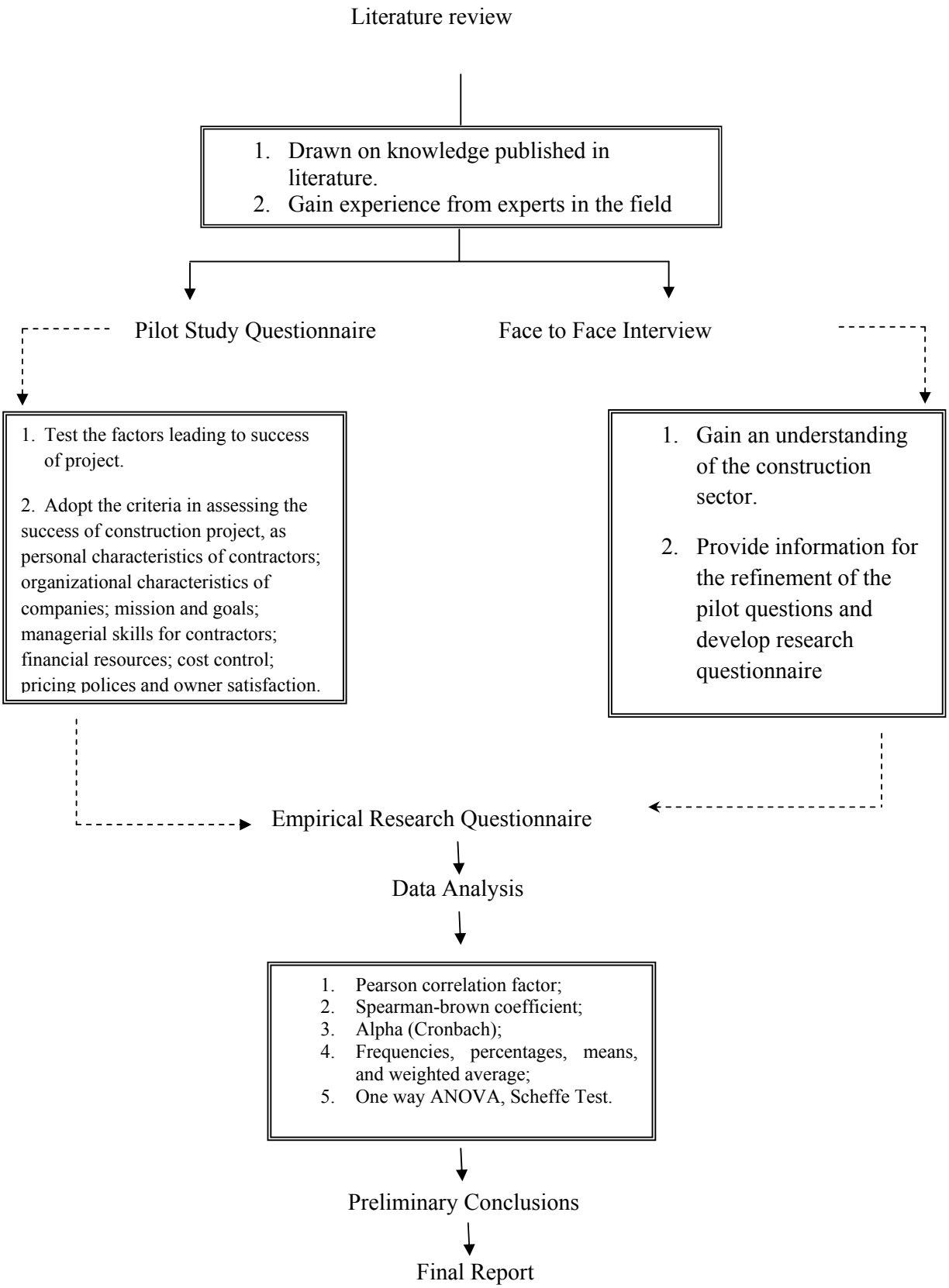


Figure 4.2: Overall research framework for this research study

4.4 Population and sample:

The population of this study is represented by contracting companies specialized in the field of construction in the Gaza Strip and officially registered with the Committee of classification of the Palestinian contractors union until 22/5/2008. To get more accurate results, a comprehensive survey was used. Table 4.1 shows the distribution of the companies throughout Gaza Strip

Table 4.1: Distribution of contracting companies through Gaza Strip

Governorate Name	No. of Contracting Companies	Percentage
Northern of Gaza	11	9%
Gaza City	65	55%
The middle region	6	5%
Khan younis	29	24%
Rafah	8	7%
Total	**119**	**100%**

Source: Palestinian contractor's union data base, as of 22/5/2008.

Table 4.1 shows that Gaza city has the greatest number of contracting companies with a number of 65 companies. Also, Khan Younis city contains the second quantity with a number of 29 companies. And the region of Northern of Gaza was the third with 11 companies, and Rafah city was the fourth with 8 companies. Finally the middle region was the last with 6 companies.

Also, the population is classified into various categories, table 4.2 provide the number of contracting companies for each class and field of work.

Table: 4.2 distribution of contracting companies with respect to field of works and class

Field of work	Classification						Total
	First-A	First- B	Second	Third	Forth	Fifth	
Building	18	23	31	27	9	11	119
Roads	2	8	25	19	9	34	97
Water and Sewage	17		16	15	13	6	67
Electro mechanic	11		9	11	1	-	32
General	1		3	9	-	-	13

Table 4.2 shows that the greatest amount for contracting companies is operated in Building and Roads fields with a numbers of 119 and 96; this reflects the reconstruction development processes which are executed after the Israeli occupation in Gaza strip.

The field of water and sewage was the third ratio with a number of 67 companies, and Electro mechanic was the fourth with a number of 32 companies. Finally, a number of 13 companies are operated in various works.

Response Rate:

Response rate was approximately 86%, it is because many reasons: some managers refused to fill questionnaire due to their busyness and some companies are closed due to the current poor economical and political conditions, so they are hardly reached.

4.5 Questionnaire Delivering and Recovery:

A list of contracting companies specialized in the field of construction in the Gaza Strip and officially registered with the Commission's classification of the Palestinian contractors union until 22/5/2008 is obtained from contractors union, this list includes companies names, and addresses.

Contractors are contacted and delivered by the questionnaires, after that they were recovered through a period of one to five weeks as follows:

- The pilot study sample was 25 companies and it was carried out during the first and second weeks, then it is eliminated from the original sample, which become 94 companies only.
- Questionnaire is delivered in the third and fourth weeks, and contractors were followed and motivated to fill the questionnaire by telephone calls, fax and visits.
- An amount of 81 filled questionnaires is collected in the fifth week.

4.6 Questionnaire Validity:

The research study begun with a review of relevant materials from textbooks, professional journals, conferences papers, research reports, and internet information to capture background knowledge about critical success factors. The objective of the literature review is to develop a frame work for the research study and to prepare for the structured interviews and questionnaire survey. The identified factors have be scrutinized and verified through a series of face to face interviews with a number of selected experts in construction project management and the site management staffs of client’s consultants and contractors. So, questionnaire validity is verified by many ways:

4.6.1 Content Validity:

A preliminary questionnaire are drafted and evaluated by committee of judgment consists of many experts and academics (See appendix-1); the purpose of this

test is to know how the questionnaire content is valid and to ensure that the sentences are clear and precise. Then the draft version is adjusted according to judgment committee notes, as well as questionnaire is divided into eight main groups as shown in Table 4.3.

Table 4.3: Main Categories of questionnaire and their related questions

S.N	CSF	Questions Number
1.	Personal Characteristics of Managers	5
2.	Organizational Characteristics of Companies	6
3.	Mission and Goals	9
4.	Managerial Skills for manager	9
5.	Financial resources	5
6.	Cost Control	6
7.	Pricing polices	9
8.	Owner satisfaction	9

4.6.2 Pilot Study:

A pilot study questionnaire was launched to test the factors and criteria adopted when assessing the success of construction project, as well as to provide information for the development of the main research questionnaire. So, a pilot sample of 25 companies is distributed and recovered and it is found out all questions are clear and accurately understood by managers.

4.6.3 Internal Consistent Validity

Internal consistent validity is checked by computing Pearson correlation coefficient between every item and the total. As well as it is tested by finding Pearson correlation coefficient between every question and its related item. Therefore, it is clear from tables 4.4 and 4.5 that the questionnaire CSFs has Significance level less than 0.05, so the questionnaire has high degree of internal consistent validity.

Table 4.4: Pearson Correlation factors for each CSF with overall CSFs

CSF	Pearson Correlation with overall CSFs	Significance level
Mission and Goals	0.616	0.001
Managerial Skills for manager	0.523	0.006
Financial resources	0.618	0.001
Cost Control	0.529	0.005
Pricing polices	0.412	0.036
Owner satisfaction	0.603	0.001

Table 4.5: Pearson Correlation factors for each question with its related CSF

No.	Pearson Correlation with the related CSF	Significance level
3.1	0.683	0.000
3.2	0.687	0.000
3.3	0.612	0.001
3.4	0.543	0.004
3.5	0.780	0.000
3.6	0.742	0.000
3.7	0.617	0.001
3.8	0.848	0.000
3.9	0.872	0.000
4.1	0.434	0.027
4.2	0.618	0.001
4.3	0.647	0.000
4.4	0.815	0.000
4.5	0.624	0.001
4.6	0.718	0.000
4.7	0.689	0.000
4.8	0.686	0.000
4.9	0.594	0.001
5.1	0.560	0.003
5.2	0.780	0.000
5.3	0.545	0.004
5.4	0.464	0.017
5.5	0.655	0.000

6.1	0.431	0.028
6.2	0.595	0.001
6.3	0.525	0.006
6.4	0.558	0.003
6.5	0.674	0.000
6.6	0.541	0.004
7.1	0.693	0.000
7.2	0.631	0.001
7.3	0.575	0.002
7.4	0.470	0.016
7.5	0.634	0.000
7.6	0.615	0.001
7.7	0.744	0.000
7.8	0.560	0.003
7.9	0.646	0.000
8.1	0.635	0.000
8.2	0.568	0.002
8.3	0.681	0.000
8.4	0.543	0.004
8.5	0.601	0.001
8.6	0.641	0.000
8.7	0.604	0.001
8.8	0.619	0.001
8.9	0.558	0.003

4.7 Questionnaire Reliability:

Reliability is tested by using Alpha (Cronbach) factor and Split half methods:

4.7.1 Alpha (Cronbach) method:

Table 4.6 illustrates that the value of Alpha (Cronbach) factor is between 0.7 and 0.9, that means all item are deeply reliable (Safy, 2001).

