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The Role of Diversity on Team Effectiveness in a Multinational and Multicultural Military Environment

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THE ROLE OF DIVERSITY ON TEAM EFFECTIVENESS

IN A MULTINATIONAL AND MULTICULTURAL MILITARY ENVIRONMENT

by

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ABSTRACT

THE ROLE OF DIVERSITY ON TEAM EFFECTIVENESS
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The trend of deploying multinational coalition or alliance forces to respond to emerging threats in the past two decades has become a conventional approach. Beyond the advantages presented by coalitions and alliances, the literature suggests that multinational forces have raised a new set of challenges in achieving their mission: managing the demographic, functional, and cultural diversity introduced by the individuals from various nations that compose the coalition/alliance.

A large number of researchers have considered diversity a "double-edged sword" as they discovered that diversity could pose risks, as well as benefits, to teamwork. Although extensive research effort has been dedicated to the area of team diversity and its effect on team effectiveness, a systematic literature review reveals that relatively little research exists that looks at the impact of diversity on teams within multinational and multicultural military environments.

This study aimed at understanding the relationship between team diversity and team performance in a multinational military environment. The conceptual framework was inspired by both the I-P-O (Input-Process-Output) (McGrath, (1984) and the IMOI (Input Mediator Output Input) (Ilgen et al., 2005) theoretical models, and "The Multicultural Team Effectiveness Model" proposed by Halverson and Tirmizi (2008).

Diversity in teams was studied in terms of three main categories: Functional Diversity, Demographic Diversity, and Cultural Diversity. In an effort to shed more light on the effects of diversity on team effectiveness, this research also employed three team level control variables: team size, the use of standard operating procedures (SOP) that teams conformed to in performing their duties, and the directorate within which team functions. Team effectiveness was measured based on performance assessments from the team leader and the immediate supervisor. A multiple regression statistical method was utilized in analyses.

The study presented empirical evidence that within-team diversity plays a significant role on the team performance in multinational military environment. Diversity in multinational experience and age were found to be the factors that best promote the performance of multinational military teams, whereas diversity in military branch and perception of quality of work life were the factors that most undermine it. When the overall effects of the functional, demographic, and cultural diversities were taken into consideration, it was seen that the level of demographic diversity in a team enhanced team performance. This contrasted with the teams' level of cultural diversity, which weakened team performance. The role of functional diversity on team performance was found to be minor and not significant. When controlled by directorate, the use of SOP within the team, and team size, the analyses showed that only use of SOP altered and counterbalanced the effects of demographic and cultural diversities on team performance.

This dissertation is dedicated to my family: my beloved wife and my adorable son and daughter. Their never-ending support, encouragement, faith and patience keep me strong in my life.

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This study has been a challenging quest for me, which I would have never been able to complete if I had not had a number of people who supported me substantially. First of all, I would like to extend my deep gratitudes to my advisor, Dr. Pilar Pazos whose extensive support and efffort in providing invaluable insights and guidance deserve special recognition. She always led me back to the right direction when I felt lost through this endeavor. I also learned a lot from her expertise, for which I am forever grateful.

I also would like to thank my dissertation committee, Dr. Tomovic and Dr. Landaeta, for their invaluable contributions and time. They both provided critical inputs that enhanced the validity and reliability of the study.

This acknowledgement wouldn't be complete if I didn't mention Chief of Staff (COS) at HQ Supreme Allied Command Transformation (SACT), Lieutenant General Phil Jones CBE, whose approval for administering a survey through the HQ SACT was vital for the study. He supported this study and encouraged his staff to participate in the survey. The staff that participated in the survey by taking their own time also deserved righteously justified credits on the study.

Finally, I would like to extend my wholehearted thanks to my forever-parnter, my wife, for the outstanding support and patience. She has been my second advisor at home, keeping me on track among too many chores that distracted me from concentrating on the research. And, I should thank my kids for sacrificing from their quality time with the dady.

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CHAPTER 1

"You must be prepared...to accept minor inefficiencies as long as that is promoting the great and common purpose...You should not try to change ideas and concepts on the part of some subordinate of a different nationality because you disagree with him. If you can achieve the great overall unity of purpose that inspires loyalty, inspires teamwork, never bother your head about things in seeking perfection because too many difficulties can arise out of minor irritations and frustrations. You must not lose your sense of humor because if you do your allied command will blow apart."

General Dwight D. Eisenhower
In a speech on Problems of Combined Command
Address to the National War College, 18 June 1948

INTRODUCTION

1.1. Background of Study

For the last couple of decades, forming multinational coalition or alliance forces to respond to emerging threats has been a mainstream approach. Experiences in Bosnia, Kosovo, Iraq, Afghanistan, the Arabian Gulf, the Gulf of Aden, Lebanon, and Libya have demonstrated the substantial military advantages to be gained through coalition and alliance operations. In this quest, NATO has played and is still playing a key role among contributing forces as part of a multinational coalition or alliance to conduct operations ranging from war to peacekeeping, peace support, and humanitarian assistance. This trend is expected to increase in the future since multi-national coalitions are considered more legitimate than actions from one nation, at least in the Western world (Soeters & Recht, 2001).

Beyond the advantages presented by coalitions and alliances, multinational forces raise a new set of challenges in achieving their mission:

managing demographic, functional, and cultural diversity introduced by the individuals from various nations which compose the coalition/alliance. For example, if we consider that the International Security Assistance Force in Afghanistan consists of contingents from 50 countries, we can easily realize the diversity the leadership of the coalition/alliance should take into account.

The web page of UN Department for Peacekeeping Operations[1] shows that there have been 54 completed coalition operations since 1948. This page also keeps records of the 16 current operations that are being carried out by coalition forces. Likewise, NATO's operations and missions web page shows that there have been 30 completed operations and missions since 1990[2], and six current operations and missions[3], as opposed to no operations between 1949-1990.

A number of research studies have identified diversity as a "double-edged sword" (Milliken & Martins, 1996; Phillips, Northcraft, & Neale, 2006) because it may instill risks to teamwork as well as benefits. Diversity in teams can offer a complex challenge, since it broadens the pool of potentially task-relevant resources, while at the same time it has the potential to disrupt team performance. Therefore, it is of great importance to identify when teams are able to benefit from diversity, and when it may be detrimental to teamwork (Pieterse, Van Knippenberg, & Van Dierendonck, 2013). Increasingly, both managers and researchers want to learn how diversity can be managed in ways that minimize

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[1] http://www.un.org/en/peacekeeping/
[2] http://www.aco.nato.int/resources/21/NATO%20Operations,%201949-Present.pdf
[3] http://www.nato.int/cps/en/natohq/topics_52060.htm

its risks and capitalize on its benefits (Phillips, Northcraft, & Neale, 2006; Harrison & Klein, 2007).

As such, there is a substantial requirement to consider and integrate the factors about diversity that surround and influence multinational military coalitions and alliances. Shuffler, Pavlas, and Salas (2012) strenuously argue this point, emphasizing that military teams brought together from different nations and cultures can face problems, since they tend to have cooperation issues, communication problems, conflict issues, and issues with team performance that largely emanate from national differences.

Dinwoodie (2005) argues that managing people who have vastly different backgrounds, traditions, motivations, and concerns is a complex leadership challenge that is often overlooked. He suggests that addressing this complex challenge begins with gaining perspective, which includes assessing the organization's current diversity situation and devising a diversity strategy.

Soeters and Recht (1998, 2001) posit that cultural awareness within the military helps unify rather than divide, serves to "socialize" military cohesiveness, makes membership in a multinational military organization more attractive to those who must carry out the mission, and allows both military and civilian leaders in such organizations to be more proactive and to quickly recognize potential problem areas.

Anderson's (1994) cross-cultural adaptation model portrays six major categories of reactors to another culture where out of six categories, only two

types of reactors seem to be able to overcome cultural differences, while the remaining four fail to adapt.

Shuffler, Pavlas, and Salas (2012) stress the point that multiculturalism in military teams is a pressing challenge for the future that requires additional research in order to address the aforementioned potential issues and to reduce the negative aspects of such teams, while enhancing their positive benefits. In the same line, based on the large amount of lessons learned, the United States Army Field Manual 100-8 (1997) states, "The glue that binds a multinational operation together is the commander's ability to understand and mesh each counterpart's capabilities, personal and professional habits, training backgrounds, relevant national characteristics, and national goals into unit of effort" (p. 5-0).

Teams first drew the attention of researchers and scholars in the late 1800s, and diversity in teams has become a topic of interest since the mid-1900s (Cartwright & Zander, 1968; Kim, 2004). Although extensive research effort has been dedicated to the area of team diversity and its effect on team effectiveness, a literature review reveals that relatively little research exists that looks at the impact of diversity on teams within a multinational context, and there is even less for the teams within a multinational and multicultural military environment (Shuffler, Pavlas, & Salas, 2012). Moreover, multinational military teams that operate in environments with unique characteristics and constraints may not necessarily reflect the findings of prior research (van Vliet et al., 2008; Salas, Cooke, & Rosen, 2008).

Salas, Cooke, and Rosen (2008), who studied key discoveries and developments in the area of team performance over the past 50 years, indicate that we still need a better understanding of teams in a multicultural context. They particularly emphasize, "the increasing prevalence of organizational structures such as globally distributed virtual teams in industry and joint-coalition forces in the military raises the possibility that the extant models are insufficient for teams with a heterogeneous cultural composition" (Salas, Cooke & Rosen, 2008).

1.2. Problem

The existing literature suggests consensus on a number of points regarding the effects of diversity on team performance and effectiveness, as is further elaborated in Chapter 2. Military teams, by their very nature, are trained to achieve mission objectives. However, when groups possessing diverse demographical, functional and cultural backgrounds must work together, differences among them can become major impediments to mission success (van Vliet & van Amelsfoort, 2008). Therefore, gaining an awareness of these differences is a necessary first step in developing tools to overcome the impediments posed by diversity and to forge effective working alliances. Knowledge of interpersonal and inter-group variations in multinational military environments can help to promote positive interaction between individuals and groups. On the whole, there is still a need for empirical studies that test theories and models in this area to enable the development of a knowledge base on which multinational military teams can capitalize (van Vliet et al., 2008).

Thus, this study aims to identify the influence of diversity, particularly demographic, functional, and cultural diversity, on team effectiveness in a multinational, multicultural military environment, taking advantage of the opportunities presented by NATO Supreme Allied Command of Transformation (SACT) for the collection of data.

As one of the two Strategic Commands of NATO, SACT is NATO's leading agent for change, driving, facilitating, and advocating continuous improvement of Alliance capabilities to maintain and enhance the military relevance and effectiveness of the Alliance. Composed of nearly 800 military and civilian personnel from 28+ nations, SACT Headquarters provides a unique multicultural and multinational military environment for researchers to investigate team attributes from the perspective of diversity.

The results help understand the role of demographic, functional, and cultural diversity on the performance of multinational military teams, creating upfront situational awareness on what military coalitions should expect to experience with respect to teamwork from the onset of their missions. The results, by identifying the significance of within-team diversity effects, answer the question of whether or not it is worth the investment of relevant training or technology that may help to mitigate the negative effects. Prior research suggests that team development in the form of training can foster team effectiveness (Shuffler, Pavlas, & Salas, 2012). Furthermore, the findings can be utilized to inform the composition of military teams by identifying the contexts (management, implementation, advisory, project-based, transformation, etc.) in

which diversity may render positive or negative effects (Ancona & Caldwell, 1992; Cox, 1994; Cox & Blake, 1991; Jackson, 1991; Kreitner & Kinicki, 1998; Shuffler, Pavlas, & Salas, 2012; Thompson & Gooler, 1996; Watson, Kumar, & Michaelsen, 1993).

1.3. Purpose Statement

The purpose of this study is to examine the relationship between ***team diversity*** and team effectiveness in a multinational military environment. Team diversity comprises individual level differences among team members in functional, demographic, and cultural aspects, as well as team level disparities. Functional diversity encompasses the traits of educational level, language proficiency, multinational experience, military branch or civilian status, and military rank or civilian pay grade, which are the variables associated with different types of skills, experiences, knowledge, and sets of roles that team members bring to their teams (Whaley, 2001). Multinational experience is the period of time that each member of a team spent in a coalition force or at a multinational headquarters, and educational level is the total years of formal school education (military and civilian) after high school. Demographic diversity accounts for the differences in nationality, age, and gender within teams. Cultural diversity accounts for differences in attributes defined by Hofstede's cultural construct (Whaley, 2001, p.29) including power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, and long-term versus short-term orientation. Additional team level factors include the size of the team,

functional directorate or division, and whether or not the team has adopted formalized standard operating procedures (SOP).

Team effectiveness is measured as the assessment of team performance by the team leader (section head) and his immediate supervisor (branch head).

CHAPTER 2

LITERATURE REVIEW

2.1. General

For this paper, a systematic search was conducted through library databases to identify relevant articles and dissertations regarding diversity in teams, and the impact of diversity on team processes, team output, and team contexts. The main focus of the search was on the topics of diversity and team effectiveness. The research material has been divided into two basic categories: research in a civil organizational context, and research in a military environment. Then, the focus was placed on the attributes that constitute diversity, on well-known diversity theories and diversity and team frameworks, on the moderating factors that may explain the impact of diversity on teams, on the means of measuring diversity, and on the relationship of diversity with team processes and output. Figure 1 illustrates a conceptual map for the literature review.

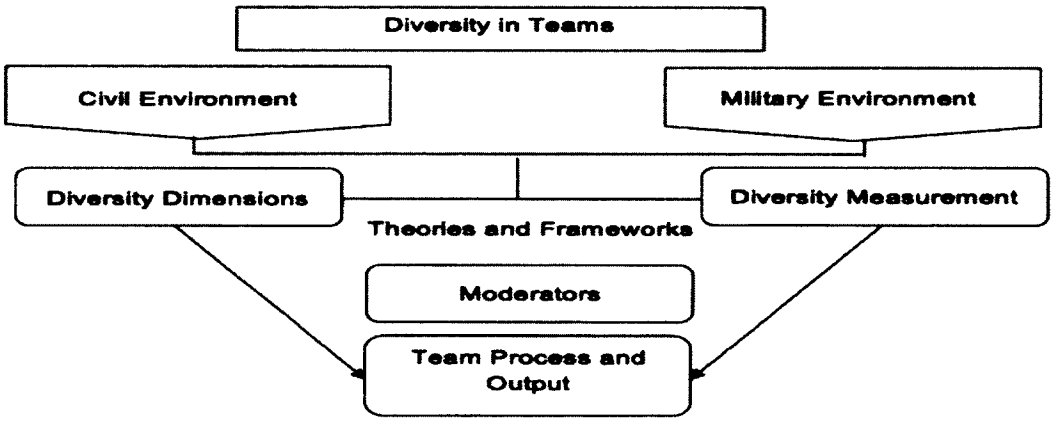

Figure 1. Literature Review Conceptual Map

Library databases provided a great number of readily downloadable articles and dissertations. Interlibrary loan was utilized if a particular piece of research was not found in the databases. Relevant books were also used in outlining the major theories and the frameworks of team diversity.

This chapter establishes a background for the research topic in an effort both to provide a comprehensive summary of the research executed so far across different disciplines, and to outline the gap that still needs further research.

2.2. The Importance and the Role of Teams in Military Organizations.

Teams are considered critical to the organizational structure of the military. The complex nature of military missions demands knowledge, skills, and abilities beyond the amount that a single individual can offer, thus imposing the use of teams (Shuffler, Pavlas, & Salas, 2012). The team is the lowest level unit in the military as opposed to individual. The size of a team may vary depending on the nature of mission.