Table 4.6: Alpha (Cronbach) for CSFs

CSF	Alpha (Cronbach)
Managerial Skills for manager	0.795
Financial resources	0.809
Mission and Goals	0.813

Cost Control	0.759
Pricing polices	0.768
Owner satisfaction	0.818

4.7.2 Split - half method:

Correlation factor is computed by the first and second half of each item. Table 4.7 indicates that the questioner is reliable.

Table 4.7: Spearman-Brown Coefficient between the first and second half of each CSF

CSF	Spearman-Brown Coefficient
Mission and Goals	0.865
Managerial Skills for manager	0.763
Financial resources	0.846
Cost Control	0.826
Pricing polices	0.762
Owner satisfaction	0.892

4.8 Statistical tools Used in the research

Kolmogorov-Smirnov test was used to identify if the data follow normal distribution or not. Table 4.8 revealed that the data was followed normal distribution. The P-value for all variables was greater than 5%.

Table 4.8: type of data using kolmogorov-smirnov test

CSF	Kolmogorov-Smirnov Z	Significance level
Mission and Goals	0.651	0.790
Managerial Skills for manager	1.066	0.206
Financial resources	0.595	0.871
Cost Control	0.610	0.851
Pricing polices	0.485	0.973
Owner satisfaction	0.749	0.629

Furthermore, the next statistical tests were used in this research:

1. Pearson correlation factor;
2. Spearman-brown coefficient;
3. Alpha (Cronbach);

4. T-test
5. Frequencies, percentages, means, standard deviation and weighted average;
6. One way ANOVA, Scheffe Test.

CHAPTER – 5

Data Analysis and Hypotheses Testing

5.1 Introduction:

This chapter aims to analyze the empirical data which are collected through the questionnaire distribution.

The chapter is divided into three sections:

- **5.2 :** Sample characteristics analysis;
- **5.3 :** Main Categories analysis and discussion;
- **5.4:** Hypotheses testing

5.2 Sample characteristics analysis

5.2.1 Introduction:

This section concludes characteristics of sample, including personal and organizational characteristics.

5.2.2 Personal Characteristics:

1. Gender:

Table 5.1: Distribution of sample with respect to gender:

Gender	No.	Percentage (%)
Male	80	98.8%
Female	1	1.2%
Total	**81**	**100%**

Results of table 5.1 reflect the poor participation of women in management of contracting companies in Gaza strip. This too low involvement may be ascribed to Palestinian society culture.

2. Age:

Table 5.2: Distribution of sample in respect of Age:

Age (year)	No.	Percentage (%)
Below 30	4	4.90%
30-40	25	30.90%
40-50	43	53.10%
Above 50	9	11.10%
Total	**81**	**100%**

Table 5.2 shows that contractors in Gaza strip are distributed throughout all ages. As well as the highest ratio is between 40-50 years, this indicates that most of managers are comparatively young.

3. Educational level

Table 5.3: Distribution of sample with respect to Educational level:

Educational level	No.	Percentage
Below General Secondary	3	3.7%
General Secondary	19	23.46%

Diploma	12	14.81%
Bachelor's degree	40	49.38
Post graduate	7	8.64%
Total	**81**	**100%**

It is obvious from table 5.3 that 49% of contractors in Gaza strip are highly educated; this indicates that they have the ability to launch effective and efficient management of critical success factors. But there are 41% have diploma or less. This means the educational level should be enhanced.

4. Experience

Table 5.4: Distribution of sample regarding to Experience

Experience (year)	No.	Percentage
1-5	10	12.35%
5-10	25	30.86%
Above 10	46	56.79%
Total	**81**	**100%**

Table 5.4 illustrates that most of contractors have experience greater than 10 years; this is a positive indicator of their ability to determine, apply and develop CSF.

5.2.3 Organizational Characteristics:

1. Location

Table 5.5: Distribution of sample according to Location

Location	No.	Percentage
Gaza	55	67.90%
Khan younis	11	13.58%
Rafah	5	6.17%
Middle Area	3	3.70%
Northern Area	7	8.64%
Total	**81**	**100%**

It is illustrated from table 5.5 that the biggest ratio (68%) of contracting companies are concentrated in Gaza city, agreeing with PCBS estimations which indicates that Gaza city has the most population and economical activities of Gaza strip (PCBS, 2008). The next city is Khan Younis then Rafah, Middle and Northern areas.

2. Establishment Age

Table 5.6: distribution of sample with respect to Establishment Age

Establishment Age (year)	No.	Percentage
1-5	15	18.52%
5-10	22	27.16%
10-15	27	33.33%
Above 15	17	20.99%
Total	**81**	**100%**

Results in table 5.6 indicate that most contracting companies in Gaza strip are established before 5-15 years. This result refers to the economical development in Gaza strip synchronous with Establishing of Palestinian National Authority (PNA).

3. Field of the work

Table 5.7: distribution of sample with respect to field of the work

Field	No.	Percentage
Buildings	74	47.13%
Roads and infrastructure	45	28.66%
Electro-Mechanic	12	7.64%
Water and Sewage	25	15.92%
General Works (others)	1	0.64%

Table 5.7 refers that most of contracting companies work in building and roads and infrastructure fields. This result reflects reconstruction activities in Gaza strip after Israeli occupation.

4. Classification

Table 5.8: distribution of sample with reference to classification

classification	No.	Percentage
First – A	7	4.46%
First – B	26	16.56%
Second	47	29.94%
Third	34	21.66%
Forth	12	7.64%
Fifth	31	19.75%

First – A contracting companies form 4.46%, first –B form 16.56%, second form the largest percentage of 29.94%, forth and fifth class companies form the smallest quantity in Gaza strip. As per classification criteria, forth and fifth class companies are small ones.

5. Employees number

Table 5.9: distribution of sample according to Employees number

Employees number	No.	Percentage
Below 10	47	58.02%
10-20	25	30.86%
20-30	6	7.41%
Above 30	3	3.70%
Total	**81**	**100%**

Table 5.9 refers that most of contracting companies in Gaza strip has permanent employees less than 20.

5.3 CSFs Analysis and discussion

5.3.1 Mission and Goals

One sample T-test was applied to determine means. Table 5.10 shows results.

Table 5.10: Means, Weighted means and P-values for Mission and Goals using one sample T-test

S.N	Item	Mean	Weighted Mean %	Rank	P-Value
3.1	Company have a written mission	7.04	70.4	7	0.019
3.2	Mission is clear for employees	7.36	73.6	2	0.039
3.3	Mission is success factor for company	7.77	77.7	1	0.038
3.4	Goals are formulated according to mission	6.54	65.4	9	0.049
3.5	Employees are involved in goals formulation	7.19	71.9	5	0.008
3.6	Goals are formulated according to Environment	7.02	70.2	8	0.013
3.7	Goals are flexible and adjustable	7.28	72.8	3	0.035
3.8	Goals are applicable	7.12	71.2	6	0.046
3.9	Company has future vision	7.25	72.5	4	0.040
Total		7.17	71.7		

Table 5.10 shows that the question no. 3.3 related to Mission as a success factor for company has the first rank with 7.77 Mean and 77.7 % weighted mean, that's means most of sample populations agree with this concept. As well as, question no. 3.2 concerning to mission clearness for employees, has the second order with an mean of 7.36 and weighted mean of 73.6 %, showing that most of surveyed managers see that mission was recognized by most of employee. Furthermore, paragraph no. 3.7 regarding to flexibility of goals has 7.28 mean and 72.8 % weighted mean with the third position which means that most of contractors think that goals are adjustable. But clause no. 3.9 asking if company have future vision or not was the fourth with an mean of 7.25 and weighted mean of 72.5 % designating to most of contractors have a clear vision for future. Also, question no. 3.5 concerning to Employees involvement in goals formulation is the fifth with 7.19 as mean and 71.9 % as weighted mean, denoting that most of contractors share their employees in goals formulation. In addition, the sixth rank was clause no. 3.8 related to goal applicability, with a mean of 7.12 and weighted mean of 71.2 %, referring that the majority of contractors believe that goals can be applied. However the seventh position was the sentence asking about the existence of

written mission in companies, results indicates that nearly all of contractors have a printed mission. And the item no. 3.6 asking for goals formulation according to environment has an mean of 7.02 and weighted mean of 70.2%, is the eighth meaning that a good number of contractors consider that goals are prepared according to external surroundings. Finally, the ninth order was the item enquiring about goals formulation according to mission, with a mean of 6.54 and weighted mean of 6.54%; this indicates that nearly half of contractors see that goals are formulated according mission.

The overall values of the mission and objectives revealed that, contractors in Gaza strip have a mission and clear goals because the total mean of this CSF was 7.17 and the total weighted mean was 71.7%, this agrees with the results of Morledge study (Morledge, 2003). This study was done in Malaysia to find out the critical success factors towards the successful implementation of JV's within construction industry

5.3.2 Managerial Skills of contractor

This aspect was launched to study the role of Managerial Skills for manager in the success of contracting companies in Gaza strip. Table 5.11 shows results.

Table 5.11: Means, Weighted means and P-values for Managerial Skills for contractor using one sample T-test

S.N	Item	Mean	Weighted Mean %	Rank	P-Value
4.1	Managers are able to plan	7.48	74.8%	4	0.036
4.2	Managers are able to use computer	7.44	74.4%	6	0.037
4.3	Manager attended training courses	7.37	73.7%	8	0.041
4.4	Manager meet staff periodically	7.51	75.1%	3	0.034
4.5	Manager issue publications to contact with employees	6.54	65.4%	9	0.048
4.6	Manager uses most modern communication tools	7.63	76.3%	2	0.009
4.7	Manager can estimate cost accurately	7.48	74.8%	4	0.036
4.8	Manager has the ability to project scheduling and following up	7.79	77.9%	1	0.050
4.9	Manager are satisfied by his skills	7.40	74.0%	7	0.046
Total		**7.40**	**74 %**		

Table 5.11 shows that the manager ability to project scheduling and following up was the first, which reflects that contractors interested in time control due to delay troubles.

In addition, the second was the question of periodical meeting between managers and staff, it points to continuous communication between management and working staff. Manager can estimate cost accurately and Managers are able to plan attained the forth order with the same mean of 7.48, this ratio reflects that contractors plan and estimate cost carefully, due to the important role of planning and cost estimation skills for construction projects success. The sixth was Managers ability to use computer, with a mean of 7.44, this mans the extensive computer applications in contracting sector in Gaza strip, but this ratio must be increase due to the so important responsibility of computer in business today. Seventh rank was the paragraph of manager satisfaction by his skills, with a mean of 7.40, this comparatively weak ratio, shows that contractors are unsatisfied by their skills and qualifications, and they are needed to hence to meet the job requirements. Also, the eighth position was the question of contracting attendance for training courses, with and mean of 7.37, this mean shows the need of contractors to more and more managerial and administrative training courses. Finally, the last rank was manager issuing for publications to contact with employees, this show negative indication as a communication tool in construction projects in Gaza strip.

The total mean of 7.40 indicates that contactors in Gaza strip have relatively appropriate managerial skills, but they are needed to be trained in communication field. This finding agrees with the results of Ann T. W. Yu study. Its results show that communication between sample members is open and effective (Ann T. W. Yu and others, 2006).

5.3.3 Financial resources

Table 5.12: Means, Weighted means and P-values for financial resources using one sample T-test:

S.N	Item	Mean	Weighted Mean %	Rank	P-Value
5.1	Company has financial resources before project execution	7.59	75.9%	3	0.035
5.2	Company has estimated financial budget	8.05	80.5%	2	0.049
5.3	Company determine its financial resources periodically	8.44	84.8%	1	0.022
5.4	Staff are trained to effective uses for resources	7.51	75.1%	4	0.027
5.5	Banks policy affect type and qty of financial resources	6.65	66.5%	5	0.049
Total		**7.65**	**76.5%**		

Generally, table 5.12 illustrates the comparatively high mean of 7.65, this indicates about the essential and vital role of financing in construction works as a critical success

factors, this comply with Adnan research (Adnan, 2003). Also, the first sup-paragraph of this CSF was the periodical determination of financial resources, with a mean of 8.44, this good ratio shows that the contractors pay their attention and concentrate their effort in looking for financial resources. The second rank was the question about financial budget, with a mean of 8.05, this mean reflects care of contractors to prepare periodical financial budget as a financial planning and control tool. The company possessing of financial resources before project start was the third rank, with a mean 7.59, which reflect that the most of contractor doesn't like financial risk due to illiquidity. Fourth rank was Staff training to effective uses for resources, with a mean of 7.51, this is a positive indication for training program in contracting company in effective use of resources field. The last question was the affects of bank policies on financial resources, with a mean of 7.65, which points to banks are not the main financial resource in contracting companies in Gaza.

Contractors in Gaza strip are extremely interested in financial resources as a CSF; they believe that financial resources are the most important CSF. This vary with the results of Xueqing Zhang study, witch indicates that Sound financial package is the third rank CSF (Xueqing Zhang, 2005).

5.3.4 Cost Control

Table 5.13: Means, Weighted means and P-values for cost control using one sample T-test:

S.N	Item	Mean	Weighted Mean %	Rank	P-Value
6.1	Company concern with cost control	8.14	81.4%	1	0.012
6.2	Company has an obvious cost control system	7.41	74.1%	3	0.043
6.3	Company arrange cost budget	7.41	74.1%	3	0.043
6.4	Employees are trained to use systems	6.94	69.4%	5	0.050
6.5	Costs level is similar to those in other companies	5.94	59.4%	6	0.052
6.6	Costs are periodically evaluated	8.09	80.9%	2	0.048
Total		**7.32**	**73.2%**		

Initially, cost control as a critical success factor has a good mean of 7.32, which provides optimistic sign of applying this process by contractors in Gaza strip. Table 5.13 clear that, the first sub-item of this CSF was Company concern with cost control, with a mean of 8.14; this indicates the interesting of contractors in this process. The second was the periodical cost estimation, with a mean of 8.09, pointing to the most of

contractors evaluates costs periodically. Company has an obvious cost control system and Company arrange cost budget were the third position with an equal mean of 7.41, meaning that good no. of contractors concerned by the two processes. Training of employees to use control system was the fifth rank, with an mean of 6.94, this illustrate training needs in the field of using cost control systems in contracting sectors. Finally, that sixth rank was about Costs level similarity throughout companies, with a mean of 5.94, it shows that contractors are unconcerned by cost level in other company, but they try to follow determinate system without any external effects.

Contractors in Gaza strip see that cost control is a vital process for success in construction activities, but they don't care about cost levels of competitors. This finding has the same opinion of Albert and Cahn study, they find that the cost performance as well as quality of design and workmanship represent the key elements of overall success of design and build projects (Albert and Chan, 2001).

5.3.5 Pricing polices

Table 5.14: Means, Weighted means and P-values for pricing polices using one sample T-test:

S.N	Item	Mean	Weighted Mean %	Rank	P-Value
7.1	Company has same policy for all projects	6.86	68.6%	9	0.051
7.2	Pricing method is a critical success factor	7.84	78.4%	2	0.033
7.3	Company has a computerized pricing system	6.89	68.9%	8	0.049
7.4	Company use cost plus approach	7.27	72.7%	6	0.032
7.5	Pricing is so secret	7.86	78.6%	1	0.050
7.6	Company has historical data	7.65	76.5%	4	0.048
7.7	Competitors affect on pricing decisions	7.81	78.1%	3	0.047
7.8	Changing currency make pricing difficult	7.46	74.6%	5	0.038
7.9	Changing piecing current increase uncertainty	7.19	71.9%	7	0.027
Total		**7.43**	**74.3%**		

Firstly, pricing process is a significant CSF in construction sector in Gaza strip, due to its good mean (7.43). Table 5.14 provides that the first position is the sub-question of the secret of pricing process, this indicates about contractor try to keep pricing decisions secret, due to competition, fairness, and transparency factors. The second was asking abut piecing as a CSF, the mean was 7.84, this means that a comparatively no. of contractors believes that pricing process are a CSF in construction process. Also, the third was the affects of competitors on pricing decisions, the result was 7.81, and this provides an indication about contractor believing in direct and clear affects by competitors on pricing process. Possessing historical data by company was the fourth order, the mean was 7.65, indicating to major ratio of contractors have and apply previous data in pricing process. But, changing currency is the fifth rank, with a mean of 7.46, this designates that a relatively high no. of contractors see that prices of money is significant aspect in pricing process. The sixth rank was the sub-item asking about cost plus approach, the mean of this item was 7.27, this comparatively weak mean indicates that contractors apply other pricing methods than cost plus, this matches with the result of Roper and McLin study, it concludes that Rate of return (ROI) will be substantial and ensure the success of organization well into the future (Roper and McLin, 2005). The sub-question about changing currency increase uncertainty gained the seventh order, with a mean of 7.19, this comply with point view of contractors about the importance of currency variety. the paragraph abut using a computerized pricing system, was the eighth order, the relatively weak mean(6.89), show the need of develop modern system for pricing process, this have the same opinion with Chileshe & Haupt study (Chileshe & Haupt, 2006). Finally, the last rank was the sub-question about using the same policy for all projects; the mean of 6.86 provides that contractors perform diverse pricing methodologies.

Contractors think that pricing process is a major CSF in construction sector in Gaza strip, and they don't apply the same policy to all projects, as well as, contractors need to develop a computerized pricing system. This result in the line of Hallaq study, he found out that a price is one of the main causes of contractor’s failure in Gaza strip (Al-Hallaq, 2003).

5.3.6 Owner satisfaction

Table 5.15: Means, Weighted means and P-values for Owner satisfaction using one sample T-test:

S.N	Item	Mean	Weighted Mean %	Rank	P-Value
8.1	Owner satisfaction is the most critical success factor	7.78	77.8%	3	0.028
8.2	Company concerns owner	7.8	78%	1	0.046

	satisfaction				
8.3	Contractor believe that profit is parallel to owner satisfaction	7.69	76.9%	6	0.035
8.4	Company apply quality criteria to get owner satisfaction	7.75	77.5%	5	0.014
8.5	Contractor evaluate himself for owner satisfaction	7.77	77.7%	4	0.019
8.6	Contractor use feed back to increase owner satisfaction	7.8	78%	1	0.022
8.7	Employees are trained to increase owner satisfaction	7.56	75.6%	7	0.039
8.8	Owner satisfaction is competitive advantage	7.38	73.8%	8	0.032
8.9	Contractor believe that owner is always right	6.47	64.7%	9	0.052
Total		**7.56**	**75.6%**		

Owner satisfaction as a CSF has a relatively good overall means, this shows its importance, this consistent with Albert and Chan study (Albert and Chan, 2001). The sub-items asking about using feed back to increase owner satisfaction and Company concerns owner satisfaction were the first, with an equal mean of 7.8; this reflects its contractors interesting. But the third was the question about Owner satisfaction is the most critical success factor, the resulting mean was 7.78, this provide the contractors conviction in the importance of owner satisfaction as a CSF. Also, the sub-question abut Contractor evaluation for himself for owner satisfaction was the fourth one, its mean was 7.77, it is clear that many contractors evaluate their selves with respect to owner satisfaction level due to its significant as a vital CSF. In addition, the fifth rank was the sub-question of applying quality criteria to get owner satisfaction, with an mean of 7.75, this show that the contractors try to enhance quality to improve owner satisfaction level, this agrees with D. K. H. Chua and others study (D. K. H. Chua and others, 1999). Furthermore, the question about equivalence between profit and owner satisfaction was the sixth, with a comparatively strong mean of 7.69, this means that contractors believe that profit is a function of many variables such as owner satisfaction. But, the seventh order was question about Employees training to increase owner satisfaction; its mean is 7.56, this point to the need of more training programs for employees in construction sector in the field of owner satisfaction. And the eighth rank was the question of Owner satisfaction as a competitive advantage, with a mean of 7.38, this means that many contractors look to owner satisfaction as a critical competitive advantage. Finally, the last rank was the question related to owner is always right, the mean was 6.47, this

comparatively weak ratio indicate that not all contractors see that owner is always correct.