Shuffler, Pavlas and Salas (2012) draw attention to the fact a team working on a task has an advantage, compared to a mere group of individuals working on the same task. They argue that teams are more innovative due to the diverse experience of their members, are better at storing and retrieving knowledge through the use of shared mental models and transactive memory systems, and are better able to adapt to changing tasks and market requirements. Shuffler, Pavlas, and Salas (2012) further assume that these kinds

of advantages have driven the use of teams into becoming a critical factor in complex military environments.

Military teams are trained to operate independently under the fog and dust of the war. That's why military units seek to engender a strong sense of belonging to a "team." Developing this loyalty to a group for whom one would be prepared to make sacrifices has been critical in ensuring group cohesion and solidarity.

Countless recent military operations are performed by coalition partners working together on an *ad hoc* basis. These individuals are expected to form an effective working team in order to achieve their missions (Dalenberg, Vogelaar, & Beersma, 2009).

Shuffler, Pavlas, and Salas (2012) emphasize that multinational military teams are very susceptible to problems emanating from cultural differences that can impact cooperation and communication, and often result in conflict and reduced team performance.

2.3. Definition of Teams

Previous research into teams provides a variety of definitions. In her literature review, Dyer (1984) suggests that a team be considered as including two or more people, with a common goal, a specific role assignment, and interdependence. In the following years, other researchers have reiterated similar elements of teams (Campion, Medsker, & Higgs, 1993; Salas, Converse, & Tannenbaum; 1992; Sundstrom, De Meuse, & Futrell, 1990). Oransu and Salas

(1993) broadened this early definition of team by adding additional characteristics:

- Teams make decisions in the context of a larger task
- Team members have specialized knowledge and skills relevant to the task and decision
- Task conditions under which teams operate often include high workload and time pressure.

Cheng (2003) pinpoints one commonality salient among the definitions, which is the requirement for individuals to engage in cooperative and interdependent actions to achieve a collective goal. It is this requirement for interactions and mutual goal alignment that differentiates a "team" from just an informal group of individuals (Stout, Salas, & Fowlkes, 1997).

Based on the above definitions Vliet and Amelsfoort (2008, page 4-1) proposed a concise definition of a team as follows:

A team consists of two or more people with a common goal, making decisions in the context of a larger task. Each member has a specific role and specialized knowledge and skills relevant to the task and decision, and team members are interdependent. (p. 4-1)

Thompson and Gooler (1996) put forward a more comprehensive definition of a team as "a dynamic integration of individuals who are committed to a common purpose (e.g., projects, tasks) and set of performance goals for which they hold themselves mutually accountable, and whose efforts produce

something beyond individual end products" (p.397). This definition delineates one other significant aspect of teams, which is that teams produce something beyond individual end products, in addition to involving dynamic processes, pursuing common purposes and goals, and acting interdependently.

Furthermore, Salas et al. (2008) define teams as being usually organized hierarchically and sometimes dispersed geographically. Team members must integrate, synthesize, and share information, as well as coordinate and cooperate in order to accomplish their mission. Salas et al. (2008) underline that organizations consider teams "the strategy of choice" when they are confronted with complex and difficult tasks, and when errors can lead to severe consequences.

One can see many types of teams in today's workplaces. Teams can vary in function: production teams perform day-to-day operations, advice teams help broaden the information base for managerial decision making, project teams apply specialized knowledge for creative problem solving, and action teams comprising a collection of highly-coordinated specialists exhibit peak performance on demand (Kreitner & Kinicki, 1998). Teams can also vary in duration; some teams are temporary, some are long-lived, and the others may even be permanent (Kreitner & Kinicki, 1998).

In this study, consistent with the widely recognized definition of Salas et al. (1992; 2008) and Thompson and Gooler (1996), a team is defined as a distinguishable set of two or more individuals who interact interdependently with

a limited life span of membership in order to accomplish a common goal which is beyond an individual end product.

2.4. A Brief History of Research on Teams

Throughout human history, although teams have been utilized to achieve large tasks and missions that have required common efforts of multiple individuals, from the practitioner's point of view, implementing work teams as a way of organizing work has been predominantly a 20th century concept (Kim, 2004).

During the early industrial era of late 19th century, attempts toward utilizing teamwork were not common, because of the dogmatic adherence to Frederic Taylor's scientific management (Porter & Beyerlein, 2000). Over the next several decades, with the introduction of larger companies, a notable development of research on teamwork took place, especially during the late 1930s when the concept of "group dynamics" emerged in field of social psychology (Cartwright & Zander, 1968). The research on group dynamics expanded more rapidly in U.S. after the Second World War; studies of teamwork flourished at the same time in other disciplines, such as medicine, social work, and psychology (Kim, 2004).

In the late 1970s, teamwork became a dominant mode of organizational production, since it was believed to be synergistically compatible with service and with knowledge-oriented business demands (Beyerlein, 2000). The 1980s and 1990s garnered a surge of interest in teamwork among management theorists and industrial/organizational (I/O) psychologists (Cohen & Bailey, 1997; Gist, Locke, & Taylor, 1987; Guzzo & Shea, 1992; Hackman, 1987). Salas et al.

(2008) have called recent decades a "golden age" of interest in team research. A literature review on the subject of team research revealed more than 130 models and frameworks of team performance or some component thereof (Salas, Stagl, Burke, & Goodwin, 2007). From these varying theoretical models, four prominent theories of teamwork in the fields of management and industrial organizational (I/O) psychology have emerged: 1) sociotechnical theory, 2) group process and productivity, 3) systems theory, and 4) input-process-output models.

Sociotechnical Theory. Sociotechnical theory suggests that the technological and social aspects of organizational work are interdependent. Therefore, it is crucial for organizations to balance the technical configuration of work and the social arrangement of workers, such as work teams or quality circles, in order to optimize organizational performance as well as quality of work-life (Trist & Bamforth, 1951; Trist, 1981). Thus, the unique feature of sociotechnical theory might be the concentrated use of interdependent work arrangements for the technological and social aspects of work.

Group Process and Productivity. This theory, proposed by Steiner (1972), attempts to explain the dynamics that influence the productivity of small, task-oriented groups. Steiner (1972) suggests that group performance is a factor of three categories of variables: (1) task requirements; (2) resources, including individual members' abilities and skills, and the tools available; and (3) the group process, which includes both interpersonal actions and the procedural actions taken in order to accomplish the task.

Systems Theory. Based on the General Systems Theory (GST) introduced by Bertalanffy (1969), O'Connor (1980) developed a systems model of teamwork with a focus on the dynamic interdependence that occurs among variables. Similarly, in investigating work group dynamics in organizations (organizational context, boundaries, team development, and team effectiveness), Sundstrom, De Meuse, and Futrell (1990) formulated a natural model of interconnected variables (organizational context, boundaries, team development, and team effectiveness).

Input-Process-Output Models of Teamwork. Although the input-process-output (I-P-O) approach had been around since the 1960s, McGrath (1984) was one of the early researchers who applied this approach to analyze teamwork (Kim, 2004). The general I-P-O model was largely based on a static, linear relationship among the three variables of input, process, and output. In 1984, Gladstein identified two main categories of inputs in her I-P-O model: team level inputs and organizational level inputs, each of which may facilitate or hamper team work. Ultimately, these two categories of inputs are assumed to affect the output, group effectiveness, both directly and indirectly through the group process. Salas et al. (2008) identify the I-P-O model as the dominant approach among other various models.

More recently, Ilgen, Hollenbeck, Johnson, and Jundt (2005) have advanced a new form of the model, which takes into account the increased complexity that teams are facing today. Their model adds to the original I-P-O the mediating factors and assumes a cyclical nature of team functioning: the input,

mediator, output, input (IMOI) (Figure 2). Substituting "M" or mediator, for "P" or processes pinpoints a broader range of variables that can influence teams rather than those solely pertain to their processes. Additionally the inclusion of "I" illustrates the fact that the framework is cyclical, with feedback occurring to inform the next iteration. Finally, the removal of hyphens (-) from I-P-O represents the fact that the model is not linear or additive, but in fact, is non-linear or conditional (Shuffler, Pavlas & Salas, 2012).

Shuffler et al. (2012) debate that the conceptual shift from an I-P-O framework to an IMOI model has strong implications for military teams. They recommend using IMOI in the studies that focus on military teams, as it helps better understand how inputs and mediators can influence team outcomes, which is important for team performance and eventually for successful operations.

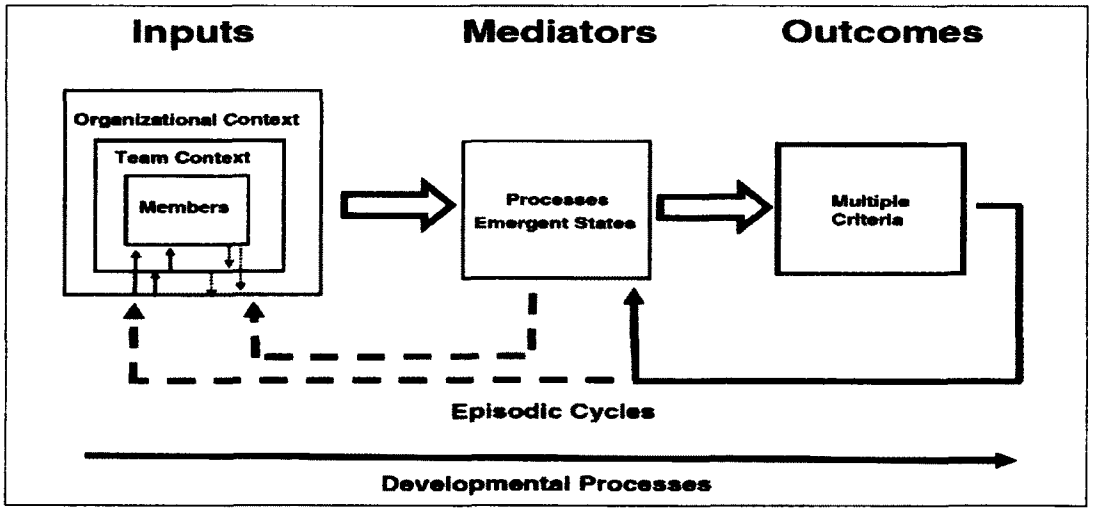

Figure 2. IMOI Model. Reprinted from Mathieu, Maynard, Rapp, & Gilson (2008)

The academic and popular literature of the 1990s fully embraced the notion that multicultural teams were becoming a way of organizational life in the world (Halverson & Tirmizi, 2008). Inspired by previous research (e.g. Ancona, 1990; Guzzo, 1986; Hackman, 1987; Salas, 2003; Williams & O'Reilly 1998), Halverson and Tirmizi (2008) propose a model representing the factors that affect team effectiveness in a multicultural context (Figure 3). This model manifests the factors that should be taken into account when investigating the effectiveness of multicultural teams. Furthermore, the model posits that all of these factors are interdependent and have influence on one another (Halverson & Tirmizi, 2008). In this regard, this model is an expanded version of both the I-P-O and the IMOI theoretical models into a multicultural context.

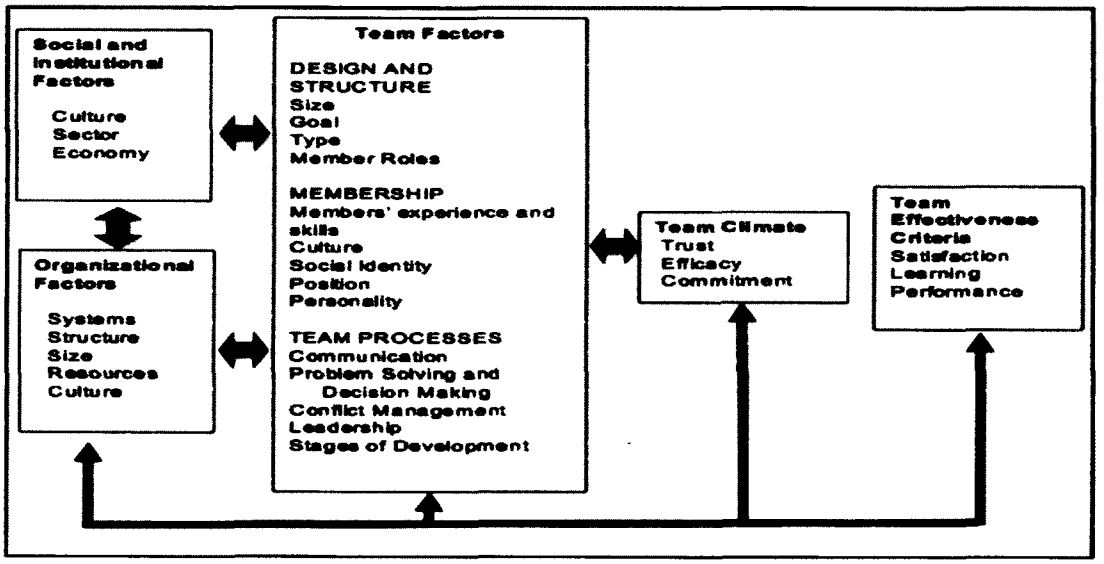

Figure 3. Multicultural Team Effectiveness Model (Halverson & Tirmizi, 2008, p.10)

Halverson and Tirmizi's (2008) model recognizes that teams are embedded in one or more larger social and organizational systems that will affect their effectiveness one way or another. The model categorizes team factors into three groups: team design and structure, membership and members' characteristics (e.g. class, race, gender, ethnicity), and team processes. The model also attempts to apprehend what constitutes the appropriate effectiveness criteria for multicultural teams. Having reconciled the literature on the theory of multicultural teams, Halverson et al. (2008) assert, in addition to productivity and performance, that team member's satisfaction and learning are considered integral to any understanding of the team's effectiveness. This approach finds its practicality in military, since the performance of an individual is usually measured by the level of satisfaction of his first and second supervisors in the chain of command.

The theory and practice of developing effective multicultural teams is an emergent area due to continuously changing demographic, cultural, and social factors. It is important to refine our understanding of the factors and processes that drive culturally diverse teams to their maximum effectiveness. In this regard, the model proposed by Halverson and Tirmizi (2008) seems to be promising in providing a framework by which to study the effects of team diversity on team effectiveness in a multinational context.

In their article, Salas et al. (2008) discuss the discoveries and developments in the area of teams, after their review of the literature of the past 50 years. They characterized eight discoveries and five challenges in this

particular field. Their list of discoveries: 1) Shared cognition matters in team performance, 2) Shared cognition can be measured, 3) Team training promotes teamwork and enhances team performance, 4) Synthetic task environments (STEs) provide context for research, 5) Team performance can be modeled, 6) Factors that influence team performance have been identified, 7) Well-designed technology can improve team performance, and 8) The field belongs to many disciplines. They also point out five challenges regarding the research field: 1) It needs better measurement, 2) It needs to study teams "in the wild" in their fully situated context, 3) It requires a better understanding of dynamic assembly of adaptive teams, 4) It needs an increased emphasis on team cognition, 5) It needs better understanding of teams in a multicultural context. This last point constitutes the focus of this study.

2.5. Theories on the Relationship of Team Diversity and Performance

As a result of the sprawling globalization and ever-advancing technology, the workforce is inevitably becoming more diverse. Some research has identified diversity as a "double-edged sword" (Milliken & Martins, 1996; Phillips, Northcraft, & Neale, 2006) because it may instill risks as well as benefits to teamwork. McGrath, Berdahl and Arrow (1995) describe diversity as the differences among the members of some particular groups. Diversity in teams offers a complex challenge: it broadens the pool of potentially task-relevant resources while offering the potential of disrupting team performance. Therefore, it is of great importance to identify when diversity can be beneficial to teams and when it may be detrimental (Pieterse, Van Knippenberg, & Van Dierendonck

2013). Increasingly, both managers and researchers want to learn how diversity can be managed in ways that minimize its risks and capitalize on its benefits (Phillips, Northcraft, & Neale, 2006).