Based on the above analysis, Owner satisfaction is on of the major CSF in construction sector in Gaza strip from contractor's perspective. But, Contractors don't believe that owner is in the right at all times. This agrees with the extensive study of Roland , it showed that More long-term partnerships with customers is Success factor over the last five years and the next five years in construction sector in Europe(Roland Berger Strategy Consultants, 2003). Tables 5.10, 5.11, 5.12, 5.13, 5.14, and 5.15 show that P values are less than or equal 0.05, this mean that all sub items are significant at this value.

5.3.7 Evaluation of CSFs

Table 5.16: Question no., Mean, Wt. means and Ranks for CSFs.

S.N	CSF	Question No.	Mean	Wt. Mean	Rank
1	Financial resources	5	7.65	76.5%	1
2	Owner satisfaction	9	7.56	75.6%	2
3	Pricing polices	9	7.43	74.3%	3
4	Managerial Skills for manager	9	7.40	74%	4
5	Cost Control	6	7.32	73.2%	5
6	Mission and Goals	9	7.17	71.7%	6
Total		47	7.42	74.2%	

Table 5.16 show that Financial resources as a CSF is the first with 7.65 mean and 76.5 % weighted mean, this reflect the vitality and importance of finance for construction projects. While, the second was the question related to owner satisfaction, which means a good number of the sample concerns with owner satisfaction as a critical success factors, this consistent with Albert and Chan study (Albert and Chan,2001). In addition, Pricing polices CSF was the third with an mean of 7.43 and wt. mean of 74.3%, this denotes the importance of pricing policies in construction according to contractors in Gaza strip. Also the forth CSF was related to Managerial Skills for manager with 7.4 mean , referring to most of sample population concentrate on Managerial Skills for manager as a critical success factor in construction projects in Gaza stripe. Furthermore, cost control CSF was the fifth with 73.2 mean, denoting the importance of this process for the most of sample population. Finally, Mission and Goal has the sixth one, although this ratio is relatively weak, but it has a positive indicator for applying by contractors in Gaza strip due to its 7.1 mean.

In addition, table 5.16 shows that the total mean value was 7.42, this means that the respondents acceptance rang was between 7 and 8, which indicated a relatively good agreement. It is clear that CSFs are highly existed with low differences.

5.4 Hypotheses Testing

5.4.1: First Hypothesis

There is no a relative significant difference (at P-value 0.05) in the existence of the critical success factors at the construction companies in Gaza strip.

The main purpose of the second hypothesis is to examine the relative importance of CSF on level of success in construction sector in Gaza strip. Table 5.17 shows that there are differences in means of CSF and shows rank of contribution of each one. Generally, that is a good indication of this hypothesis inaccuracy.

Table 5.17: Mean values and ranks of CSFs

S.N	CSF	Mean Value	Rank
1.	Mission and Goals	7.17	6
2.	Managerial Skills for contractors	7.40	4
3.	Financial resources	7.65	1
4.	Cost Control	7.32	5
5.	Pricing polices	7.43	3
6.	Owner satisfaction	7.56	2

Table 5.17 provides evidence for differences between CSF impacts. A financial resource CSF is the first which reflects the highest impact as a critical success factor. Owner satisfaction is the second, it show a chief impact as a CSF. Pricing polices is the third, this means contractors deeply interest in this process as a CSF. Managerial Skills for contractors is the forth CSF, Cost Control and Mission and Goals are the two last ranks, indication the weakest CSF impact. This conflicts with the study of Ann T. W. Yu and others, it provides that The 15 top critical success factors, in decreasing order of importance, were found to be open and effective communication; clear and precise briefing document; clear intention and objective of client; clear project goals and objectives; through understanding of client requirements; experience of brief writer; team commitment; identification of client requirements; agreement of brief by all relevant parties; sufficient consultation from stakeholders; holding workshops with stakeholders; control of the briefing process; realistic budget program; consensus building; and honesty. (Ann T. W. Yu and others, 2006). And this results differ with the result of Iyer and Jha research, they conclude that two success factors and one failure factor: commitment of project participants; owner's competence; and conflict among project participants contribute significantly in enhancement of current performance level of the project (Iyer and Jha, 2006).

5.4.2: Second Hypothesis

There are no significant differences (at P-value 0.05) in the level of critical success factors at the construction companies in Gaza strip attributed to some personal and organizational characteristics, including:

e. Educational level of contractor;
f. Experience of contractor;
g. Number of employees;
h. Age of Establishment.

Second hypothesis was tested to determine the differences between groups of CSFs, by using One-Way ANOVA test.

a. <u>Educational level of contractors.</u>

Tables 1,2,3,5 and 6 in appendix -3 shows that the value of computed F is less than its standard value, and Sig. value is greater than 0.05 for Mission and Goals, managerial skills for contractor, financial resources, pricing policies and owner satisfaction, so it is accepted to say there are no differences in the level of critical success factors at the construction companies in Gaza strip attributed to educational level of contractor. It may be explained as the next:

- Contractors focus their efforts on technical daily works more than strategies formulation, goals and plan setting. The thing weakens the effect of educational level on Mission and Goals, managerial skills for contractor, financial resources, pricing policies and owner satisfaction.
- There is a common agreement in recognizing the importance of Mission and Goals, managerial skills for contractor, financial resources, pricing policies and owner satisfaction as a critical success factor, without any impact of contractor educational level.

However, table 3 in appendix -3 illustrates that the total value of F is 1.032 and sig. value is 0.396, which complies with the above requirements, but question 6.6 has F (3.268) larger than typical (2.490), indicating that there are differences at sig. level 0.05 about periodical evaluation of cost and educational levels for contractors. These differences reflect the importance of cost evaluation in cost control process. Scheffe test was applied to determine the direction of these differences; table 5.18 shows results of Scheffe test.

Table 5.18: Scheffe test for mean differences to Periodical cost evaluation:

Educational Level	Below General Secondary	General Secondary	Diploma	Bachelor's degree	Post graduation
Below General Secondary	-	-0.193	0.00	0.258	1.905
General Secondary	0.193	-	0.193	0.451	2.098*
Diploma	0.00	-0.193	-	0.258	1.905
Bachelor's degree	-0.258	-0.451	-0.258	-	1.646
Post graduation	-1.905	2.098*	-1.905	-1.646	-

*The mean difference is significant at the 0.05 level.

Table 5.18 refers that there are statically differences attributed to educational level about periodical evaluation of cost, between graduated contractors and below secondary, but it doesn't reach 0.05 to be clear.

Scheffe test results show the existence of important role of educational level of contractors and its effects on cost control as a critical success factor in construction sector in Gaza strip.

The acceptance of first sub- hypothesis (a) means that educational level of contractor in Gaza strip has no effect on the following CSFs: Mission and Goals, managerial skills for contractor, financial resources, pricing policies and owner satisfaction. But it affects on cost control only. This finding relatively agrees with Egbu study. The study suggests that more is needed on the education and training of construction personnel and that these education and training programmes should reflect the nature of innovation and CSF dimensions as very complex social processes (Egbu, 2004).

b. Experience of contractor

Tables 1 to 6 in appendix – 3 shows that There are no significant differences in the level of critical success factors at the construction companies in Gaza strip attributed to Experience of contractors, that is because estimated F is less than typical(2.490). But question 6.1 related to company concern with cost control has computed F (4.971) larger than typical (2.490), table 5.19 shows results of Scheffe test to measure direction of references attributed to contractors experience.

Table 5.19: Scheffe test for mean differences to cost control concern:

contractors experience	1 – 5 years	5 – 10 years	Above 10 years
1 – 5 years	-	1.300*	0.639
5 – 10 years	-1.300*	-	-0.661
Above 10 years	-0.639	0.661	-

*The mean difference is significant at the 0.05 level.

Table 5.19 refers to the not obvious differences attributed to contractors experience about cost concern as a component of cost control as a critical success factor. It can be clarified by the significance of cost in construction projects as a direct determinant of profit. Also, cost realization varies according to experience.
Furthermore, questions 7.3 and 7.4 related to computerized pricing system and using cost plus approach have computed F (2.716 and 3.716 respectively) larger than typical (2.490), tables 5.20 and 5.21 show results of Scheffe test to measure direction of references attributed to contractors experience.

Table 5.20: Scheffe test for mean differences to using computerized pricing system:

contractors experience	1 – 5 years	5 – 10 years	Above 10 years
1 – 5 years	-	0.640	1.257
5 – 10 years	-0.640	-	0.617
Above 10 years	-1.257	-0.617	-

Table 5.21: Scheffe test for mean differences to using cost plus approach:

contractors experience	1 – 5 years	5 – 10 years	Above 10 years
1 – 5 years	-	0.740*	0.704*
5 – 10 years	-0.740*	-	-0.036
Above 10 years	-0.704*	0.036	-

*The mean difference is significant at the 0.05 level.

Tables 5.20 and 5.21 show the ambiguous differences attributed to experience of contractor in using computerized pricing system and cost plus approach. That means contractors use computerized pricing system and cost plus approach not uniformity according to their experience. The ambiguity of differences may be caused by using non-scientific approach in computerized and cost plus pricing. As well as, table 5.19 provides an evidence about using computerized system by persons with experience of less than 5 years more than with experience above 5 and 10 years, this is due to the job nature of seniors, the more the experience, the less operational process. In addition, questions 8.1, 8.3 and 8.7 related to Owner satisfaction is the most critical success factor, Contractor believe that profit is equivalent to owner satisfaction, Company apply quality criteria to get owner satisfaction have computed F (3.005, 2.509 and 4.074 respectively) larger than typical (2.490), tables 5.22, 5.23 and 5.24 show results of Scheffe test to measure direction of references attributed to contractors experience.

Table 5.22: Scheffe test for mean differences to Owner satisfaction is the most critical success factor:

contractors experience	1 – 5 years	5 – 10 years	Above 10 years
1 – 5 years	-	0.920	0.948
5 – 10 years	-0.920	-	0.028
Above 10 years	-0.948	-0.028	-

Table 5.23: Scheffe test for mean differences to Contractor believe that profit is parallel to owner satisfaction

contractors experience	1 – 5 years	5 – 10 years	Above 10 years
1 – 5 years	-	1.480	0.796
5 – 10 years	-1.480	-	-0.684
Above 10 years	-0.796	0.684	-

Table 5.24: Scheffe test for mean differences to Contractor believe that profit is equivalent to owner satisfaction

contractors experience	1 – 5 years	5 – 10 years	Above 10 years
1 – 5 years	-	1.140	-0.013
5 – 10 years	-1.140	-	-1.153*
Above 10 years	0.013	1.153*	-

*The mean difference is significant at the 0.05 level.

Tables 5.22, 5.23 and 5.24 show the little difference in owner satisfaction attributed to experience of contractor, it may be caused using inefficient approaches to determine owner needs and wants, depending on experience only.

The validity of second sub- hypothesis (b) denotes that experience of contractor in Gaza strip has no effect on CSFs. It is because contractors gain experience by technical and operational process rather than strategies implementation. This result is comparatively agrees with Hallaq study, he sees that lack of experience in the line of Gaza strip is one of failure causes (Hallaq, 2003).

c. Number of employees

Tables 1 to 6 in appendix – 3 illustrate that there are no significant differences in the level of critical success factors at the construction companies in Gaza strip attributed to employee number. So that evaluated F for all dimension are less than typical (2.490), that means contractor is not affected by employee no. when using Mission and Goals, managerial skills for contractor, financial resources, pricing policies and owner satisfaction as critical success factors. It is attributed to employees no. is a variable of functional and operational process rather than strategy formulation.

d. Establishment Age of company

Tables 1 to 6 in appendix – 3 illustrate that there are no significant differences in the level of critical success factors at the construction companies in Gaza strip attributed to establishment year. So that evaluated F for all dimension are less than typical (2.490), that means contractor is not affected by establishment year when dealing with Mission and Goals, managerial skills for contractor, financial resources, pricing policies and owner satisfaction as critical success factors.

But questions 4.4 and 4.6 has computed F (2.672 and 4.186 respectively) greater than typical (2.49). This means there are differences in the level of Manager meet staff periodically and manager uses publications to contact with employees attributed to establishment year. It may be caused by the more est. years the more employee involvement and attributed to inefficient communication tools. Table 5.25 illustrates the direction of differences in "Manager meets staff periodically ".

Table 5.25: Scheffe test for mean differences to Manager meet staff periodically

Establishment Year	1 – 5 years	5 – 10 years	10-15 years	Above 15 years
1 – 5 years	-	-0.031	-0.177	0.156
5 – 10 years	0.031	-	-0.147	0.178
10 -15 years	0.177	0.147	-	0.330
Above 15 years	-0.156	-0.178	-0.330	-

*The mean difference is significant at the 0.05 level.

Table 5.26: Scheffe test for mean differences to manager uses publications to contact with employees:

Establishment Year	1 – 5 years	5 – 10 years	10-15 years	Above 15 years
1 – 5 years	-	-0.353	-0.553	-0.887
5 – 10 years	0.353	-	-0.200	-0.533
10 -15 years	0.553	0.200	-	-0.333
Above 15 years	0.887	0.533	0.33	-

The validity of sub- hypothesis (d) denotes that establishment year of contracting companies in Gaza strip has no effect on the level of CSFs. It is because CSFs level is a function of top management support and commitment rather than the year at which the company is formed, as well as, CSF is mainly prepared during company foundation, then they still valid through out company age.

5.4.3: Third Hypothesis

There is a significant correlation (at P-value 0.05) between the level of success at the construction companies in Gaza strip and its critical success factors.

Correlations measure how variables or rank orders are related. So, Pearson's correlation coefficient is estimated to validate third hypothesis.
Table 5.27 provides Pearson's correlation coefficient computed between individual CSF and overall CSFs.

Table 5.27: Pearson correlation with whole CSFs

S.N	CSF	Pearson correlation with whole CSFs	Sig. value
1.	Mission and Goals	0.682	0.000
2.	Managerial Skills for contractors	0.509	0.000
3.	Financial resources	0.647	0.000
4.	Cost Control	0.527	0.000
5.	Pricing polices	0.577	0.000
6.	Owner satisfaction	0.644	0.000

Table 5.27 shows that there is a significant correlation between the success in construction companies and mission and goals as a CSF, this means that the more interesting in mission and goals formulation, the more level of success. And, there is a considerable association between the success in construction companies and managerial skills for contractors, so that the more managerial skills of managers, the more success level. As well as, Pearson's correlation coefficient of 0.647 of financial resources reflects the comparatively strong connection with success, therefore, the more adequate financial resources, and the most the success in construction sector in Gaza strip. Furthermore, cost control and Pricing polices have a medium Pearson's correlation coefficient of 0.527, that indicate normal relationship with the success in construction sector. But, Owner satisfaction has a greater Pearson's correlation coefficient of 0.644, which indicates to stronger connection with the level of success, this consistent with Albert and Chan study (Albert and Chan, 2001). Finally, it is a significant thing to illustrate that , mission and goals as CSF, has the strongest correlation with the success, then financial resources has the second order, also Owner satisfaction was the third, Pricing polices was the fourth, Cost Control was the fifth. Finally, Managerial Skills for contractors has the weakest correlation with the level of success. This disagrees with Hallaq study which showed that the most related causes of contractors failure are: delay in collecting dibs from clients, closure, depending on banks and paying high profits, lack of capital, cash flow management, lack of experience in the line of Gaza strip,

absence of construction regulation, low margins of profit due to competition, award contract to lowest price, and lack of experience in contract (Hallaq, 2003).

There is a positive correlation between CSFs and the level of success in contracting companies in Gaza Strip. mission and goals as CSF has the strongest correlation, then, financial resources, Owner satisfaction, Pricing polices , Cost Control, Managerial Skills for contractors.

CHAPTER - 6

Conclusions and Recommendations

6.1 Introduction:

This chapter represents the main conclusions and recommendations of the study. The chapter consists of three sections:

6.2 Conclusions;

6.3 Recommendations;

6.4 Proposed further studies.

6.2 Conclusions:

Following data analysis and discussion, the next are the most notable Conclusions

1. The majority of contractors were males, so it can be said that construction sector in Gaza strip is a masculine society; and most of contractors ages in Gaza strip were between 40-50 years, which indicates that most of contractors are young, and they can perform duties and missions sufficiently and effectively; furthermore, The percent of 40 % of contracting managers in Gaza strip are relatively highly educated, this indicates that they have the ability to carry out effective and efficient management; finally, Most of contracting managers have experience greater than 10 years, this is a positive indicator of their ability to use and develop CSFs;

2. The age of most of contracting companies in Gaza strip was between 5-15 years. This result was attributed to the economical development in Gaza strip starting with PNA establishment;

3. A large amount of contracting companies was operated in building, roads and infrastructure fields. This result reflects reconstruction activities in Gaza strip after Israeli occupation;

4. Nearly all of contracting companies in Gaza strip has employees less than 20;

5. About 71% of contracting companies in Gaza strip have a clear description of goals and mission. Nearly, 74% of contractors in Gaza strip are competent and qualified to handle managerial activities. As well as, almost 73% of contractors apply cost control as a CSF. Furthermore, 78% see that Pricing method is a

critical success factor, finally, 77% think that Owner satisfaction is the most critical success factor;

6. Financial resources was the first CSF, the second CSF was owner satisfaction. In addition, Pricing polices CSF was the third. Also the fourth CSF was related to Managerial Skills for contractors. Furthermore, cost control CSF was the fifth. Finally, Mission and Goal has the sixth one;

7. Mission and goals as CSF has the strongest correlation with the success, then financial resources has the second order, also Owner satisfaction was the third, Pricing polices was the fourth, Cost Control was the fifth. Finally, Managerial Skills for contractors has the weakest correlation with the level of success.

8. There is a significant correlation (at significant level of 0.05) between the level of success at the construction companies in Gaza strip and its critical success factors.

6.3 Recommendations:

Based on data analysis and research results, the following recommendations and suggestions are proposed:

1. Contractors in Gaza strip are required to be more interested in strategic planning, to formulate and apply adequate CSFs;

2. CSFs of contracting companies in Gaza strip should be formulated according to the external and internal environments;

3. Contractors in Gaza strip must apply modern managerial approaches and scientific tools.

4. Top managers in contracting company in Gaza strip shouldn't concentrate efforts on financial issues, but they are required to be interested in other topics as, human resource development, owner satisfaction, and cost reduction.

5. Contractors should apply periodical evaluation for costs, financial resources, and owner satisfaction and competition levels.

6. Contractors should conduct continues training programs with cooperation with PCU and NGOs to improve managerial and financial practices.

7. Contracting Companies have to estimate financial and cost budgets as important tools of cost control and planning.

8. Employees should be involved in goals formulation;

9. Contractor' Staff are needed to be trained to effective uses for resources and cost control.

10. Contractors must vary financial resources other than banks, to reduce financial risks. Caused be bank policies.

11. Contractors should apply different pricing strategies other than cost plus, such as ROI and ROR.

12. Top management must positively react to changes of managerial and financial polices.

13. PNA, NGO and donors must coordinate and cooperate with contractors. In addition, they must support contracting sector as a fundamental component of Palestinian economy.

6.4 Proposed further studies:

1. This study was conducted during ongoing unstable political and economical conditions. It is preferable to repeat study in usual environment to compare to what extent the impact on contractors.
2. Quantitative analysis approaches to measure CSFs in contracting companies.
3. CSFs formulation.
4. CSFs determination from Owner's perspective

5. there is a need to study the technical CSFs in contracting company, related to technical process and transactions

Bibliography

A-Books:

1. Barrie, Donald & Paulson, Boyd, **Professional Construction Management**, 3rd edition, McGraw-Hill, Inc., 1992.

2. Betts, Martin, **Strategic management of I.T. in construction**, Blackwell Science, UK, 1999.

3. Clough, Richard and Sears, Glenn, **Construction contracting**, 6th edition, John Wiley & Sons. Inc., USA, 1994.

4. Dory, Zakrya, **Strategic Management: Concepts, Operations, and cases study**, 2nd edition, Dar Elyazory for publication and distribution, Amman, Jordan, 2005.