Williams and O'Reilly (1998) published a comprehensive paper on the work and the findings in the area of diversity, covering both physical characteristics and psychological differences. It is very difficult to find a single definition of diversity that works across all domains. However, Williams and O'Reilly (1998) have attempted to make one. They define diversity as any attribute people use to tell themselves that another person is different.

Williams and O'Reilly (1998) identified three theoretical positions that help to understand the harmful or helpful effects of diversity on team processes and output: *the social categorization perspective, the similarity/attraction paradigm, and the information/ decision-making perspective.*

The social categorization perspective (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) posits that if people perceive themselves to be different from one another, then categorization within a team is likely to occur, which often leads to negative team outcomes (van Knippenberg & Schippers, 2007). Individuals usually identify themselves as members of a specific group, and at the same time categorize non-members as belonging to other groups (Tajfel, 1982). In this sense, favoring insiders and judging outsiders would seem to complicate social processes and thus exert a negative influence on teams (Suwannarat et al., 2012).

The *similarity / attraction paradigm* (Byrne, 1971) states that similarities among people lead to social attraction. Like the social categorization perspective, it predicts that teams with similar members (or with members who at least perceive themselves to be similar) will be more productive than teams with diverse members. In other words, people with related values, beliefs, and attitudes tend to cooperate more and work better together (Williams & O'Reilly, 1998).

The *information/decision-making perspective* suggests that diverse work teams are more likely to have access to a greater pool of task-relevant resources, which might facilitate problem solving and might enhance creativity. In this regard, research findings concerning the outcomes of diversity in the workplace are inconclusive (e.g., Jackson & Joshi, 2011; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998). Van Knippenberg, De Dreu, and Homan (2004) tried to integrate the social categorization and information/ decision-making perspectives in their categorization-elaboration model. This model suggests that to understand the influence of diversity on team performance and other outcomes, researchers should examine mediators and moderators and should explore new aspects of diversity (Hentschel et al., 2012).

2.6. Dimensions of Team Diversity: Existing Frameworks

In their research, McGrath et al. (1995) describe four diversity models: the Trait Approach, the Expectation Approach, the Differential Power Approach, and the Multicultural Approach.

The Trait Approach suggests that group members' demographic characteristics are related to their task-related knowledge, skills, and abilities (KSA); values, beliefs, and attitudes (VBA); and personality, cognitive, and behavioral styles (PCB), which in turn, influence their behavior. Furthermore, each member's behavior has an impact on group interaction and performance (McGrath et al., 1995).

The Expectation Approach focuses on the differential expectations evoked by demographic differences and how the expectations affect group interaction and performance. For instance, let's assume that A and B are the members of a team. Based on member A's demographic characteristics, member B makes inferences about member A's underlying attributes (KSA, VBA, and PCB) and vice versa. These inferences can lead to expectations by A and B about one another's behavior, and they may further lead to differential treatment of and differential behavioral responses by other group members, and finally may influence group interaction and performance (Cheng, 2003).

The Differential Power Approach argues that members of different demographic categories (e.g., men and women) join the group with differential power and differential access to resources, both in organizations and in the larger society within which the organization is operating. This theory further assumes that the relative power that one member holds over another will eventually influence group interaction and performance. For example, the dominant members of a group have greater access to resources, and thus they have greater influence in forming group interactions and outcomes, whereas the

subordinate members of the group tend to be silent regarding in-group interaction and may have less influence on the outcomes (McGrath et al., 1995).

The Multicultural Approach integrates the three models reviewed above. It argues that demographic diversity can have an impact on group interactions and outcomes through all three paths. Differences in underlying attributes (KSA, VBA, and PCB), the expectations that team members have on each other, and differences in power all contribute to members' impacts on group processes and outcomes (Cheng, 2003)

Additionally, Campion et al. (1993) formulated a model of work group outcomes in which the researchers suggested five categories that affect team outcomes: 1) job design, 2) task interdependence, 3) group composition, 4) organizational context, and 5) group process.

In their review, Jackson, May, and Whitney (1995) delineate readily detectable (via demographic markers) and less observable (via ability and cognitive resources) team diversity (Kim, 2004).

The studies done during 1980s and 1990s mostly focused on demographic diversity, such as age, race, and gender. One of the reasons for this trend was that these characteristics were easily observable and measurable (Cheng, 2003). McGrath et al. (1995) consider diversity on five clusters of key attributes of work groups: 1) demographic attributes (e.g. age, race, gender, ethnicity, sexual orientation, physical status, religion, and education), 2) task related knowledge, skills, and abilities (KSA), 3) values, beliefs and attitudes, 4)

Personality, cognitive and behavioral styles, and 5) Organizational status (e.g., organizational rank, occupational specialty, departmental affiliation, tenure).

Pelled (1996) further categorizes diversity into two major themes: the visibility and job-relatedness of demographic characteristics. For visibility, she refers to the extent to which a demographic characteristic is easily detectable by the other members of the team. She defines job relatedness as the degree to which the attribute has a direct relationship with the perspectives and skills related to tasks. In her theoretical model, she categorizes the characteristics of age, gender, race, and group tenure as high visibility attributes, and organizational tenure, education, and functional background as low visibility attributes. In addition, group tenure, organizational tenure, education, and functional background are categorized highly job-related, and age, gender, and race are categorized less-job-related attributes.

Milliken and Martins (1996) have reviewed much of the recent management research in the area of team diversity. They identify twelve different dimensions of diversity. To organize their thinking about the different types of diversity, they categorize diversity into "observable and readily detectable attributes" such as race, ethnic background, age, or gender, and "less visible, less observable or underlying attributes" such as education, technical abilities, functional background, tenure, socioeconomic, and personality characteristics or values.

Likewise, Harrison, Price and Bell (1998), after their review of the diversity literature, suggest the typology of surface level diversity (demographic) and deep

level diversity (attitudinal). They define surface level diversity as the differences among group members in observable physical features, which include the demographic variables that Milliken and Martins (1996) categorized as observable diversity (Whaley, 2001). Deep-level diversity, on the other hand, is defined as differences among members' attitudes, beliefs, and values that are not readily observable, however, over time become noticeable through member interactions.

Whaley (2001) uses a heuristic approach and takes into account the differences between Milliken and Martins (1996) and Harrison et al. (1998) to come up with three levels of diversity. Whaley (2001) proposes that Level I diversity comprises the demographic attributes similar to "readily observable" or "surface level" diversity. Level II diversity contains the skill-based and role-set diversity variables; these variables are also described as "working-level" diversity variables such as different types of skills, experiences, knowledge, and roles sets that individuals bring to a work group. Finally, Level III diversity encompasses the differences among members' attitudes, beliefs, and values.

Whaley (2001) asserts that many studies demonstrate a negative relationship between Level I diversity and productivity. On the other hand, some studies reveal that the number of alternatives considered in decision-making tasks and the degree of cooperation within the group increases with diversity (Cox, Lober, & McLeod, 1991; McLeod & Lobel, 1992; Watson, Kumar, Michaelsen, 1993). Watson et al. (1993) argue that these kind of positive effects occurred only after the diverse group has been together for a period of time.

Whaley (2001) also points out that some research reports a positive relationship between Level II attributes and the decision-making process leading to some cognitive benefits; however, he admitted that he couldn't find any research demonstrating a direct relationship between values, attitudes, or personality diversity and group performance.

When considering attitudes, beliefs, and values that constitute culture it is almost impossible to ignore Hofstede's (1980) research on international differences in work-related values. Hofstede (1980) conducted a large research project involving 116,000 employees in 50 countries and three regions at two points in time. He identified four basic cultural, multinational dimensions, which can explain half of the variance in the countries' mean scores. He labeled these dimensions as *Power Distance (PD), Uncertainty Avoidance (UA), Individualism versus Collectivism (IND),* and *Masculinity versus Femininity (MAS)*. These four dimensions were deemed to relate to very fundamental problems facing any human society, but to which different societies have found different answers (Hofstede, 1983). Later on, he added the fifth dimension: Long-term versus Short-term Orientation (Hofstede, 2001). Power Distance is the extent to which the less powerful individuals in a system accept the differences in status, hierarchy, and class. In low-PD cultures, people in subordinate positions can easily access people in superior positions; in high-PD cultures, power holders are entitled to privileges and leaders tend to be directive (Halverson, and Tirmizi, 2008). Uncertainty avoidance (UN) refers to the tolerance for uncertainty and reflects the amount of discomfort experienced by an individual in the presence of

unknown factors (van Vliet & van Amelsfoort, 2008). Individualism-Collectivism is the extent to which an individual prefers to work alone or in a group. The Masculinity-Femininity dimension is related to the division of emotional roles between men and women. Masculinity stands for a society in which social gender roles are clearly distinct, and one in which men are supposed to be assertive, tough, and focused on material success, while women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap, one in which both men and women are supposed to be modest, tender, and concerned with the quality of life (Hofstede, 2001). Long-term versus short-term orientation is related to the choice of focus for people's efforts: the future or the present (Hofstede, 2001).

Hofstede (2001) asserts that these five dimensions have been empirically found and validated, and that each country in the research can be positioned on the scale represented by each dimension; moreover, these dimensions are statistically distinct and occur in all possible combinations.

Table 1 illustrates key differences in societies bearing low or high values in each of the cultural dimensions suggested by Hofstede (2001).

Similarly, House, Hanges, Javidan, Dorfman, and Gupta (2004) developed a cultural framework by using a team of 172 researchers who gathered data from 17,300 respondents in 951 organizations across 62 societies. The framework suggests nine cultural dimensions that prevail in multicultural organizations. Table 2 illustrates the dimensions proposed by the GLOBE project and their definitions.

Table 1. Value connotations of Hofstede's cultural dimensions. (Adapted from Hofstede, 2001).

Cultural Dimensions	Low	High
Power Distance	Low dependence needs Inequality minimized Hierarchy for convenience Superiors accessible All have equal rights Change by evolution	High dependence needs Inequality accepted Hierarchy needed Superiors often inaccessible Power-holders have privileges Change by revolution
Individualism (vs. Collectivism)	"We" conscious Relationships over tasks Fulfill obligations to group Loss of "face," shame	"I" conscious Private options Fulfill obligations to self Loss of self-respect, guilt
Masculinity (vs. Femininity)	Quality of life is serving others Striving for consensus Work in order to live Small and slow are beautiful Sympathy for the unfortunate Intuition	Ambitious and a need to excel Tendency to polarize Live in order to work Big and fast are beautiful Admiration for the achiever Decisiveness
Uncertainty Avoidance	Relaxed, lower stress Hard work not a virtue per se Emotions not shown Conflict & competition seen as fair play Acceptance of dissent Willingness to take risks There should be few rules	Anxiety, higher stress Inner urge to work hard Showing emotions acceptable Conflict is threatening Need for consensus Need to avoid failure Need for laws and rules
Long Term Orientation (vs. Short Term Orientation)	Absolute truth Conventional/Traditional Concern for stability Quick results expected Spending for today	Many truths (time and context) Pragmatic Acceptance of change Perseverance Thrift for investment

Table 2. The GLOBE Project Cultural Dimensions. (Adapted from Halverson et al., 2008, p.30)

Cultural Dimensions	Definitions
Power Distance	The extent to which members of a society expect power to be distributed equally.
Gender Egalitarianism	The degree to which societies discourage differences in gender roles and inequality.
Uncertainty avoidance	The extent to which societies rely on rules, policies, and procedures to minimize ambiguity and unpredictability of future events.
Collectivism-I (institutional collectivism)	The degree to which societies encourage and reward collective action and distribution of resources.
Collectivism-II (in-group collectivism)	The extent to which members of a society express pride, loyalty, and cohesiveness in their relationship with others.
Future Orientation	The degree to which members of society engage in future-oriented behaviors such as planning, preparing for, and investing in the future.
Assertiveness	The extent to which members of a society are aggressive, demanding, and confrontational toward each other in their interactions.
Performance Orientation	The extent to which societies reward and encourage individuals for innovation and performance excellence.
Humane Orientation	The extent to which a society encourages its members to be generous, altruistic, and caring, and to show concern for the welfare of others.

The House et al. (2004) project was designed to differentiate cultural practices from cultural values. Thus, the findings reflect two values of the cultural dimension as 'as is' and 'should be' for each society in the study. In this regard, House's work differs from Hofstede's work that reflects mixed values of cultural practices and expected cultural values (House et al., 2004). However, House et al. (2004) employed an analysis in order to test the correlation between their

cultural dimensions and those of Hofstede. The analysis revealed that the dimensions of Power Distance, Uncertainty Avoidance, and Collectivism vs. Individualism are significantly correlated in two studies, whereas the dimension of Assertiveness in the GLOBE study also has a significant relationship with Hofstede's Masculinity Dimension (Table 3).

Table 3. Correlation between GLOBE cultural dimensions and Hofstede's.

(Adapted from House et al., 2004, p. 140)

GLOBE Cultural Dimensions	Correlation	Hofstede's Cultural Dimension
Power Distance	Significant positive	Power distance
Uncertainty Avoidance	Significant Positive	Uncertainty Avoidance
Institutional Collectivism	Significant Negative	Individualism
In-Group Collectivism	Significant Negative	
Gender Egalitarianism	Not Significant	Masculinity
Assertiveness	Significant Positive	
Future Orientation	Not Tested	Long Term Orientation

Although the dimension of Future Orientation was not tested against Hofstede's Long Term Orientation, their definitions are clearly similar enough to suggest significant correlation, as shown in Table 4.

Table 4. GLOBE Dimension of Future Orientation vs. Hofstede's dimension of Long Term Orientation.

GLOBE Dimension of Future Orientation	Hofstede's Dimension of Long Term vs. Short Term Orientation
The degree to which members of society engage in future-oriented behaviors such as planning, preparing for, and investing in the future (House et al., 2004).	The choice of focus for people's efforts: the future or the present (Hofstede, 2001)

There have been multiple studies that have further validated Hofstede's findings by empirically testing the five dimensions. The studies also found that each country could be positioned on the scale represented by each dimension and that these dimensions were statistically distinct and occurred in all possible combinations (Hofstede, 2001). Sondergaard (1994) reported on over 60 replications of Hofstede's study and states that the "analysis of the replications showed that the differences predicted by Hofstede's dimensions were largely confirmed" (p. 452). Hofstede's dimensions have also received strong validation from Offermann and Hellmann (1997), and Fernandez, Carlson, Stepina, and Nicholson (1997). The finding by Barkema and Bermeulen (1997) is of importance particularly as it "supports a key assumption of Hofstede ....that the values are stable over time" (p.859). Regarding consistency against the test of time, Hermel (1999) remarks that Hofstede's contributions "are among the finest and most important influences in the field of ... cultural studies" (p.649). Likewise, Van Oudenhoven (2001), who attempted to cross-validate Hofstede's classification of national cultures, concludes its validity (Page, 2003). Finally,

House et al. (2004) also confirm the validity of Hofstede's dimensions, since three of the GLOBE dimensions are direct descendants of Hofstede's, namely "Power Distance, Uncertainty Avoidance, and Individualism vs. Collectivism" (p.138).

2.7. Common Moderators Linking Group Diversity to Group Process and Outputs.

Since the findings regarding the relationship between team diversity and team process or team effectiveness have been equivocal and ambiguous, many researchers have looked for some other contextual factors that may moderate this relationship. The major moderators that have been studied are diversity perspective, goal congruence, group faultlines, affective and substantive conflicts in group, business strategy, and task type (Cheng, 2003).