5. Emmitt, Stephen and Christopher Gorse**, Construction communication**, Blackwell publishing, U.K., 2003.

6. Halpin, Daniel and Woodhead, Ronald, **Construction Management**, 2nd edition, John Wiley& Sons, Inc., USA, 1998.

7. Harris, Frank & McCaffer, Ronald, **Modern Construction Management**, 3rd edition, ESP professional Books, USA, 1998.

8. Laudon, Kenneth, **Management Information systems: New approaches to organizations and technology**, 5th edition, Prentice Hall International, Inc, USA, 1998.

9. Levy, Sidney, **Project Management in construction**, 4th edition, McGraw-Hill, USA, 2002.

10. Lynch, Richard, **Corporate Strategy**, 2nd edition, Prentice Hall, England 2000.

11. O'Brien, James, **Management information system: managing information Technology in the E-Business enterprise**, 5th edition, McGraw-Hill Irwin, USA, 2005.

12. O'Brien, James A., **introduction to information systems in business management**, 6th edition, IRWIN, USA, 1991.

13. Reynolds, George, **Information systems for managers**, 2nd edition, west publishing company, USA, 1992.

14. Ritz, George, **Total Construction Project Management**, McGraw –Hill, Inc., 1994.

15. Safy, Sameer, Statistical Package for Social Science, afaaq library, Gaza, 2001.

16. Schexnayder, Clifford and Mayo, **Richard, Construction Management Fundamentals**, McGraw Hill, New York, USA, 2004.

17. Turban and others, **Information Technology for management: Improving quality and productivity**, John Wiley and sons, Inc, 1996.

18. Wendy Robson, **Strategic Management and Information Systems, an integrated approach**, 1st edition, Pitman Publishing, UK, 1994.

B- Periodicals:

1. Albert, Chan and others, **Design and build project success factors multivariate analysis,** Journal of Construction Engineering and Management, Volume 132, BSCE, Mar/Apr. 2001.

2. Chan, Albert, and others, **Exploring critical success factors for partnering in construction projects**, Journal of Construction Engineering and Management, Volume 130, March/April 2004.

3. Chan , Albert P.C. and Chan, Ada P.L., **Key performance indicators for measuring construction success**, Emerald Group Publishing Limited, Benchmarking: An International Journal, Volume: 11 Issue: 2 , 2004.

4. Chileshe, Nicholas and Haupt Theo C., **Modelling critical success factors of construction project management (CPM)**, Journal of Engineering, Design and Technology ,Emerald Group Publishing Limited, Volume: 3, Issue: 2, 2005.

5. Chua, D. K. H. and others**, Critical Success Factors for Different Project Objectives**, Journal of Construction Engineering and Management, Vol. 125, No. 3, May/June 1999.

6. Dunna, Bharadwaj and Prasad, Burela Vara, **Success Factors for Effective Implementation of Project Controls In Contracting Companies: A Qualitative study**, Master thesis, Umeå University, 2007.

7. Egbu, Charles, **Managing knowledge and intellectual capital for improved organizational innovations in the construction industry: an examination of critical success factors**, Emerald Group Publishing Limited, Engineering, Construction and Architectural Management, Volume: 11 Issue: 5, 2004.

8. Hui, Sammy King-fai and others, **Factors involved in the success of Hong Kong construction and property entrepreneurs**, International Journal of

Entrepreneurial Behavior & Research, Emerald Group Publishing Limited, Volume: 12 ,Issue: 4 , 2006.

9. Iyer, K. C. and Jha K. N., **Critical Factors Affecting Schedule Performance: Evidence from Indian Construction Projects**, Journal of Construction Engineering and Management, Volume 132, Issue 8, August 2006.

10. Pinto, Jeffrey and Prescott, John, **Variations in critical success factors over the stages in the project life cycle**, Journal of management, Volume 14, no.1, March 1988.

11. Sanvido, Victor, and others, **Critical Success Factors for Construction Projects**, Journal of Construction Engineering and Management, Volume 118, Issue 1, March/April 1992.

12. Toor Shamas-ur-Rehman and O. Ogunlana Stephen, **Critical COMs of success in large-scale construction projects: Evidence from Thailand construction industry**, Elsevier, International Journal of Project Management, 2007.

13. Yu, Ann, **Investigation of critical success factors in construction project briefing by way of content analysis**, Journal of Construction Engineering and Management, ASCE, Volume 132, Nov. 2006.

14. Zhang, Xueqing, **Critical Success Factors For Public-Private Partnerships In Infrastructure Development**, Journal of Construction Engineering and Management, ASCE, Volume 131, Jan 2005.

C- Master Theses

1. Abu Mostafa, Zeyad, **Study of the measurement of labor productivity in the Palestinian construction industry**, Master thesis, Islamic University of Gaza (IUG), 2003.
2. David, Aspegren and Gustafsson, Andreas, **The management consultant as a change agent : Critical success factors in change management ,** Master thesis, Jönköping University, Copenhagen, 2006.
3. Dunna, Bharadwaj and Prasad, Burela Vara, **Success Factors for Effective Implementation of Project Controls In Contracting Companies: A Qualitative study**, Master thesis, Umeå University, 2007.
4. Fang,Li and Patrecia, Sylvia, **Critical Success Factors in ERP Implementation,** Master thesis, Jönköping University, Copenhagen, 2005.
5. Halalaq, khaled, **Causes of contractor's failure in Gaza strip**, Master thesis, Islamic University of Gaza (IUG), 2003.
6. Madi, Ibrahim, **Essential factors affecting accuracy of cost estimation of building contracts**, Master thesis, IUG, 2003.
7. Niclas, Krantz and Marcus, Sköld, **Critical Success Factors across the ERP life cycle**, Master thesis, Jönköping University, Copenhagen, 2005.
8. Skaik, Hashem, **A cost control system for local contracting companies**, Master thesis, IUG, 2004.
9. Thuy Vu Nga and Kamolrat, **Critical Success Factors inMerger & Acquisition Projects**, Master thesis, Umeå, 2007.
10. Wendy Robson, **Strategic Management and Information Systems, an integrated approach**, 1st edition, Pitman Publishing, UK, 1994.

D- Reports:

1. Brewer G.J, and others, **The use of ICT in the construction industry: critical success factors and strategic relationships in temporary project organizations,** Construction Informatics Digital Library ,University of Newcastle, Callaghan, NSW, Australia, available on line at :http://itc.scix .net.

2. Caralli, Richard, **The Critical Success Factor Method: Establishing a Foundation for Enterprise Security Management**, Carnegie Mellon University, Electronic Version, 2004, available on line at: www.cert.org/archive/pdf/criticalsuccessfactors0407.pdf.

3. Henzelmann, Toresten and others, **Survey of success factors in the European construction industry, Summary of key findings,** Roland Berger Strategy Consultants, 2003.

4. Issa, Nakhleh, **Encyclopedia of the Palestine Problem**, 2006, available online at: http://www.palestine-encyclopedia.com/EPP/Start.ht

5. Koota, Jaana. **Market review and study of success characteristics in construction companies. Case: Unites States**, Espoo 2003. VTT Tiedotteita – Research Notes 2195. 41 p. + app. 6 p.

6. KBS, **Critical Success Factors**, 2008, available on line at: www.KBS.com.

7. Khang Do Ba and Moe Tun Lin , **Success Criteria and Factors for International Development Projects: A Lifecycle-based Framework,** School of Management, Asian Institute of Technology (AIT), Thailand, 2004.

8. Kincannon, Charles, **Economic Census: Construction Industry Series**, U.S. Department of Commerce, 2004.

9. Kjeilen, Tore, **Palestine: Economy,** LookLex Ltd, 2008, available online at: http://lexicorient.com/e.o/palestine_2.htm.

10. Morledge, Roy and Adnan, Hamimah , **Critical Success Factors In Malaysian Construction Joint Venture Projects**, The RICS Foundation, Proceedings of The RICS Foundation Construction and Building Research Conference, University of Wolverhampton, London, 2003.

11. Rautiainen, Tanja, **Critical Success Factors in Biopharmaceutical Business: A Comparison Between Finnish and Californian Businesses** , TEKES, Electronic Version, 2001, http://www.tekes.fi/julkaisut/Critical_Succes.pdf.

12. Roper Ken and McLin Michael, **Key Performance Indicators Drive Best Practices for General Contractors**, FMI Corporation,2005, www.fminet.com.

13. Siniora, Hanna, **the EU and the Palestinian Entity - Economic Issues**, the Palestinian Academic Society for the Study of International Affairs (PASSIA), Jerusalem, 2008.

14. UNRWA, **The Palestinian War-Torn Economy: Aid, Development And State Formation,** united nations conference on trade and development, 2006.

15. Williams and Ramaprasad, **The Critical Success Factor Approach,** available on line at: http://www.allbusiness.com/sales/sales-forecasting/652993-1.html.

16. Wolfensohn, James, **Disengagement, the Palestinian Economy and the Settlements**, the World Bank, 2004.

17. World Bank, **Disengagement, the Palestinian Economy and the Settlements**, 2006.

E- Websites

1. PCBS, **Palestinian Central Bureau of Statistics**, available online at: http://www.pcbs.gov.ps.

2. PCU, **Palestinian Contractors Unions,** available online at: http://www.pcu.ps.

3. PECDAR, **Palestinian economic council for development and reconstruction** , available online at: http://www.pecdar.ps

Appendices

Appendix – 1

Questionnaire Evaluators

S.N	Name	Position
1	Dr. Sameer Shehada	Faculty of Engineering- IUG
2	Dr. Roshdy Wady	Faculty of Commerce- IUG
3	Dr. Nihad Moghany	Municipality of Gaza
4	Dr. Samy Abo alroos	Faculty of Commerce- IUG
5	Dr. Yousef Ashoor	Faculty of Commerce- IUG
6	Dr. Shafeq Gendia	Faculty of Engineering- IUG
7	Eng. Khaled Dahlees	IUG
8	Eng. Abd Alraheem Shehab	PCU

Appendix – 2: Questionnaire

A- Questionnaire in Arabic language

بسم الله الرحمن الرحيم

الجامعة الإسلامية
كلية الدراسات العليا

قسم إدارة الأعمال

السيد/ مدير شركة المقاولات .... حفظه الله.

السلام عليكم ورحمته وبركاته ... وبعد:

يقوم الباحث بعمل دراسة لاستكشاف عوامل النجاح الحرجة في قطاع الإنشاءات من وجهة نظر المقاولين في قطاع غزة، وذلك كبحث تكميلي للحصول على درجة الماجستير في إدارة الأعمال، وقد اعد الباحث لذلك الاستبانة المرفقة. لذا يرجى من سيادتكم التكرم بقراءة فقرات الاستبيان والإجابة حسب نوع الفقرة بما ترونه يتوافق مع الوضع القائم بشركتكم. مع العلم بان هذه البيانات سيتم استخدامها بغرض البحث العلمي فقط.

شاكراً لكم حسن تعاونكم
وبمزيد الاحترام والتقدير

الباحث
أحمد محمود حمدية

أولاً : الخصائص الشخصية: **" ضع علامة (√) في المربع المخصص"**

1. **المسمى الوظيفي .....**
2. **الجنس:**

ذكر ☐ أنثى ☐

3. **العمر:**

أقل من 30 سنة ☐ 30-40 سنة ☐ 40-50 سنة ☐ 50 سنة فأكثر ☐

4. **المؤهل العلمي:**

اقل من ثانوية عامة ☐ ثانوية عامة ☐

دبلوم بعد الثانوية ☐ بكالوريوس ☐ دراسات عليا ☐

5. **عدد سنوات الخبرة في العمل:**

1-5 سنوات ☐ 5-10 سنوات ☐ أكثر من 10 سنوات ☐

ثانياً : الخصائص التنظيمية: **" ضع علامة (√) في المربع المخصص"**

1. **موقع الشركة:**

غزة ☐ خان يونس ☐ المنطقة الوسطى ☐ رفح ☐ المنطقة الشمالية ☐

2. **العمر الزمني للشركة:**

1-5 سنوات ☐ 5-10 سنوات ☐ 10-15 سنة ☐ 15 فأكثر ☐

3. **مجال عمل الشركة :**

أبنية ☐ طرق ☐ كهروميكانيك ☐ مياه ومجاري ☐ أخرى ☐

4. **تصنيف الشركة:**

درجة أولى "أ" ☐ درجة أولى"ب" ☐ درجة ثانية ☐

درجة ثالثة ☐ درجة رابعة ☐ درجة خامسة ☐

5. عدد العاملين الدائمين بالشركة

اقل من 10 ☐ 10-20 موظف ☐

20-30 موظف ☐ أكثر من 30 موظف ☐

ملاحظة / في الفقرات التالية يرجى تحديد درجة الموافقة بالأرقام من 1-10 و كلما اقترب الرقم من 10 زادت الموافقة والعكس صحيح

ثالثاً : وجود رسالة وأهداف للشركة

الرقم	الأسئلة	حدد درجة الموافقة
3.1	يوجد رسالة مكتوبة للشركة.	
3.2	رسالة الشركة واضحة العاملين.	
3.3	يعتبر وجود رسالة للشركة عاملاً لنجاحها.	
3.4	لدى الشركة أهداف منبثقة عن الرسالة.	
3.5	يتم إشراك العاملين في صياغة الأهداف.	
3.6	يتم صياغة رسالة وأهداف الشركة في ضوء دراسة البيئة المحيطة.	
3.7	الأهداف قابلة للتعديل.	
3.8	الأهداف قابلة للتطبيق.	
3.9	يوجد لدى الشركة رؤية سليمة بالتوجه نحو المستقبل.	

رابعاً: المهارات الإدارية لدى مدير الشركة

الرقم	الأسئلة	حدد درجة الموافقة
4.1	لدى إدارة الشركة القدرة على وضع خطط عمل.	
4.2	لدى إدارة الشركة القدرة على استخدام الحاسوب في الإدارة.	
4.3	شارك المدير دورات تدريبية في مجال الإدارة.	
4.4	يعقد المدير اجتماعات دورية مع طواقم العمل.	
4.5	يصدر المدير نشرات دورية للتواصل مع الموظفين.	
4.6	يستخدم المدير احدث وسائل الاتصال مع طواقم العاملين.	
4.7	توجد لدى المدير القدرة على تحديد التكاليف بدقة.	
4.8	توجد لدى المدير القدرة على البرمجة الزمنية للمشاريع ومتابعتها.	

4.9	أنت راض عن مستوى مهاراتك الإدارية.	

خامساً: توفر الموارد المالية

الرقم	الأسئلة	حدد درجة الموافقة
5.1	تتوفر لدى الشركة الموارد المالية اللازمة للمشروع قبل تنفيذه.	
5.2	يتم إعداد موازنة مالية للشركة.	
5.3	يتم حصر الموارد المالية للشركة دورياً.	
5.4	يتم تدريب الكوادر الإدارية على الاستفادة العظمى من الموارد المالية المتاحة.	
5.5	تؤثر سياسات البنوك على نوعية وحجم الموارد المالية المتاحة.	

سادساً: التحكم في التكلفة

الرقم	الأسئلة	حدد درجة الموافقة
6.1	تولي الشركة اهتماماً كبيراً للتحكم في التكاليف.	
6.2	يوجد في الشركة أنظمة فعالة وواضحة للتحكم في التكاليف.	
6.3	يتم إعداد موازنة تقديرية واضحة للتكاليف.	
6.4	يتم تدريب العاملين في جميع المستويات الإدارية على تطبيق هذه الأنظمة.	
6.5	مستوى التكاليف لديكم يماثل مستواه لدى الشركات الأخرى.	
6.6	يتم عمل تقييم دوري للتكاليف.	

سابعاً: سياسات التسعير في الشركة

الرقم	الأسئلة	حدد درجة الموافقة
7.1	تتبع الشركة سياسة تسعير واحدة لكل المناقصات التي تتنافس بها.	
7.2	تعتبر طريقة التسعير عاملا هاما لنجاح الشركة	
7.3	يوجد لدى الشركة نظام محوسب للتسعير.	
7.4	تستخدم الشركة أسلوب زيادة نسبة ربح معينة على التكلفة الحقيقية للبنود.	
7.5	تتبع الشركة السرية الكاملة في التسعير	
7.6	يوجد لدى الشركة بيانات تاريخية- يتم تحديثها دوريا- للاستفادة منها في التسعير.	
7.7	يؤثر المنافسون على القرارات التسعيرية.	
7.8	تغير أسعار العملات يجعل من التسعير عملية صعبة.	
7.9	اختلاف عملات التسعير للمشاريع يزيد من خطورة عدم التأكد في عملية التسعير.	

ثامناً: رضا الجهة المالكة:

الرقم	الأسئلة	حدد درجة الموافقة
8.1	يعتبر رضا المالك من أهم عوامل النجاح في المقاولات.	
8.2	تراعي الشركة رضا المالك في كل المشاريع التي تقوم بها.	
8.3	يؤمن المقاول بان تحقيق الربح متوازي مع تحقيق رضا المالك.	
8.4	تبحث الشركة عن كل متطلبات الجودة التي تحقق رضا المالك.	
8.5	يقيم المقاول نفسه بصورة دورية من ناحية تطبيقه لما يحقق رضا المالك.	
8.6	يستخدم المقاول المعلومات والشكاوى في زيادة مستوى رضا المالك.	
8.7	يتم تدريب العاملين على رفع مستوى رضا المالك.	
8.8	تحقيق مستوى عالي لرضا المالك هو ميزة تنافسية كبيرة بين الشركات.	
8.9	يؤمن المقاول بمقولة أن المالك دائماً على حق.	

B- Questionnaire in English language

First: Personal Characteristics

1. **Position:** ……
2. **Gender:**

☐ Male ☐ Female

3. **Age:**

☐ Below 30 ☐ 30-40

☐ 40-50 ☐ Above 30

4. **Educational Level:**

☐ Under general secondary ☐ General Secondary

☐ Diploma ☐ B.Cs ☐ Post graduation

5. **Experience:**

☐ 1-5 years ☐ 10-5years ☐ Above 10 years

Second: Organizational Characteristics

1. **Location:**

☐ Northern area ☐ Gaza ☐ Middle area ☐ Khan younis ☐ Rafah

2. **Establishment Period:**

☐ 5-1years ☐ 5-10 years ☐ 15-10years ☐ Above 15 years

3. **Field of Works:**

☐ Buildings ☐ Water and sewage ☐ Electro mechanic ☐ Roads ☐ Others

4. **Company Class:**

☐ First - A ☐ First - B ☐ Second

☐ Third ☐ Fourth ☐ Fifth

5. Employee number

☐ Below 10 ☐ 20-10

☐ Above 30 ☐ 30-20

Not: in the following question, put determine the degree of acceptance by placing number from 1 to 10, the more it is close to 10, the more agreement.