The ***diversity perspective*** is the point of view of an organization on how it perceives diversity in the workplace. Ely and Thomas (2001) argue that an organizational perspective of diversity is important because it describes the relations between diversity and organizational outcomes. Ely and Thomas (2001) proposed three perspectives usually held by organizations: 1) discrimination and fairness, 2) access and legitimacy, and 3) integration and learning.

Ely and Thomas (2001) posit that organizations that believe that it is a moral imperative to ensure justice and fair treatment to all members of society pursue what is known as a *discrimination and fairness perspective* in order to provide equal opportunities in hiring and promotion. These organizations usually

do not pay attention to the benefits or detriments of diversity (Ely & Thomas, 2001).

If the markets and constituencies of an organization are culturally diverse, the organization should match its own workforce diversity accordingly, in order to gain access to and legitimacy with those markets and constituent groups. For orgainizations like this, diversity is only a marketing approach; they may not necessarily value the range of different experiences, skills, abilities that a diverse workforce brings to the organization (Ely & Thomas, 2001).

On the other hand, the organizations that adopt an integration and learning perspective believe that the varieties of knowledge, experiences, skills, and abilities brought by a diverse team are potentially valuable resources to the core functioning of the organizations, which then can be utilized in promoting their markets, strategies, and business practices. This perspective relates diversity to group processes and outcomes (Ely & Thomas, 2001). In their case-study, Ely and Thomas (2001) suggested that only the "integration and learning" perspective was associated with sustainable performance gains attributable to diversity.

Goal congruence is the harmony among the members with regard to the goals that the organization, group, or team has established. Vancouver and Schmitt (1991) identified two types of goal congruence: 1) supervisor-subordinate goal congruence, which simply focuses on assessing the congruence in goals for the members in varying hierarchical positions, and 2) member-constituency goal congruence, which is the agreement between a member and the rest of the

members within a single constituency regarding the importance of various goals. Based on Chatman, Polzer, Barsade, and Neale's (1998) "Looking Glass Inc." simulation, Cheng (2003) posits that organizations which make organizational membership salient and encourage employees to categorize one another as having the organization's interests in common (high goal congruence) were more likely to benefit from demographic diversity than those organizations which emphasize individualism and distinctiveness (low goal congruence) among members.

Group faultlines, proposed by Lau and Murnighan (1998), are hypothetical dividing lines among group members based on one or more attributes which split a group into subgroups. The attributes in question are mainly demographic attributes such as age, gender, race, and such (Cheng, 2003). If, say, a military team is composed of four members, with Member I a 50-year old Colonel, male branch head; Member II a 45-year old Commander, male section head; Member III a 30-year old civilian, female subject matter expert; and Member IV a 28-year old Lieutenant, female staff officer, it is very likely that Members I and II will form a subgroup, and Members III and IV will form another, based on the age faultline (Cheng, 2003).

Affective and substantive conflict in-group is another moderating factor suggested by Pelled (1996). She describes affective conflict as the perception among group members that there are interpersonal clashes caused by emotional feelings like anger, distrust, etc., and notes that substantive conflict is the perception of disagreement among group members on task-related issues

such as task goals, task procedures, appropriate courses of action etc. She proposes that affective conflict moderates the relations between visible demographic characteristics (age, race, sex, etc.) and team performance, while substantive conflict moderates the link between job-related attributes (tenure, education, functional background) and team performance. She further points out that both types of conflicts are moderated by group longevity.

Business strategy refers to the strategies that organizations pursue to achieve, for example, strategies of growing, expanding, or downsizing. Richard (2000) proposes that business strategy is an organization-level moderating factor. In his study, he used 79 subjects from 63 banks in three states. His study shows that racial diversity is not positively related to firm performance. However, when the business strategy was taken into account, the racial diversity turns out to have had a positive effect on firm performance when the organization pursues a growth strategy, whereas it has negative effects when the organization is pursuing a downsizing strategy (Cheng, 2003).

Task type was proposed by Jehn, Northcraft, and Neale (1999) as a moderator between diversity and group performance. They identified a number of characteristics of the task that can act as moderators of the relationship between diversity and performance; for instance, simple and well-understood tasks vs. complex and not well-understood tasks. Jehn et al. (1999), in their research, found that task type moderates the relationship between informational diversity and team performance. In their study, informational diversity refers to the differences in knowledge bases and perspectives that members bring to the

group. The current study prefers to use the term of functional diversity instead of informational diversity for this definition. Jehn et al. (1999) found that informational diversity more likely increases the performance and efficiency when the tasks are complex (Cheng, 2003).

A shared mental model, as a moderator between diversity and group performance, facilitates group coordination and the allocation of resources (Klimoski & Mohammed, 1994) as it allows team members to draw on their own well-structured knowledge as a basis for selecting actions that are consistent and are coordinated with those of their teammates (Cannon-Bowers, Salas, & Converse, 1993). Shared mental models refer to "organized knowledge structures that allow individuals to interact with their environment" (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000, p. 274). Dalenberg, Vogelaar, and Beersma (2009) proposed that team members with a shared mental model have a good understanding of the goals, roles and responsibilities, time sequencing of events, tasks to be performed, how individual efforts will be coordinated, and progress toward goals (e.g., Bailey & Thompson, 2000; Mathieu et al., 2000). Studies have shown that heterogeneity in teams may hamper the building of shared mental models; however, once a shared mental model is established it will likely enhance team performance (Krouse, Smith & Smith, 2001).

2.8. Diversity Measurements

Blau (1977), who believed that diversity should be measured not only by the number of characteristic groups to which team members belong but also by

the distribution of these characteristics, introduced a formula to calculate a heterogeneity (diversity) index: $(1-\sum p_i^2)$. In this formula, p_i represents the percentage of population in each group. For example, let's assume that we have a group composed of White, Black, Asian, and Hispanic people with the percentage of 75:10:7:8 respectively. The racial diversity index for this group is $(1-.75^2-.10^2-.07^2-.08^2)$ 0.4162. The higher the diversity index, the greater the degree of diversity the group has. The lower the index, the lower the percentage of the minorities in the group.

Wagner, Pfeffer and O'Reilly (1984) also introduced a similarity equation that measures how relatively distant (similar or dissimilar) a member of a group is, in comparison with the other members of the group, in terms of the euclidean distance on two demographic attributes; age and entry date to the company. The equation reads as follows:

$$D=\sqrt[2]{\frac{\sum(x_i-x_j)^2}{n}} \qquad \text{(Eq. 1)}$$

This measure calculates "the degree of relative isolation of the individual" regarding age and entry date from the other group members, where x_i is the value of a particular attribute for the focal member, x_j is the value for another member of the group, and n is the size of the group. A high result represents a weak connection to the group. For example, if a group has 5 members, and Member I is 25 years old, Member II is 30 years old, Members III, IV, and V are 35, 45, and 60 years old respectively, then, in order to measure Member I's

similarity with the group. the equation runs as $\sqrt[2]{\frac{(25-30)^2+(25-35)^2+(25-45)^2+(25-60)^2}{5}}$ = 18.708.

For Member V, it is $\sqrt[2]{\frac{(60-25)^2+(60-30)^2+(60-35)^2+(60-45)^2}{5}}$ = 24.392. Therefore, Member I is more similar to the other members of the group than is Member V.

Harrison and Klein (2007) put forth a scoping study on measures of diversity, which also includes Blau's diversity index and Wagner, Pfeffer, and O'Reilly's (1984) similarity equation, along with other measurements. In their study, they propose a new diversity typology that splits diversity into distinctive types: Separation, Variety, and Disparity. Harrison and Klein (2007) define separation as "the composition of differences in (lateral) position or opinion among unit members, primarily of values, beliefs, or attitudes especially regarding team goals and processes (p. 1203)." According to their study, "Variety" denotes the "composition of differences in kind, source, or category of relevant knowledge or experience among unit members such as content expertise, functional background, non-redundant network ties, industry experience (p. 1203)." Finally, "Disparity" describes the "composition of (vertical) differences in proportion of socially valued assets or resources held among unit members such as pay, income, prestige, status, decision-making authority, social power (p. 1203)." Harrison and Klein (2007) emphasize that recognizing diversity types helps researchers avoid methodological errors and mistakes in their research conclusions. Table 5 displays the indices and formulas that Harrison and Klein (2007) suggest be used to measure each type of diversity.

Table 5. Measurements for within-unit diversity types. ***(Adapted from Harrison & Klein, 2007, p. 1203)***

Diversity Type	Index	Formula
Separation (on attribute S)	Standard deviation	$\sqrt{[\Sigma(S_i - S_{mean})^2/n]}$
	Mean Euclidean distance	$\Sigma\sqrt{[\Sigma(S_i - S_j)^2/n]}/n$
Variety (on attribute V)	Blau	$1-\Sigma p_k^2$
	Teachman (entropy)	$-\Sigma[p_k \cdot \ln(p_k)]$
Disparity (on attribute D)	Coefficient of variation	$\sqrt{[\Sigma(D_i - D_{mean})^2/n]}/D_{mean}$
	Gini coefficient	$(\Sigma\|D_i - D_j\|)/(2 \cdot N^2 \cdot D_{mean})$

2.9. Diversity Measurement and Team Size

Biemann and Kearney (2009) argue that team size matters, when measuring diversity. They cite Harrison and Klein (2007), who point out that Blau's index was developed for sampling with replacement from an infinite population, whereas groups tend to be relatively small, mostly ranging from two to 20 group members. Harrison and Klein (2007) suggest that researchers may employ an alternative calculation of Blau's index to adjust the upper limit for group size. Biemann and Kearney (2009) employed a simple test in order to see the impact of group size on Blau's index. They calculated the average Blau's index for two categories and group sizes between 2 and 20. All of their estimations were based on the same distribution of a variable that is perfectly equally distributed within the population, which means that both categories have a statistical probability of p = 0.50. Results show that the average Blau score rises as group size increases. For example, the average of Blau's index is .33 in

groups of three and is .47 in groups with 15 members. Since all iterations are based on the same underlying distribution, Biemann and Kearney (2009) conclude that Blau's index is systematically biased such that smaller groups have lower values than larger groups. They further assert that if the extent of this bias is described in relation to a reference group with ten members, Blau's index of variety is, on average, 26.5% lower in groups of three and 5.1% higher in groups with 20 members. This shows that, especially for relatively small group sizes, Blau's index strongly underestimates the variety in groups, whereas the bias becomes smaller with increasing group sizes. To correct for this bias, Biemann and Kearney (2009) suggest using an estimator independent of group size. They developed the following alternative formula;

$$\text{Blau}_{N=}\ 1-\sum\frac{Ni(Ni-1)}{N(N-1)} \qquad \text{(Eq. 2)}$$

where N_i is the absolute frequency of group members in the i^{th} category and N is the total number of group members. They argue that this alternative calculation is essential to get an unbiased estimation of within-group variety. Then, they repeated the above-mentioned test 10,000 times for each group size. The deviations reveal that these estimations differ only marginally from those in the reference category. The highest deviation from the reference group occurred in groups with three members, but even this deviation was less than one percent (0.6 %) and could be interpreted as a random sampling error. Thus, Biemann and Kearney (2009) conclude that Blau_N is an estimator of variety in groups and that it is unbiased by group size.

Biemann and Kearney (2009) also touch on the similarity equation introduced by Wagner, Pfeffer, and O'Reilly (1984). They employed the same test for the similarity equation and found that similar biases occurred when the group size differed. They developed the following alternative equation for unbiased estimation of similarity:

$$D_N = \sqrt{\frac{\sum(Xi-X)^2}{q}} \qquad \text{(Eq. 3)}$$

Where Xi is the value of the i^{th} individual in the group and X is the group mean,

$$q=\frac{(N-1)}{C_N^2}, \text{ and } C_N = \frac{\left(\frac{N-1}{2}\right)\sqrt{\frac{N-1}{2}}}{(N/2)}. \qquad \text{(Eq. 4)}$$

Harrison and Klein (2007) argue that as the Mean Euclidean Distance, "Standard Deviation" is also a practical choice for measuring within-unit separation when the diversity attribute is continuous and might range from a lower bound of -∞ to an upper bound of +∞. Harrison and Klein (2007) underline the fact that the maximum standard deviation doesn't increase as the size of the unit or team increases, and that larger sizes do not create larger estimates of within-unit diversity.

2.10. Measurement of Team Performance

The Multicultural Team Effectiveness model by Halverson and Tirmizi (2008) suggests three measurements for team effectiveness: Satisfaction, Learning, and Performance. Having reconciled the literature on the theory of multicultural teams, Halverson et al. (2008) assert, in addition to productivity and performance, that a team member's satisfaction and learning are considered

integral to understanding the team's effectiveness. Thomas and Ravlin (1995), in their two-year study of multicultural teams in the Australasian region, found that team performance was positively correlated with each member's satisfaction of task accomplishment (Halverson et al., 2008).

Mohammed and Nadkarn (2011), in their study examining temporal diversity and team performance, used a four-factor perceived performance measure rated by a 7-level Likert scale, where 1 was poor and 7 was exceptional. Their performance factors were the timeline by which a team's project was completed, the team's timeliness in meeting project milestones and deadlines, the client's satisfaction with team's performance, and the team members' evaluations of the team's overall performance.

Aubé and Rousseau (2011), in their study investigating interpersonal aggression and team effectiveness, chose a group of subject matter experts comprising two university professors specializing in the field of work teams, in order to measure team performance. These subject matter experts developed a five-item scale based on existing measures (e.g., Alper, Tjosvold, & Law, 1998; Aubé & Rousseau, 2005). This scale includes the following indicators: (a) achievement of performance goals, (b) productivity (quantity ofwork), (c) quality of work accomplished, (d) respect for deadlines, and (e) respect for costs. They instructed participants to assess the performance of the team they supervised by taking into account the outcomes of the last six months. The response scale was a five-point scale (1 = very low to 5 = very high).

Staples and Webster (2008) in their study exploring the effects of trust, task interdependence, and virtualness on team performance, noted that typical team effectiveness models (e.g. Cohen, 1994) usually involve three main groups of outcome variables: (1) performance outcomes, such as quality, productivity, and controlling costs; (2) attitudinal outcomes, such as satisfaction with the team, motivation, and organizational commitment; and (3) behavioral outcomes, such as turnover and absenteeism. Staples and Webster (2008) adopted an eight-factor perceived team performance variable (from Van de Ven & Ferry, 1980) based on the first and last categories, for which they rate teams by the quantity or amount of work produced, the number of innovations or new ideas introduced by the team, its reputation for work excellence, the attainment of team production or service goals, the quality or accuracy of work, the efficiency of team operations, the morale of team personnel, and its adherence to schedule and budget. Staples and Webster (2008) computed a reliability of $\alpha = 0.92$ for their variable of perceived team performance.

2.11. Recent Research on Team Diversity and Findings

Early research on diversity generally focused on more visible, easily detectable and measurable demographic attributes, such as age, race, and gender. Some researchers, along with these demographic attributes, also investigated functional attributes that are as visible and measurable as the former. Recently, in order to obtain a better understanding on the effects of diversity, since the need to go beyond demographic differences has emerged,

researchers have shifted their attention to attitudinal aspects (values, beliefs, culture), which are not readily observable (Whaley, 2001).

Thompson and Gooler (1996) conducted a review study on the impacts of diversity on problem solving, decision-making, creativity, innovation, communication, and negotiation. In their review, they noted that, in the 1950s and 1960s, several studies proposed that heterogeneous groups with regard to gender, personality, training background, and attitudes produced higher-quality solutions to problems than homogeneous groups did (e.g. Hoffman, 1959; Hoffman & Maier, 1961). Later, these results were confirmed by other studies (e.g. Aamodt & Kimbrough, 1982; Eisenhardt & Schoonhoven, 1990) which suggested that heterogeneity in behavioral styles, background characteristics such as education, tenure, age, and occupational function was associated with higher performance. Thompson and Gooler (1996) posited that this was particularly true for heterogeneous top management teams, probably because people with different backgrounds bring different information to the group. After reviewing a number of studies on the link between diversity and team composition, Jackson (1991) also concluded that diverse work-teams were more likely to produce more creative and innovative solutions than homogeneous teams. McLeod, Lobel, and Cox (1993) experimented with a brainstorming task in groups of Asian, African-American, Caucasian-American, and Hispanic students. They found that heterogeneous groups outperformed homogeneous groups, and that the ideas created by diverse groups were more feasible. The study of Thompson and Gooler (1996) showed that diversity leads to some major

benefits such as more effective problem solving, better decision-making, and enhanced creativity and innovation. They suggested this might emanate from diverse teams having a broader spectrum of knowledge, skills, abilities, and experiences, and being able to come up with myriad different ideas, perspectives, and approaches.

Williams and O'Reilly (1998) carried out a similar literature review going back 40 years. They reviewed over 80 empirical studies. They focused on five diversity variables: tenure, functional diversity (specialty and education), age, sex, and race, and their effect on group performance (e.g. innovation, turnover) and group process (e.g. communication, social integration). They noted that diversity in age, tenure, sex, and race generally seemed to have negative impacts on group process and performance, and that the effect of functional diversity was ambiguously positive. They concluded that "increased diversity typically has negative effects on the ability of the group to meet its members' needs and to function effectively over time" (p. 117), and further noted that evidence shows that increased diversity may have dysfunctional effects on group process and performance.

The following year, O'Reilly, Williams, and Barsade (1999) studied how in-group diversity affects teamwork in terms of age, tenure, sex, and race/ethnicity. They hypothesized, based on similarity/attraction theory (Byrne, 1971) and the social categorization process (Hogg & Abrams, 1988), that members who are the most distant from the rest of the team with regard to the particular attribute are likely to feel less included and, therefore, the result will be lower levels of

teamwork. They emphasized that previous research showed that demographic differences can lead to less sharing of information (Zenger & Lawrence, 1989), less accurate communication (Ibarra, 1992), higher levels of conflict (Pelled, 1996), less cooperation and cohesiveness (Jehn, Northcraft, & Neale, 1997; Riordan & Shore, 1997), an unwillingness to share credit (Burt & Reagans, 1997), and an inability to define common goals and aspirations (O'Reilly, Snyder, & Boothe, 1993). O'Reilly et al. (1999) collected data from employees of three divisions of a major clothing manufacturer and retailer by means of survey. Their sample was composed of 32 project teams and 185 respondents, and consisted of mixed gender and mixed ethnicity groups (Asian/Black/Hispanic) with an average age of 39.6 years and tenure of 7.6 years. They used an Euclidean distance measure (Wagner, Pfeffer, & O'Reilly, 1984) to determine how different an individual was on his age and entry date to the company from others in the group. They found that being more distant from the group led to less effective teamwork, regardless of the diversity variable (age, team tenure, sex, or race).

Pelled (1996), by reviewing the research on diversity done before her time, proposed a theoretical model for the visibility and job-relatedness of demographic characteristics and their effects on the substantive conflict, affective conflict, turnover, and the performance of teams. In her study, visibility refers to the extent to which a demographic characteristic is easily detectable. In this sense, characteristics such as age, gender, race, and group tenure have high visibility, while organizational tenure, education and functional background have low visibility. On the other hand, job relatedness is the degree to which the

attribute has a direct relationship with the perspectives and skills related to tasks. In this regard, group tenure, organizational tenure, education, and functional background are categorized as highly job-related, and age, gender, and race are categorized as less-job-related attributes. She defined substantive conflict (task related) as "the perception among group members that there are disagreements about task issues including the nature and importance of task goals and key decision areas, procedures for task accomplishment, and the appropriate choice for action" (p. 620). Similarly, she described affective (emotional) conflict as the perception of interpersonal clashes among group members that stemmed from anger, distrust, fear, frustration, etc. She ended up with the argument that the visibility had positive indirect relationship with turnover and negative indirect relationship with cognitive task performance. This means that the attributes with high visibility (age, gender, race, and group tenure) have greater effect on turnover than those with low visibility (organizational tenure, education, and functional background). With regard to the impact on cognitive task performance, the direction of the relationship is reversed; high visibility attributes have a weaker effect on cognitive task performance than low visibility attributes. On the other hand, Pelled argued that job-related demographic characteristics are positively related to cognitive task performance – "that is, outcomes of groups' efforts to generate plans or creative ideas, solve problems, or make decisions" (p. 624). She proposed that affective conflict mediates the relationship between visibility variables and member turnover. This means that as the visibility of demographic diversity increases, the affective conflict within the group increases,

and as the affective conflict increases, the individual and group turnover increases. She also proposed a similar positive relationship between job relatedness, substantive conflict, and group performance. Furthermore, she argued that the longevity of group (the average amount of time the group members have belonged to the group) reduces the effects of both affective and substantive conflicts on turnover and on group performance.

In their research, based on the existing diversity theories, Stahl et al. (2010) argue that diversity, including cultural diversity, influences teams in three ways. First, the social identity and social categorization theory posits that individuals usually identify themselves as members of a specific group, and at the same time categorize nonmembers as belonging to other groups (Tajfel, 1982). In this sense, the members of a group would tend to show favoritism to insiders and to judge outsiders. Diversity, in this regard, would seem to complicate social processes and thus exert a negative influence on teams. Second, the similarity theory explains that people with related values, beliefs, and attitudes tend to cooperate more and work better together (Williams & O'Reilly, 1998). Third, the information processing theory asserts that diversity generates an assortment of contributions. Therefore, a diverse team can expand its information boundary in order to draw perspectives from eclectic sources of information. Other benefits include enhanced problem solving, creativity, innovation, and adaptability (Ancona & Caldwell, 1992; Cox, 1994; Cox & Blake, 1991; Jackson, 1991; Watson et al., 1993).

In a recent study, Suwannarat and Mumi (2012) postulate that the above-mentioned three perspectives are also true for the influence of cultural diversity on teams in particular. They suggest that people of similar cultures tend to attract one another because of the commonalities of their beliefs and values (Triandis, 1959, 1960), and that people naturally categorize each individual according to their nationality, race, and ethnicity (e.g., Earley & Mosakowski, 2000; Tajfel, 1982). They further argue that the identification of insiders and outsiders in multinational teams is immediate and usually continues for a long time, but it is also the case that diversity of culture correlates with the diversity of viewpoints, attitudes, and logic which are brought into a team by people from different backgrounds (Hofstede, 2001; Lane et al., 2009).

Suwannarat et al. (2012) studied the direct effect of the cultural diversity in the top management team of international joint venture firms (IJVs) on team performance and IJV performance. They also focused on the indirect effect of cultural diversity on team performance and IJV performance via four mediators: conflict, social integration, effective communication, and creativity. Suwannarat et al. (2012) concentrated on the top management teams in charge, since they believed that top management would play an important role in accomplishing the goals of the venture and determining the success and failure of the IJVs.

Suwannarat et al. (2012) define cultural diversity as a combination of surface and deep level diversities, in which surface level diversity refers to such demographic characteristics as age and gender, and deep level diversity refers to the degree of conscientiousness, which is associated with being careful,

thorough, responsible, organized, hardworking, achievement-oriented, and persevering (Suwannarat et al., 2012). When compared to existing diversity frameworks, their selection of diversity factors doesn't exactly fit in the known cultural diversity frameworks; instead, their selection shows more demographic and work (function) related value-based diversity factors. Nevertheless, these factors can still partially hold cultural diversity.

Suwannarat et al. (2012) used an official database of IJV firms that operate in Thailand. They employed postal questionnaires in both Thai and English languages to reach the target respondents in the IJVs operating in Thailand. They adopted ordinary least square (OLS) regression analysis to test the relationships.

The results of Suwannarat et al. (2012)'s study indicate that cultural diversity negatively affects team performance and IJV performance with the exception that it may positively affect team performance that relies on creativity. Their results appeared to be contradictory, mainly because of their choice of attributes that constitute cultural diversity: demographic attributes and work (function) related values. To that end, their findings support previous research studies that propose that demographic diversity is negatively related to team performance, while functional diversity is positively related only in the fields of creativity, innovation, problem-solving, and decision-making.

Rienties and Tempelaar (2013) also studied cultural diversity. Their study investigated how cultural dimensions would affect academic integration that, in the end, would lead to academic success. They obtained a sample of 1275

students from 53 countries, who were studying at nine higher educational institutes in the Netherlands. They employed the three cultural dimensions of Hofstede: Power Distance, Uncertainty Avoidance, and Masculinity. They clustered students into the nine geographical regions of the GLOBE study: Anglo-Saxon, Latin Europe, Germanic Europe, Eastern Europe, Latin America, Sub-Saharan Africa, Middle East, Southern Asia, and Confucian Asia. They utilized multi-level regression analyses. They found significant and substantial differences in the academic and social integration process between the nine groups of international students. The results also revealed that the cultural dimensions of Hosftede significantly predicted the academic adjustment and social adjustment of the international students. In particular, uncertainty avoidance and masculinity were found to be positively related both to academic adjustment and to social adjustment where the power-distance was negatively related.

Adler and Gundersen (2008) assert that teams consisting of members with diverse cultural, professional, and/or personal backgrounds are likely to deliver either excellent or miserable outcomes (Berg, 2012). Berg (2012) cites Adler and Gundersen's (2008) argument that teams with membership diversity often have the raw material for excellent performance, and that it is how membership diversity is managed that separates high performing and low-performing multicultural teams. Figure 4 shows a team effectiveness bell curve by homogeneity and heterogeneity, where the middle of the bell curve is reserved for more homogeneous teams.

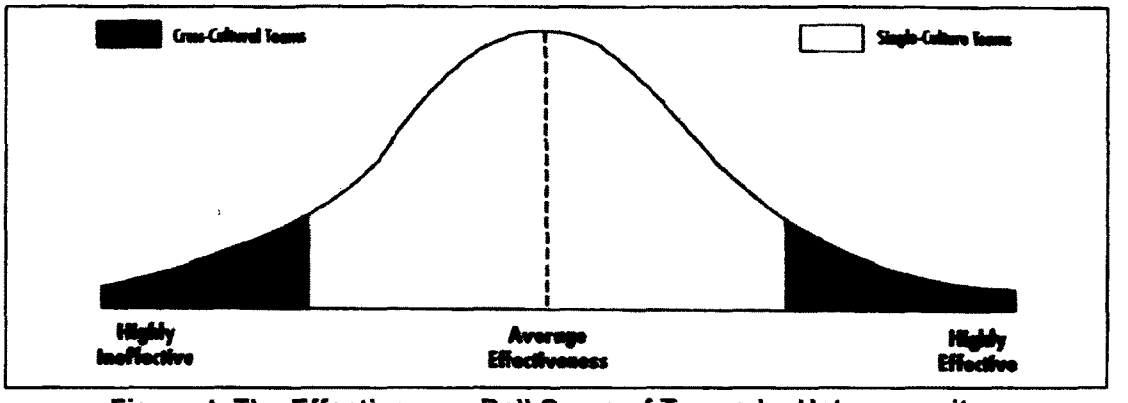

Figure 4. The Effectiveness Bell Curve of Teams by Heterogeneity.

Reprinted from Adler and Gundersen (2008, p.140).

Research done by Berg (2012) has investigated multicultural teams in both virtual settings and traditional settings. Her study suggests that a virtual-team setting conceals some differences grounded in cultural values, as well as personality, enabling each team member to contribute toward an excellent team result. Berg concludes that multicultural teams, at least in a traditional-team setting, are double-edged swords: due to the possibility that they may inspire their members and/or frustrate them, they might build bridges or barricades, and they might capitalize on their potential for exceptional accomplishments or exploit it for disasters.

In their theory paper, Carte and Chidambaram (2004) proposed that collaborative technologies (e.g., electronic tools such as email, group support systems, computer conferencing) could reduce the negative effects of diversity early in the life of a diverse team, which may lead to minimizing the salience of surface-level diversity.

Inspired by Carte and Chidambaram's (2004) theory, Staples and Zhao (2006) examined the effect of cultural diversity on team effectiveness in both virtual and collocated teams. They created heterogeneous teams based on individualism/collectivism values, different languages spoken, country of birth, and nationality. Then they had teams work on a desert survival task either collocated or virtually (via audio conference and electronic chat tools). Their results indicated that the performance of the virtual heterogeneous teams was superior to that of the face-to-face heterogeneous teams. The results supported Carte and Chidambaram's (2004) theory that the reductive capabilities of collaborative technologies are beneficial for newly formed diverse teams.

Anderson (1994) has looked into multicultural teams from a behavioral science perspective: that of cross-cultural adaptation. She proposed a model of cross-cultural adaptation based on socio-psychological adjustment theory, mainly dealing with those recovering from culture shock or culture-related stress. Based on her model, she defines six major categories of reactors to another culture: returnees, those who withdraw at an early stage; time servers, those who appear to be doing their jobs, but are really simply serving out their time; escapers, those who remain, but are always motivated by the urge to leave it all behind; beavers, counterparts of the escapers, they escape their work by burying themselves in the minutiae of their tasks; adjusters, people who are actively coping, still trying to fit in and working at it, and who are conscious of their lack of fit and are constantly worried by it; and participators, people who are effective, who demonstrate a willingness to learn and to expand their own subjective cultures to

include the host. Her model suggests that, out of the six categories, only Participators and partially Adjusters come within sight of overcoming cultural differences, while the remaining four fail to adapt.

2.12. Diversity Research on Multinational Military Teams

Landis (2001) considers the six types of reactors to a new culture proposed by Anderson (1994): returnees, escapers, beavers, time-servers, adjusters, and participators. He points out that the military has generally ignored the possibility that working with the culturally/ethnically different may be a disturbing and transitional experience for some people.

Boene (2002) researched the relationships among officers in a multinational peacekeeping operation. Boene (2002) focused on the source of intercultural problematic relations. Table 6 has been adapted from Boene's (2002, p.93) research. The research found that 38% of the total officer sample reported difficulties and/or problems in interpersonal relations with colleagues from other national military units. Of those, 35% reported that these difficulties were intermittent and 3% said they were frequent. Senior ranking officers (between 40%-55%) reported having experienced "problematic cross-national relations" more often than did junior officers (less than 30%). Regarding the source of problematic intercultural relations, the study identified the factors shown in Table 6. The difficulties mainly emanated from language and cultural diversity, and from the diversity in military culture, e.g. divided loyalties, mission interpretation, professional preparation, and ethical codes of conduct.

Table 6. Source of Intercultural Problematic Relations

(Adapted from Boene, 2002, p.93).

Source of Difficulty	**%**
Language	46.1
Divided Loyalties (NATO, UN, Country...)	32.6
Cultural Differences	31.2
Mission Diverging Interpretations	31.2
Interoperability Problems	28.4
Professional Preparation	28.4
Different Ethical Codes	24.8
Communication	22.0
Rivalries	17.0
ROE	16.3
Other	4.2

Note: Percentages exceed 100 because respondents could choose more than one item.