S.N	Question	Degree of Acceptance
Third : Mission and Goals		
3.1	Company have a written mission	
3.2	Mission is clear for employees	
3.3	Mission is success factor for company	
3.4	Goals are formulated according to mission	
3.5	Employees are involved in goals formulation	
3.6	Goals are formulated according to Environment	
3.7	Goals are flexible and adjustable	
3.8	Goals are applicable	
3.9	Company has future vision	
Fourth : Managerial Skills for manager		
4.1	Managers are able to plan	
4.2	Managers are able to use computer	
4.3	Manager attended training courses	
4.4	Manager meet staff periodically	
4.5	Manager issue publications to contact with employees	
4.6	Manager uses most modern communication tools	
4.7	Manager can estimate cost accurately	
4.8	Manager has the ability to project scheduling and following up	
4.9	Manager are satisfied by his skills	
Fifth: Financial resources		
5.5	Company has financial resources before project execution	
5.2	Company has estimated financial budget	
5.3	Company determine its financial resources periodically	
5.4	Staff are trained to effective uses for resources	
5.5	Banks policy affect type and qty of financial resources	
Sixth: Cost Control		
6.1	Company concern with cost control	

6.2	Company has an obvious cost control system	
6.3	Company arrange cost budget	
6.4	Employees are trained to use systems	
6.5	Costs level is similar to those in other companies	
6.6	Costs are periodically evaluated	
Seventh: Pricing polices		
7.1	Company has same policy for all projects	
7.2	Pricing method is a critical success factor	
7.3	Company has a computerized pricing system	
7.4	Company use cost plus approach	
7.5	Pricing is so secret	
7.6	Company has historical data	
7.7	Competitors affect on pricing decisions	
7.8	Changing currency make pricing difficult	
7.9	Changing piecing current increase uncertainty	
Eighth: Owner satisfaction		
8.1	Owner satisfaction is the most critical success factor	
8.2	Company concerns owner satisfaction	
8.3	Contractor believe that profit is parallel to owner satisfaction	
8.4	Company apply quality criteria to get owner satisfaction	
8.5	Contractor evaluate himself for owner satisfaction	
8.6	Contractor use feed back to increase owner satisfaction	
8.7	Employees are trained to increase owner satisfaction	
8.8	Owner satisfaction is competitive advantage	
8.9	Contractor believe that owner is always right	

Appendix – 3

Statistical Tables

Table (1): One- Way ANOVA test for Mission and Goals, attributed to some personal and organizational characteristics:

S.N	Question	Educational level of managers		Experience for managers		Number of employees		Establishment period of company	
		F value	Sig. Value	F value	Sig. Value	F value	Sig. Value	F value	Sig. Value
3.1	Company have a written mission	0.818	0.518	1.246	0.293	0.729	0.538	0.840	0.476
3.2	Mission is clear for employees	1.15	0.340	1.024	0.364	1.243	.300	0.611	0.610
3.3	Mission is success factor for company	0.243	0.913	1.542	0.220	1.649	0.185	0.446	0.721
3.4	Goals are formulated according to mission	1.583	0.187	0.262	0.770	0.736	0.534	0.110	0.954
3.5	Employees are involved in goals formulation	0.405	0.805	1.530	0.223	0.929	0.431	1.071	0.366
3.6	Goals are formulated according to Environment	1.523	0.204	0.863	0.426	0.693	0.559	0.297	0.828
3.7	Goals are flexible and adjustable	1.189	0.323	1.496	0.230	0.266	0.849	0.702	0.553
3.8	Goals are applicable	0.967	0.431	.450	.639	.488	.692	0.618	.605
3.9	Company has future vision	1.009	0.408	0.528	0.592	1.097	0.356	1.030	0.384
Total values		**0.655**	**0.625**	**1.492**	**0.231**	**0.637**	**0.593**	**0.097**	**0.962**

The typical value of F at degree of freedom (4,76), and at significance level of 5% = 2.490

Table (2): One- Way ANOVA tests for Managerial Skills of manager, attributed to some personal and organizational characteristics:

S.N	Question	Educational level of managers		Experience for managers		Number of employees		Establishment period of company	
		F value	Sig. Value	F value	Sig. Value	F value	Sig. Value	F value	Sig. Value
4.1	Managers are able to plan	0.359	0.837	1.830	0.167	0.368	0.776	1.032	0.383
4.2	Managers are able to use computer	2.433	0.055	1.831	0.167	0.285	0.836	2.070	0.111
4.3	Manager attended training courses	0.275	0.893	0.572	0.567	0.764	0.518	0.750	0.526
4.4	Manager meet staff periodically	0.679	0.609	0.460	0.633	0.084	0.968	2.672	0.053
4.5	Manager issue publications to contact with employees	0.595	0.668	0.127	0.880	0.451	0.717	2.040	0.115
4.6	Manager uses publications to contact with employees	0.288	0.885	0.297	0.744	0.686	0.563	4.186	0.108
4.7	Manager can estimate cost accurately	1.421	0.235	0.588	0.558	2.356	.078	1.661	0.182
4.8	Manager has the ability to project scheduling and following up	1.361	0.255	2.404	0.097	2.041	0.115	1.165	0.329
4.9	Manager are satisfied by his skills	0.717	0.583	0.097	0.908	0.473	0.702	1.177	0.324
Total values		**1.177**	**0.328**	**0.818**	**0.445**	**0.375**	**0.772**	**1.932**	**0.131**

The typical value of F at degree of freedom (4, 76), and at significance level of 5% = 2.490

Table (3): One- Way ANOVA test for test for Financial resources, attributed to some personal and organizational characteristics:

S.N	Question	Educational level of managers		Experience for managers		Number of employees		Establishment period of company	
		F value	Sig. Value	F value	Sig. Value	F value	Sig. Value	F value	Sig. Value
5.1	Company has financial resources before project execution	0.967	0.431	2.388	0.098	1.014	0.391	1.029	0.385
5.2	Company has estimated financial budget	1.423	0.234	0.194	0.824	0.290	0.832	0.069	0.976
5.3	Company determine its financial resources periodically	1.604	0.182	0.122	0.885	1.183	0.322	1.015	0.391
5.4	Staff are trained to effective uses for resources	2.145	0.083	1.018	0.366	0.185	0.906	0.829	0.482
5.5	Banks policy affect type and qty of financial resources	0.560	0.693	1.525	0.224	0.666	0.576	0.511	0.676
Total values		**0.781**	**0.541**	**0.450**	**0.640**	**0.827**	**0.483**	**0.861**	**0.465**

The typical value of F at degree of freedom (4,76), and at significance level of 5% = 2.490

Table (4): One- Way ANOVA test for test for Cost Control, attributed to some personal and organizational characteristics:

S.N	Question	Educational level of managers		Experience for managers		Number of employees		Establishment period of company	
		F value	Sig. Value	F value	Sig. Value	F value	Sig. Value	F value	Sig. Value
6.1	Company concern with cost control	0.232	0.920	4.971	0.109	0.885	0.453	0.151	0.929
6.2	Company has an obvious cost control system	0.167	0.954	0.639	0.530	1.125	0.344	0.146	0.932
6.3	Company arrange cost budget	1.374	0.251	0.606	0.548	0.831	0.481	1.789	0.156
6.4	Employees are trained to use systems	0.982	0.423	2.139	0.125	1.228	0.305	0.257	0.856
6.5	Costs level is similar to those in other companies	0.920	0.457	0.964	0.386	0.680	0.567	0.541	0.655
6.6	Costs are periodically evaluated	3.268	0.116	0.845	0.434	0.759	0.520	1.221	0.308
Total values		**1.032**	**0.396**	**3.397**	**0.139**	**1.205**	**0.314**	**0.676**	**0.570**

The typical value of F at degree of freedom (4,76), and at significance level of 5% = 2.490

Table (5): One- Way ANOVA test for Pricing polices, attributed to some personal and organizational characteristics:

S.N	Question	Educational level of managers		Experience for managers		Number of employees		Establishment period of company	
		F value	Sig. Value	F value	Sig. Value	F value	Sig. Value	F value	Sig. Value
7.1	Company has same policy for all projects	0.298	0.879	0.743	0.479	0.405	0.750	0.308	0.819
7.2	Pricing method is a critical success factor	2.215	0.075	1.683	0.192	0.303	0.823	1.172	0.326
7.3	Company has a computerized pricing system	0.781	.541	2.716	0.072	0.113	0.998	1.095	0.356
7.4	Company use cost plus approach	0.477	0.753	3.716	0.069	2.337	0.080	0.690	0.561
7.5	Pricing is so secret	0.507	0.731	1.252	0.292	0.258	0.855	1.400	0.249
7.6	Company has historical data	0.214	0.930	2.037	0.137	0.989	0.402	0.613	0.608
7.7	Competitors affect on pricing decisions	0.187	0.945	1.110	0.335	0.644	0.589	0.358	0.784
7.8	Changing currency make pricing difficult	1.060	0.382	1.096	0.339	0.720	0.543	0.370	0.775
7.9	Changing piecing current increase uncertainty	0.243	0.913	0.449	0.640	0.404	0.750	0.097	0.962
Total values		**0.230**	**0.921**	**1.906**	**0.156**	**0.141**	**0.935**	**0.308**	**0.820**

The typical value of F at degree of freedom (4,76), and at significance level of 5% = 2.490

Table (6): One- Way ANOVA test for Owner satisfaction, attributed to some personal and organizational characteristics:

S.N	Question	Educational level of managers		Experience for managers		Number of employees		Establishment period of company	
		F value	Sig. Value	F value	Sig. Value	F value	Sig. Value	F value	Sig. Value
8.1	Owner satisfaction is the most critical success factor	0.044	0.996	3.005	0.055	1.922	0.133	1.158	0.331
8.2	Company concerns owner satisfaction	.345	0.846	1.805	0.171	0.929	0.431	2.241	0.090
8.3	Contractor believe that profit is parallel to owner satisfaction	0.619	0.651	2.509	0.088	0.750	0.525	1.531	0.213
8.4	Company apply quality criteria to get owner satisfaction	1.556	0.195	2.082	0.132	0.817	0.488	2.289	0.085
8.5	Contractor evaluate himself for owner satisfaction	1.903	0.119	0.237	0.790	0.698	0.556	0.651	0.585
8.6	Contractor use feed back to increase owner satisfaction	0.305	0.874	2.197	0.118	0.406	0.749	0.425	0.736
8.7	Employees are trained to increase owner satisfaction	0.738	0.569	4.074	0.021	0.270	0.847	0.486	0.693
8.8	Owner satisfaction is competitive advantage	0.267	0.898	0.146	0.865	0.612	0.609	1.839	0.147
8.9	Contractor believe that owner is always right	2.155	0.082	0.424	0.656	0.878	0.457	1.069	0.367
Total values		**0.691**	**0.601**	**2.880**	**0.062**	**0.450**	**0.718**	**1.011**	**0.392**

The typical value of F at degree of freedom (4,76), and at significance level of 5% = 2.490