Similarly, Nuciari (2007) studied stress factors in Military Operations Other Than War (MOOTW) and developed ideas about the skills required to cope with these stressors. She used the data from a specific sociological enquiry conducted in the year 2000 by a group of scholars belonging to the European Research Group On Military And Society (better known as ERGOMAS) (Caforio, 2002), which had been cross-national comparative research conducted as an expert survey among 371 officers serving in nine different countries (Belgium, France, Hungary, Italy, Poland, Russia, South Africa, Sweden, USA) with wide experience in MOOTWs' deployments.

Nuciari (2007) argues that MOOTWs have been recognized as missions with various and lower levels of risk when compared to conventional combat operations but nonetheless with a high level of stress, as far as troops and leaders are concerned. She asserts that the stress factors all emanate from

different types of diversities. She theorizes five categories of diversity nested in MOOTWs (p.26), one of which is the cultural diversity among the multinational forces deployed. This is also the focus of this study. The other four categories of diversity postulated by Nuciari (2007) are the diversities concerning respectively the military mission, the MOOTW itself, the uncertain or the predictable nature of tasks, and the operation theater.

Another piece of research that emphasized similar problems and challenges among multinational coalition forces was conducted by Elron, Shamir, and Ben-Ari (1999). In their theoretical analysis, Elron et al. (1999) sought an answer to the question of how cooperation and coordination across national and organizational boundaries in multinational forces can be made workable despite their high level of cultural diversity.

Elron et al. (1999) pointed out the social categorization theory and the similarity / attraction paradigm that suggest a context in which organizational members are more likely to make in-group / out-group categorizations on the basis of similarities. They argued such distinctions with perceptual biases and negative stereotypes of out-groups may decrease cooperation, disable communication among units from different nationalities, and weaken the commitment to the organization, and in turn, may increase misunderstandings and conflicts. Elron et al. (1999) quote the Chief of Staff to Multinational Force and Observers (MFO) in Sinai (1994-1995) who presents evidence from the field that relates to their theory:

> One of the challenges that I and my staff face is the same challenge that members face throughout this Force—the ability to communicate with people of 11 different nationalities. As I learned very quickly when I arrived here, what I say to an American may not always be interpreted the same as if I say it to a Canadian, an Australian or a Fijian. You can issue orders and edicts, and demand that things happen, but that doesn't get the job done in this multinational environment. (p.81)

Yet despite the potential for misunderstanding, conflict, and operational difficulties in multinational forces, Elron et al. (1999) argue that such forces are able to function effectively and carry out their missions in a reasonable manner. As evidence, they point out the multinational operations that have been carried out around the globe and have been observed to have been adequately successful by their deploying authorities.

In order to answer their question, Elron et al. (1999) adopted a methodology that starts with an exploration of multinational corporations and civilian organizations from the assumption that multinational forces may share some of the same organizational problems. Then, they proceed to investigate multinational military organizations and the mechanisms that they employ to cope with the problems associated with their internal cultural differences so that they are able to carry out their assigned missions and tasks.

Elron et al. (1999) conclude that there are some integrating factors such as *common military culture, bureaucratic controls and structural similarity, integrative missions, shared conditions and experiences, the temporariness of*

the system, and the *level of cultural diversity* that alleviate the negative effects of diversity. They suggest that military troops often arrive for service in multinational forces sharing what may be called a common (worldwide) military culture. They bring evidence from the peacekeeping force in Cyprus in which the major line of organizational conflict was between military personnel and civilians, not between the different national military contingents. They also argue that military organizations have traditionally been highly bureaucratic, and that this makes them rely less on "clan" or cultural control and more on standard procedures, rules, and regulations, and on a strong hierarchy relative to civilian organizations. Therefore, careful planning, clear hierarchies, and strong discipline may ensure a reasonable level of cooperation and coordination, even in temporary and diversified structures. Elron et al. finally note that the military has also been utilizing a few mechanisms such as *joint operations and training, cross-cultural training, formal coordinating mechanism, information flows and sharing of knowledge, leadership,* and *deliberate cohesion building activities* in order to cope with problems and conflicts stemming from diversity.

In other research, Sutton and Linda (2003) studied ways to develop and validate a model representing the relationship between cultural dimensions and team performance functions. They redefined Klein, Klein, and Mumaw's (2001) cultural diversity framework based their study on four cultural dimensions: *Power Distance* (the extent to which the less powerful accepts that power is distributed unequally), *Uncertainty Avoidance* (the extent to which people feel threatened by uncertainty), *Activity Orientation* (the extent to which people emphasize

independent accomplishments in terms of task over relationship), and *Thinking Orientation* (the extent to which one is capable of mentally playing out alternate strategies and imagining how they might have resulted in different outcomes).

As team performance functions, Sutton and Linda (2003) used the four functional factors proposed by Pierce (2002), which are four fundamental aspects of team performance that are consistent across teams, multinational or not: *Situation Assessment* (information exchange regarding team tasks, goals, and mission), *Coordination* (response sequencing, time and position coordination of responses), *Roles and Responsibilities* (load balancing, matching member resources to task requirements), and *Support Behavior* (general activity monitoring, adjustment of team and member activities in response to errors and omissions).

Data were collected over a period of 12 months from Stabilization Force (SFOR) headquarters that was running military peacekeeping operations in Bosnia-Herzegovina, in order to assess the degree to which cultural cognitive dimensions impact working level teamwork in a multinational headquarters. Interviews with focus groups were used for collection of data. Findings were used to build the framework shown in Table 3.

In key findings, evidence of Power Distance, Uncertainty Avoidance, and Activity Orientation was relatively stronger than that of Thinking Orientation. "Distinct patterns were revealed in the degree to which individuals were judged to be high or low Power Distance. Uncertainty Avoidance responses showed that individuals were judged to have either a high need for certainty or a low need for

certainty. Activity Orientation responses tended to reflect and independent versus interdependent orientation. Thinking Orientation responses were judged to indicate a tendency toward either hypothetical or concrete thinking" (Sutton & Linda, 2003).

In the second step, they tested framework for validation. Results were weaker for the construct of Thinking Orientation. Therefore, they modified the framework to reflect a matrix of 3 (Power Distance, Uncertainty Avoidance, and Activity Orientation) to 4 (Situation Assessment, Coordination, Assigning Roles and Responsibilities, and Support Behaviour) for understanding cultural diversity in cognition and teamwork (Table 7).

This framework simply reveals the different approaches to team performance functions by individuals who have different cultural characteristics. For instance, an individual who has a high power distance enjoys a vertical structure of hierarchy while his counterpart who has a low power distance prefers a more horizontal structure.

One significant finding of this framework, which the author has also experienced often in the coalition forces in which he has served, is about the support behavior of individuals based on their uncertainty avoidance traits. Individuals with high uncertainty avoidance tend to require formal requests for support when they are asked to support other individuals or teams, which can slow down the workload. If these kinds of individuals are the leaders of a team or of a division, the situation of managing work gets even more slow and difficult.

Table 7. Framework for understanding cultural diversity in cognition and teamwork. (Adapted from Sutton and Linda, 2003, p.13).

National Cultural Dimension	Team Performance Functions				
	Range	Situation Assessment	Coordination	Assigning Roles & Responsibilities	Support Behavior
Power Distance	High	Vertical	Centralized	Rank	Leader
	Low	Horizontal	Decentralized	Expertise	Team
Uncertainty Avoidance	High need for certainty	Detailed Info	Well defined	Highly Specialized	Formal
	Low need for certainty	General Info	Ad hoc	Multi-functional	Informal
Activity Orientation	Independent	Direct Comms	Doing	Skills & Abilities	Task
	Interdependent	Indirect Comms	Being	Connections	Relationship

Soeters (1997) replicated Hofstede's cultural dimensions study with military academy cadets from 13 different countries. The aim of the study was twofold; first, to examine the extent to which the national cultural backgrounds of the student-populations of the military academies differ from those of their civilian countrymen in other sectors; second, to investigate the degree to which the national cultural backgrounds of the student populations in the military academies mutually differ.

Soeters (1997) used Hofstede's standardized instrument, the Values Survey Module (VSM) with four cultural Dimensions (power distance (PD), uncertainty avoindance (UA), individualism (IND), masculinity (MAS)) to operationalize his conceptual framework. This survey was administered to a sample of 664 participants in from the Netherlands, Belgium, Germany, UK, Denmark, Norway, France, Italy, Spain, U.S, Canada, Hungary, and Belarus.

The results of Soeters' (1997) study suggests that the cadets of military academies reflect the same national pattern of cultural differentiation found in the original Hofstede's (YEAR) IBM study for only two cultural dimensions: Power Distance and Uncertainty Avoidance, with the nuance of higher scores in general compared to civilian compatriots. However, for the other two dimensions, Individualism/Collectivism and Masculinity, the study indicates no correlation between the two studies. Soeters suggests that this may be because of nation-specific pressures to reinstitutionalize the military on the particular issues of salaries and opportunities for advancement. For the second aim of the study, the results demonstrate strong variations among academy cultures and reveal the existence of one international military culture.

Following Soeters' (1997) steps, Page (2003) also repeated Hofstede's study in a multinational military environment. His dissertation aimed at studying national cultural differences among NATO countries as well as among PfP (Partnership for Peace) countries. He used Hofstede's revised VSM-94 with five cultural dimensions: PD, UA, IND, MAS, and Long Term Orientation (LTO). He administered VSM-94 at NATO School Oberammergau and at the U.S. European Command Headquarters in Stuttgart-Vaihingen, Germany. Although the survey was administered to 419 military officers from 45 countries, only 286 surveys from 11 countries passed the validity canon, which is at least 20 respondents per country; these were used for the purpose of the study.

Page (2003) employed a one-way ANOVA to test the national differences with respect to Hofstede's five cultural dimensions. When the significance was

established with ANOVA results, he performed Fisher's Least Significant Difference (LSD) and Bonferroni post hoc tests to determine the number and identity of those matched pairs with significance.

The results of the Page's (2003) study suggested that there are significant national cultural differences among military officers from NATO countries as well as among those from PfP countries with respect to Hofstede's five cultural dimensions. Moreover, the study also revealed that the officers in NATO are more culturally homogenous than those in the PfP.

Soeters and Recht (2001) conducted a study at Multimil, an institute that organizes courses for an international audience, which consist of high-ranking military and civilian employees of NATO and PfP countries. Multimil offers a 26-week course twice a year for the purpose of developing a general knowledge and an understanding of strategic issues among the course members. Soeters & Recht (2001) aimed to investigate to what extent the participants changed their opinions on daily course-related matters, their general views and attitudes on strategic issues, and their basic values in life during this six-month long training period.

Soeters and Recht (2001) surveyed 295 high-ranking military and civilian employees from 20 countries attending five consecutive periods of the course from 1995 to 1997. The participants were asked to respond to a questionnaire at the beginning and at the end of the course, in order to make it possible to observe changes occurring during the course in a quasi-experimental fashion. The results suggest that significant changes between experiences and

expectations occurred with respect to the daily course-related matters. Although the course participants showed some changes of attitudes and opinions on strategic issues, the change in the groups was not systematic and consistent. The study demonstrates this overall stability even more clearly when the basic values (Hofstede's five cultural dimensions) are considered.

Riedel (2008) has made an attempt to explain how cultural dimensions affect within-team communication, based on the assertion by Triandis (2000) that a culture's position on the dimensions influences the cues in the communication interaction to which individuals in that cultre pay attention. She emphasizes that communication problems due to cultural factors can be a major barrier to group performance and effectiveness if the cultural differences are ignored.

According to Riedel (2008), people with a high power distance tend to use formal, hierarchical communication, while people with low power distance who tend to use informal, rather than formal, communication channels. She asserts that power distance influences who group members are most likely to talk with and and with whom they are most likely to make eye contact. The example she brought forth from Conyne, Wilson, Tang, and Shi's (1999) research offers evidence to this assertion, as it revealed that

> Chinese group members (a high power distance culture) spoke directly to the group leader twice as frequently as to other members. They also found that group members from the US, a low power distance culture, spoke directly to the leader one third as frequently as they did other group members. (Riedel, 2008, pp.6-7)

Riedel (2008) cites Gudykunst and Mody (2002) who propose individualism-collectivism to be the most important cultural dimension that explains the differences and similarities in communication across cultures. Riedel (2008) argues that, in individualistic cultures, individual goals precede group goals; individualists are inclined to use direct, precise, and clear messages in communication; they don't place a large psychological distance between in-group and out-group members; they value self-expression and they perceive speaking out a means of problem solving; and they likely prefer confrontational strategies for resolving interpersonal conflicts. On the other hand, she points out, in collectivist cultures, people tend to use indirect, ambiguous, implicit messages and usually bury the core message within a more positive tone in an effort to avoid unpleasant encounters or direct confrontations; they impose a large psychological distance between in-group and out-group members; they expect an unquestioning loyalty to the group from group members; they are more hesitant in providing information (possibly due to a culture-related hesitancy to speak); and they are more concerned with social relationships in communication than with the task.

The extent of uncertainty avoidance (UA), argues Riedel (2008), is also a significant factor in within-group communications. She stresses that low UA cultures are more inclined to adapt to change, to cope with uncertainty, and to take risks. Conflict and disagreement are seen as natural and beneficial in low UA cultures, and their impact becomes accentuated when the individual with high/low UA is a team leader. A team leader with high UA may excessively

control a situation, limiting dialogue and the development of a shared situational awareness. Conversely, a team leader with low UA may not cover sufficient details or give the team members enough information to do their jobs (Riedel, 2008).

Riedel (2008) suggests that the masculinity dimension has particular implications for multinational military teams, due to the perceptions of the roles of women in the different cultures that compose the teams. She narrates an example of a female Major from a feminine culture assigned in a multinational military unit in which her authority was repeatedly challenged by subordinates from masculine cultures. Riedel (2008) reports that the Major, in general, felt powerless and unable to communicate effectively within the team even though she had a relatively high rank and had experienced acceptance of her authority in her own country's military community.

2.13. Summary and Gap Analysis

As a result of globalization and ever-advancing technology, the workforce is inevitably becoming more diverse. Several researchers have considered diversity as a "double-edged sword" (Milliken & Martins, 1996; Phillips, Northcraft, & Neale, 2006) because it may instill risks to teamwork as well as benefits. Therefore, increasingly, both managers and researchers want to learn how diversity can be managed in ways that will both minimize its risks and capitalize on its benefits (Harrison & Klein, 2007; Phillips, Northcraft, & Neale, 2006). In the same line, Shuffler et al. (2012) accentuate that diversity in multinational, multicultural teams is "a pressing future challenge" which calls for

further research in order to reduce the negative aspects of diversity while enhancing its more positive benefits.

The literature review has identified three major theories that help to understand the harmful or helpful effects of diversity on team process and output. These are the *social categorization perspective, the similarity/attraction paradigm*, and the *information/decision-making perspective* (Williams & O'Reilly, 1998). Based on these diversity theories, Stahl et al. (2010) argue that diversity, including cultural diversity, influences teams in three ways. First, the social identity and social categorization theory posits that individuals usually identify themselves as members of a specific group, and at the same time categorize non-members as belonging to other groups (Tajfel, 1982). Diversity, in this regard, would seem to complicate social processes and thus exert a negative influence on teams. Second, the similarity theory explains that people with related values, beliefs, and attitudes tend to cooperate more and to work better together (Williams & O'Reilly, 1998). Third, the information processing/decision making theory asserts that diversity generates an assortment of contributions. Therefore, a diverse team can expand its information boundary in order to draw perspectives from eclectic sources of information. Other benefits include enhanced problem solving, creativity, innovation, and adaptability (Ancona & Caldwell, 1992; Cox, 1994; Cox & Blake, 1991; Jackson, 1991; Watson et al., 1993).

The literature review demonstrates that researchers have categorized diversity attributes in a number of ways. Some delineate diversity as readily

detectable (demographic markers) or as less observable (ability and cognitive resources) (Jackson, May, & Whitney, 1995; Pelled, 1996); some categorize it as surface-level (demographic) or deep-level (attitudinal) diversity (Harrison, Price, & Bell, 1998); or with more job-related, less job-related attributes (Pelled, 1996). In general, six categories seem prevalent in the literature: 1) demographic attributes (e.g. age, race, gender, ethnicity, sexual orientation, physical status, religion, and education), 2) task-related knowledge, skills, and abilities (KSA), 3) values, beliefs, and attitudes, 4) personality, cognitive and behavioral styles, 5) functional diversity or organizational status (e.g., organizational rank, occupational specialty, departmental affiliation, tenure), and 6) cultural diversity (work-related values, e.g., power distance, uncertainty avoidance) (Hofstede, 1980; House et al., 2004; McGrath et al., 1995; Milliken & Martins, (1996); Whaley, (2001)).

Through the literature review, four salient diversity models have been described (the *trait approach,* the *expectation approach,* the *differential power approach, and* the *multicultural approach*) where all assert that interdependency has influence on team processes and outcomes. Likewise, prior research suggests four prominent theories of teamwork in the fields of management and industrial organizational (I/O) psychology: 1) sociotechnical theory, 2) group process and productivity, 3) systems theory, and 4) I-P-O (input-process-output) models, among which Salas et al. (2008) identify the I-P-O model as the dominant approach. Ilgen et al. (2005) have advanced the I-P-O model by adding mediating factors and by assuming a cyclical nature of team functioning: the

input, mediator, output, input (IMOI). Salas et al. (2008) recommend using IMOI in the studies that focus on military teams, since it helps better understand how inputs and mediators influence team outcomes, which is important for team performance and eventually for successful operations. Halverson and Tirmizi (2008) have expanded the IMOI theoretical model into a multicultural context and have developed their *Multicultural Team Effectiveness Model.*

In an effort to measure diversity, Blau (1977) introduced a formula, which is known as the heterogeneity index, to calculate the extent of diversity within a group. Wagner, Pfeffer, and O'Reilly (1984) also introduced a similarity equation that measures how relatively distant (similar or dissimilar) a member of a group is, in comparison with the other members of the group, in terms of Euclidean distance measure on two demographic attributes: age and entry date to company.

Biemann and Kearney (2009) argue that both Blau's heterogeneity index and Wagner et al.'s (1984) similarity equation would be biased if team size were not accounted for. They suggested a refined version of formulas for both equations, with team size taken into consideration.

Harrison and Klein (2007) propose "Standard Deviation" to be a practical choice to measure within-unit separation where the diversity attribute is continuous; they suggest that it is an unbiased measure since the maximum standard deviation doesn't increase as the size of team increases, or in other words, larger sizes do not create larger estimates of within-team diversity.

Regarding the impact of diversity on teamwork, the literature review reveals that diversity leads to some major benefits such as more effective problem solving, better decision-making, and enhanced creativity and innovation, which might emanate from having diverse teams with a broader spectrum of knowledge, skills, abilities, and experiences that are more likely to come up with a myriad of different ideas, perspectives, and approaches (Aamodt & Kimbrough, 1982; Eisenhardt & Schoonhoven, 1990; Hoffman, 1959; Hoffman & Maier, 1961; Jackson (1991); McLeod, Lobel, & Cox, 1993; Thompson & Gooler, 1996).

On the other hand, there are a substantial number of researchers who assert that that demographic diversity (age, tenure, sex, and race) has negative impacts on group process and performance, and who assert that the effect of functional diversity (task related) was ambiguous (O'Reilly, Williams, & Barsade, 1999; Pelled, 1996; Suwannarat & Mumi, 2012).

Williams and O'Reilly's (1998) literature review of over 80 empirical studies reveals that "increased diversity typically has negative effects on the ability of the group to meet its members' needs and to function effectively over time" (p. 117), and further comments that evidence shows that increased diversity may have dysfunctional effects on group process and performance.

Adler and Gundersen (2008) assert that teams consisting of members with diverse cultural, professional, and/or personal backgrounds are likely to deliver either excellent or miserable outcomes. They postulate that teams with membership diversity often have the resources for excellent performance, and they further assert that it is the way in which membership diversity is managed

that makes the difference between high performing and low-performing multicultural teams. They have developed a bell curve to describe the effectiveness of homogenous and heterogeneous teams, demonstrating that the middle of the bell curve is reserved for more homogeneous teams while heterogeneous teams perform either at the upper end or at the lower end of the distribution.

Since the findings on the relationship between team diversity and team process or team effectiveness have been equivocal and ambiguous, many researchers have studied the contextual factors that may moderate this relationship. The most important moderators that have been studied are the diversity perspective, goal congruence, group faultlines, affective and substantive group conflict, business strategy, and task type (Cheng, 2003).

From a behavioral science perspective, Anderson's (1994) cross-cultural adaptation model portrays six major categories of reactors to another culture. Her model suggests that out of six categories, only two types of reactors seem able to overcome cultural differences, while the remaining four fail to adapt.

On the military side of the literature, a rather low volume of research regarding multinational military teams has been found. The research reviewed suggests that there are reported difficulties and problems in multinational military units, mainly emanating from language and cultural diversity and from the diversity in military culture, e.g. divided loyalties toward the nation and the coalition, mission interpretation, professional preparation, and ethical codes of conduct (Boene, 2002).

Nuciari (2007) asserts that the stress factors in MOOTWs all emanate from five types of diversity, one of which is the MOOTW's cultural diversity respective to the multinational forces deployed.

Elron et al. (1999) make a counterargument, noting that, in spite of the high level of demographic, functional and cultural diversity, multinational coalition forces still cooperate effectively due to their integrating factors, among them the common (worldwide) military culture, bureaucratic controls and structural similarity, integrative missions, shared conditions and experiences, the temporariness of the system, and the level of cultural diversity that alleviate the negative effects of diversity.

Sutton and Linda (2003) developed and validated a model representing the relationship between cultural dimensions and team performance functions. Their framework simply reveals the different approaches to team performance functions by individuals who have different cultural characteristics.

Soeters (1997) replicated Hofstede's cultural dimensions study with participants from the military academies of 13 different nations. Results illustrate that cadets of military academies reflect the same national pattern of cultural differentiation found in the original IBM study of Hofstede for only two cultural dimensions: Power Distance and Uncertainty Avoidance, with the nuance of higher scores in general, compared to civilian compatriots. However, for the other two dimensions, Individualism/Collectivism and Masculinity, Soeters (1997) found different results from those of Hofstede (1980).

Page also replicated Hofstede's cultural dimensions study in a multinational military environment. The results of the Page (2003) study suggest that there are significant national cultural differences among the military officers from NATO countries as there are among those from PfP countries, with respect to Hofstede's five cultural dimensions. Moreover, the study also reveals that the officers in NATO are more culturally homogenous than those in the PfP.

For multinational military teams, Riedel (2008) has made an attempt to explain how the cultural dimensions affect within-team communication. Riedel (2008) emphasizes that communication problems due to cultural factors can be a major barrier to group performance and effectiveness, if those cultural differences are ignored.

Dinwoodie (2005) suggests that the best way to proceed is to gain diversity perspective and to assess the organization's current diversity situation first, in order to cope with the challenges inherent in leading and working in teams consisting of individuals with vastly different backgrounds, traditions, motivations, and concerns.

Shuffler et al. (2012) note that, although an extensive research effort has been dedicated to the area of team diversity and its effect on team effectiveness, their literature review reveals that relatively little research exists that looks at the impact of different types of diversity on teams within a multinational context, and even less research on teams in a multinational military context. They pinpoint the multiculturalism in military teams as a pressing challenge that requires additional research in order to address the aforementioned potential issues and

reduce the negative aspects of such teams, while enhancing their positive benefits.

In the same line, van Vliet et al. (2008) and Salas et al. (2008) both indicate that multinational military teams that operate in environments with unique characteristics and constraints may not necessarily reflect the findings of prior research.

In conclusion, the literature review reveals the fact that there is still a research gap in our understanding of how different types of diversity (e.g. surface and deep level) affect outcomes, for multinational military teams.

2.14. Conceptual Framework for Research

The purpose of this study is to examine the relationship between team functional, demographic, and cultural diversity and team performance in a multinational military environment. Team diversity comprises differences among team members in terms of functional, demographic, and cultural aspects. Figure 5 illustrates the conceptual framework for the research.

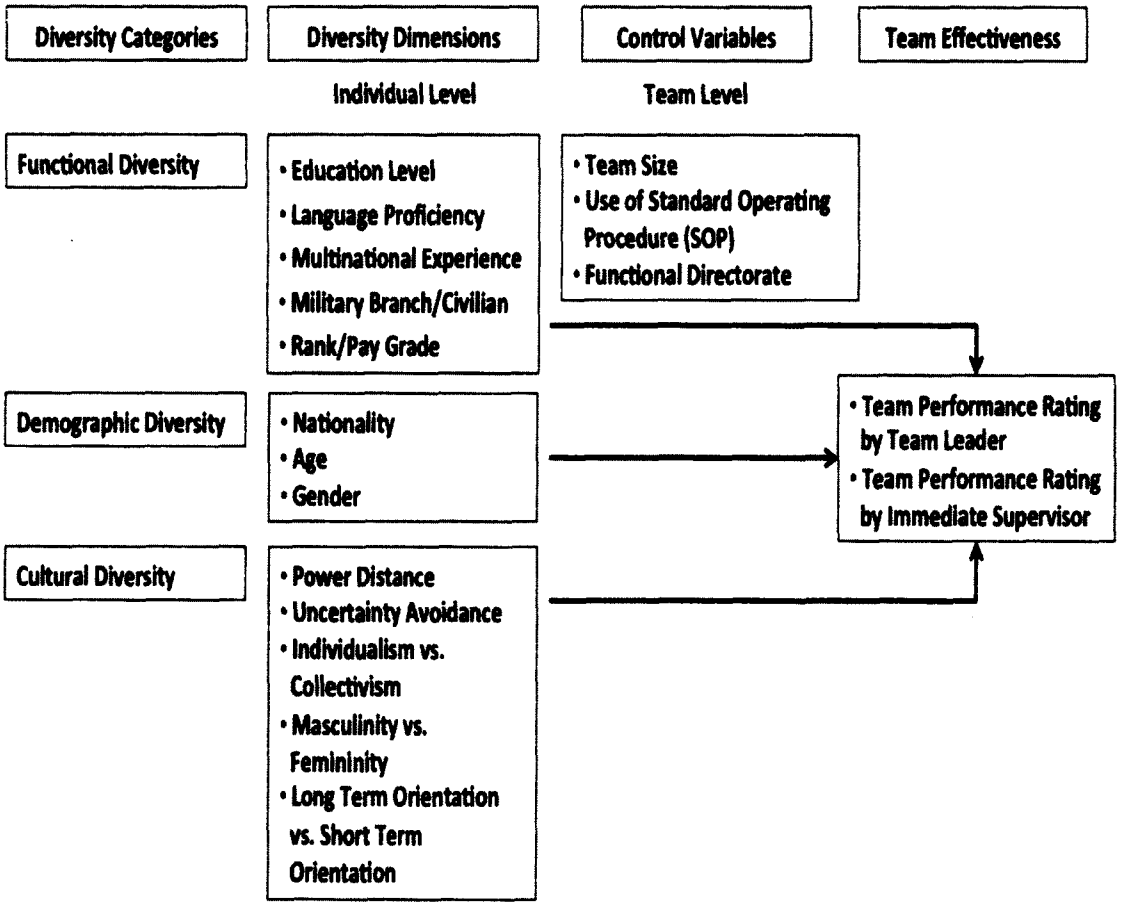

Figure 5. Conceptual Framework for the Research.

The conceptual framework is inspired on both the I-P-O (Input-Process-Output), (McGrath, 1984) and the IMOI (Input-Mediator-Output-Input) (Ilgen et al., 2005) theoretical models. The Multicultural Team Effectiveness model proposed by Halverson and Tirmizi (2008) constitutes the conceptual foundation of the study. It basically assumes that the degree of diversity in a team has a direct relationship on the team's effectiveness.

Diversity in teams is studied in terms of three main categories: functional diversity, demographic diversity, and cultural diversity. These categories and their underlying dimensions have been identified through a systematic literature review. The choice of diversity categories and dimensions, and the team level control variables will be elaborated in the following chapter.

Although the IMOI model argues that mediators (team processes, team climate etc.) are important to a better understanding of team dynamics, this research does not include mediators; rather, it focuses on an investigation of the relationship between different types of diversity and team outputs.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Overview

Chapter 1 addresses the growing importance and increasing frequency with which world countries resort to multinational coalitions or to alliance forces in response to emerging global threats. However, besides the benefits and advantages that they present, multinational forces raise a new set of challenges. A major challenge is the management of a highly diverse organization resulting from the large number of nations that comprise the coalition/alliance. It has been emphasized that such multinational forces are often faced with problems in team performance, and that their demographical, functional, and cultural differences can become major impediments to mission success (Shuffer et al., 2012; van Vliet et al., 2008).

Chapter 2 reviews the literature concerning the effects of diversity on teams, presenting theoretical models and frameworks that have been most commonly employed by researchers. Various types and attributes of diversity and methods used in diversity measurement are also reviewed. It is noted that diversity has been linked to some major benefits, such as more effective problem-solving, better decision-making, and enhanced creativity and innovation, with the reservation that increased diversity can also have dysfunctional effects on group processes and performance. The scant number of studies that have been published on multinational military teams report difficulties and problems in

teams and units, often stemming from diversity among national forces. Chapter 2 also presents a literature gap analysis that reveals the pressing need for empirical studies that test theories and models in this area, to allow for the development of a knowledge base on which multinational military teams capitalize (Shuffler et al., 2012; van Vliet et al., 2008). In Chapter 2, a conceptual framework was introduced to measure the relationship between team diversity and team performance in a multinational military environment.

The structure of this chapter is as follows: first, the foundations of the study are discussed; second, hypotheses is justified and presented; and third, the research methodology and relevant constructs are shown.

3.2. Research Questions

This research aims to answer the following research questions:

- What is the relationship between within-team functional diversity and team performance?
- What is the relationship between within-team demographic diversity and team performance?
- What is the relationship between within-team cultural diversity and team performance?
- What is the relationship between within-team aggregated categorical diversity and team performance?
- Does the effect of diversity on team performance differ significantly by the functional directorate in which team operates?

- Does the effect of diversity on team performance differ significantly by the use of Standard Operating Procedures (SOP)?
- Does the effect of diversity on team performance differ significantly by the team size?

3.3. Research Design

Selection of the model. The I-P-O (Input-Process-Output) (McGrath 1984) and IMOI (Input Mediator Output Input) (Ilgen et al. (2005) theoretical models have inspired the main design of the research.

The Multicultural Team Effectiveness model proposed by Halverson and Tirmizi (2008) can be considered as an expansion of the IMOI model into a multicultural team context. The relation of these two models can be viewed in Figure 6.

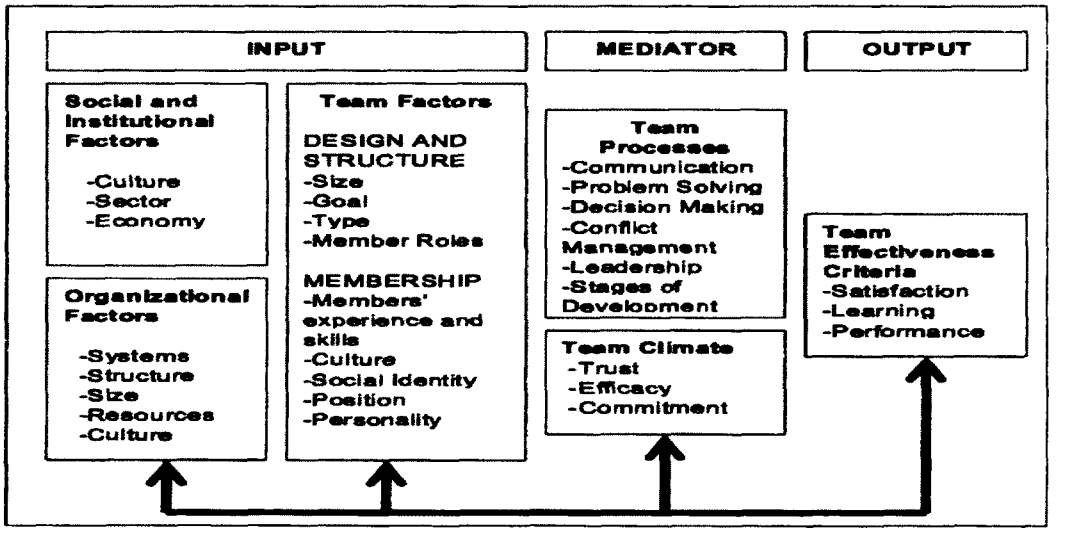

Figure 6. A Modified Model of Multicultural Team Effectiveness Model (Halverson and Tirmizi, 2008, pp.10) in relation to the IMOI model (Ilgen et al., 2005).

This figure also constitutes the conceptual foundation of this study. It assumes that the degree of diversity in a team has a direct relationship to team effectiveness.

Although the IMOI model argues that mediators (team processes, team climate etc.) are important to better understand team dynamics, in this study the intention is to focus on investigating the relationship between team level factors and team effectiveness; this study leaves the impacts and roles of mediators for future researchers.

Selection of independent variables. This study aims to investigate the impacts of diversity on team effectiveness in multinational, multicultural military contexts. The literature review has demonstrated three salient diversity categories: Functional Diversity, Demographic Diversity, and Cultural Diversity. The diversity dimensions under each category have been selected from prominent diversity dimensions found in the literature, particularly the literature regarding military teams.

The diversity dimensions of Functional Diversity (Educational Level, Language Proficiency, Multinational Experience, Military Service/Civilian, and Rank) and Demographic Diversity (Nationality, Age, and Gender) are quite straightforward, as they are readily observable in any multinational military force. For the cultural diversity dimensions, there have been different dimensions used in the past, with Hofstede's and the GLOBE cultural dimensions being the most widely accepted. Hofstede's dimensions were found to be more relevant to this research, since they focus on cultural values at work, as opposed to the GLOBE

method of studying values in the greater societal context (House et.al., 2004, pp. 91).

Selection of control variables. In addition to the selected diversity dimensions at individual level, whose validities have been discussed and affirmed in Chapter 2, in an effort to shed more light on the effects of diversity on team effectiveness, this research also employed three team-level control variables: team size, the use of standard operating procedures (SOP) that teams abide by in performing their duties, and the directorate within which the team functions.

Team size is an important factor in computing the degree of team diversity (Biemann & Kearney, 2009). It is assumed that the interactions in large teams are more complicated than those in small teams. Therefore, the possible effect of diversity on team performance may differ by the size of the teams. One objective of this study is to examine if team size can moderate the relationship between diversity and team effectiveness.

The use of Standard Operating Procedure (SOP) is believed to be relevant to the relationship between diversity and team effectiveness. As discussed in Chapter 2, the literature suggests "a shared mental model" as a moderator between diversity and team performance. In a military context, shared mental models are typically made explicit through Standard or Standing Operating Procedure (SOP), which is an established procedure or a set of procedures to be followed in carrying out a given operation in a given situation. Another objective of this study is to investigate whether utilizing SOPs in

teamwork makes any difference on the relationship between within-team diversity and team effectiveness.

The directorate within which the team performs is believed to have a role in the relationship between diversity and team effectiveness. The literature review demonstrates that the effect of diversity may differ by functional area (Ancona & Caldwell, 1992; ; Cox, 1994; Cox & Blake, 1991; Jackson, 1991; Kreitner & Kinicki, 1998; Shuffler, Pavlas, & Salas, 2012; Thompson & Gooler, 1996; Watson, Kumar, & Michaelsen, 1993). The Headquarters of Supreme Allied Command Transformation where this research where this research was conducted embraces four distinctive directorates, two of which deal with transformation that involves a high degree of problem-solving, decision-making, creativity, and innovation, while the other two deal with tasks involving more traditional organizational management such as coordination, implementation, advisory, and budgeting. Thus, this study explores whether there is a distinctive pattern among directorates in terms of the effects of within-team diversity on team effectiveness.

Selection of the dependent variable. In this study, the rating of team effectiveness is based on a performance assessment from the team leader and the immediate supervisor. In military organizations, team leaders and their immediate supervisors typically are the ones who are responsible to conduct personnel performance evaluations for their staffs. Based on the elaboration in literature review, for this research it was decided to utilize Staples and Webster's (2008) eight-factor measure of perceived team performance, since it was

assessed to be most similar to the military's applications of performance evaluation. The arithmetic mean of the performance assessments of team leader and immediate supervisor were taken as a measure of team performance.

The next section elaborates on the operational definitions and measures of the variables included in the research.

3.4. Definition and Measure of Variables

Independent variables. This study focuses on 13 independent variables in three categories: Functional Diversity, Demographic Diversity, and Cultural Diversity.

Functional diversity variables are those associated with different types of skills, experiences, knowledge, and sets of roles that team members bring to their team (Whaley, 2001). The study employs five functional diversity variables that the literature review deemed relevant in multinational a military context.

- ***Education level*** is the traditional formal academic degrees or military equivalent obtained (high school, bachelor's degree or military academy, master's degree or military war college, doctorate or military equivalent). This is a categorical ordinal variable.
- ***Language proficiency*** is the level of mastery in English language, which is the first official language at NATO, followed by French as the second official language. The NATO Standardization Agreement (STANAG) 6001 on language proficiency levels suggests the 6 proficiency levels for NATO as illustrated in Table 8.

Table 8. English language proficiency levels according to NATO STANAG 6001.

Proficiency Levels	Proficiency Skills
No Practical Proficiency	No particular skills
Elementary Proficiency	-Adequate for routine courtesy and minimum practical needs related to traveling, obtaining food, and lodging, giving and understanding simple directions, asking for assistance. -Ability to write is limited to simple lists of common items or a few short sentences.
Fair	-Adequate for simple social and routine job needs as giving and understanding instructions and discussing projects within very familiar subject-matter fields. Word-meanings often unknown, but quickly learned. -Can draft routine social correspondence and meet limited professional need.
Good (Minimum Proficiency)	-Adequate for all practical and social conversations, discussions and correspondence in a known field. -Can draft official correspondence and reports in a special field.
Very Good (Full Professional)	-Broad, precise, and appropriate to the subject and the occasion. -Can draft all levels of prose pertinent to professional needs.
Excellent (Native)	-Completely equal to a native speaker of the language.

Table 9. Skill Measures for English Language

Levels / Skills	Speaking	Listening/ Understanding	Reading	Writing
No Practical Proficiency	0	0	0	0
	1	1	1	1
Elementary Proficiency	2	2	2	2
	3	3	3	3
Fair (Limited Working Proficiency)	4	4	4	4
	5	5	5	5
Good (Minimum Proficiency)	6	6	6	6
	7	7	7	7
Very Good (Full Professional)	8	8	8	8
	9	9	9	9
Excellent (Native)	10	10	10	10

In measuring proficiency in English, the study used self-rating, which was suggested as a reliable indicator of language performance by Marian, Blumenfeld, and Kaushanskaya (2007) who developed The Language

Experience and Proficiency Questionnaire (LEAP-Q). This is an interval variable, is measured from 0 to 10 as shown in Table 9.

- ***Multinational experience*** is the total number of years that the member of the team has spent in a coalition force and at multinational military headquarters (NATO or non-NATO). This is a continuous ratio variable.
- ***Military branch / civilian*** is the military branch (Navy, Army, Air Force, Marine Corps) that the team member belongs to. If s/he is not military personnel, then, he/she is civilian or a civilian contractor. This is a categorical nominal variable.
- ***Rank/pay grade*** is the military rank or civilian pay grade that the team member carries at the time of the research. The ranks and civilian pay grades are fully comparable and translatable across nations in accordance with NATO Manpower Policy (MC 216/4, 2011). There is no official military-civilian rank/grade equivalence for NATO, but as a principle, officer ranks equate to civilian A and L grades (Table 10). This is a categorical ordinal variable.

Table 10. NATO ranks/pay grades for military and civilian personnel

Military Ranks	Civilian Pay Grades
1. Lower than Lieutenant, Sub-Lieutenant	1. Lower than A-1 (Engineer) or equivalent
2. Lieutenant (Army, Air Force), Sub-Lieutenant	2. A-1 (Engineer) or equivalent
3. Captain (Army, Air Force), Lieutenant (Navy)	3. A-2 (Engineer with experience) or equivalent
4. Major, Lieutenant Commander	4. A-3 (Senior Engineer) or equivalent
5. Lieutenant Colonel, Commander	5. A-4 (Senior Principal Engineer) or equivalent
6. Colonel, Captain (Navy)	6. Upper than A-4 or equivalent
7. Higher than Colonel, Captain (Navy)	

Demographic diversity variables are the characteristics naturally possessed by members of teams.

- ***Nationality*** is the nation that a member belongs to. Because nationality is associated with a country, the country is considered an indicator of nationality for the study. This is a categorical nominal variable.
- ***Age*** is the age of a team member at the time of research. This is a continuous ratio variable.
- ***Gender*** is the sex of a team member. This is a categorical dichotomous variable.

Cultural diversity variables are based on the cultural dimensions defined by Hofstede (2001).

- ***Power Distance*** is the individual Power Distance Index of a team member. This is a continuous ratio variable.
- ***Uncertainty Avoidance*** is the individual Uncertainty Avoidance Index of a team member. This is a continuous ratio variable.
- ***Individualism versus Collectivism*** is the individual Individualism / Collectivism Index of a team member. This is a continuous ratio variable.
- ***Masculinity-Femininity*** is the individual Masculinity-Femininity Index of a team member. This is a continuous ratio variable.

- ***Long-term versus Short-term Orientation*** is the individual Long Term/Short Term Orientation Index of a team member. This is a continuous ratio variable.

Control variables. Three control variables are employed in the study: team size, the use of Standard Operating Procedure (SOP), and the Directorate.

- ***Team size*** is the number of team members, including the team leader. This is a continuous ratio variable.
- ***The use of Standard Operating Procedure (SOP)*** inquires whether or not the team members use SOPs in conducting their tasks; if yes, it further inquires how often at five levels: 1-never/don't have SOPs, 2-seldom, 3-sometimes, 4-usually, 5-always. This is an interval variable.
- ***Directorate*** indicates one of the four functional divisions within which the team functions: Resources and Management, Capability Development, Strategic Plans and Policy, or Joint Force Trainer. This is a categorical nominal variable.

Dependent variable. The team performance is used as a measure of team effectiveness. Therefore, the team leader and the first supervisor to that team leader are asked to evaluate the performance of their team for the last six months. Then, the arithmetic mean of their evaluations is used as the measurement of team performance. Hence, this is a continuous ratio variable. As discussed in the previous section, for the purpose of the research, Van de Ven & Ferry's (1980) and Staples & Webster's (2008) eight-factor measure of perceived team performance was deemed to be the right choice to utilize. The eight factors

upon which the team leader and the first supervisor are asked to evaluate their team are as follows:

- The quantity or amount of work produced,
- The number of innovations or new ideas introduced by the team,
- Its reputation for work excellence,
- The attainment of team production or service goals,
- The quality or accuracy of work,
- The efficiency of team operations,
- The morale of team personnel, and
- Adherence to schedule and budget.

In order to better capture the differences in team effectiveness between teams, the study employed a 7-level Likert scale as did Mohammed and Nadkarn (2011).

3.5. Research Environment and Rationale

NATO has been functioning since 1949 for collective defense and cooperative security. NATO has two Strategic Commands that include military and civilian personnel from 28 allied member countries. In addition to member countries, military officers from several partnership countries such as Austria, Azerbaijan, Sweden, and Ukraine hold positions within this Strategic Command.

The Supreme Allied Command Transformation (SACT), one of the Strategic Commands, is NATO's leading agent for change, driving, facilitating,

and advocating continuous improvement of Alliance capabilities to maintain and enhance the military relevance and the effectiveness of the Alliance.

Composed of nearly 800 military and civilian personnel from 28+ nations, SACT Headquarters provides a unique multicultural and multinational military environment for researchers to investigate the effects of team diversity on team performance within a multicultural context. This study will take advantage of the opportunities presented by NATO SACT headquarters for the collection of data.

3.6. Population and Sample

Population. For the last couple of decades, the formation of multinational coalitions or alliance forces to respond to emerging threats has been a mainstream approach, in military contexts. Experiences in Bosnia, Kosovo, Iraq, Afghanistan, the Arabian Gulf, the Gulf of Aden, Lebanon, and Libya have demonstrated the substantial military advantages to be gained through coalition and alliance operations. In this quest, NATO has played and is still playing a key role in contributing to the forces, as part of a multinational coalition or alliance conducting operations ranging from war to peacekeeping, peace support, and humanitarian assistance. This trend is expected to continue, and perhaps even to increase, in the future.

The web page of the UN Department for Peacekeeping Operations[4] displays 54 completed coalition operations since 1948. It also keeps records of the 16 operations that are currently being carried out by coalition forces.

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[4] http://www.un.org/en/peacekeeping/

In this regard, both the increasing number of *ad hoc* coalition forces being used by international communities and huge multinational security organizations like NATO, with the manpower of almost 9000 personnel, constitute the population for this study. The EU Defense Agency, EU Military Staff HQs, and other bilateral and multi-lateral multinational HQs are also parts of the population that this study targets.

Sample. This study focuses on Headquarter of Supreme Allied Command Transformation (HQ SACT) as a part of the population for the study. HQ SACT was first established in 1952 as Allied Command Atlantic (HQ ACLANT), which was responsible for allied maritime operations. In 2002, with the reorganization of the NATO Command Structure, ACLANT was renamed as Supreme Allied Command Transformation (SACT) and took on the mission of transforming and preparing NATO for future security challenges. HQ SACT comprises four distinct directorates: Strategic Plans and Policy, Capability Development, Joint Force Trainer, and Integrated Resource Management.

The Strategic Plans and Policy (SPP) Directorate develops and promotes issues of strategic importance to transformation, articulates policies to direct Alliance transformation efforts, and supports the development of NATO strategic level concepts which clarify how transformation may be achieved.

The Capability Development (CAPDEV) Directorate acts as the SACT's Director for guidance, direction, and coordination of activities and resources. This Directorate has the responsibility for the entire Capability Development Process

from Step 2 (Identify Capability Needs) through to the last step, Step 6 (Conduct Implementation).

The Joint Force Trainer (JFT) Directorate directs and coordinates the full spectrum of education and training, e-learning, resident training and education, individual training, collective training and exercises, within NATO and with Partnership countries.

The primary function of the Integrated Resource Management (IRM) Directorate is to maintain ACT as a strategy-driven organization by ensuring that resources are committed and redistributed in accordance with SACT's strategy.

Figure 7 illustrates a generic organizational structure for HQ SACT. There are a number of division heads under each directorate, to which branches are tied directly. For the sake of simplicity, division heads are not displayed in the Figure 7.

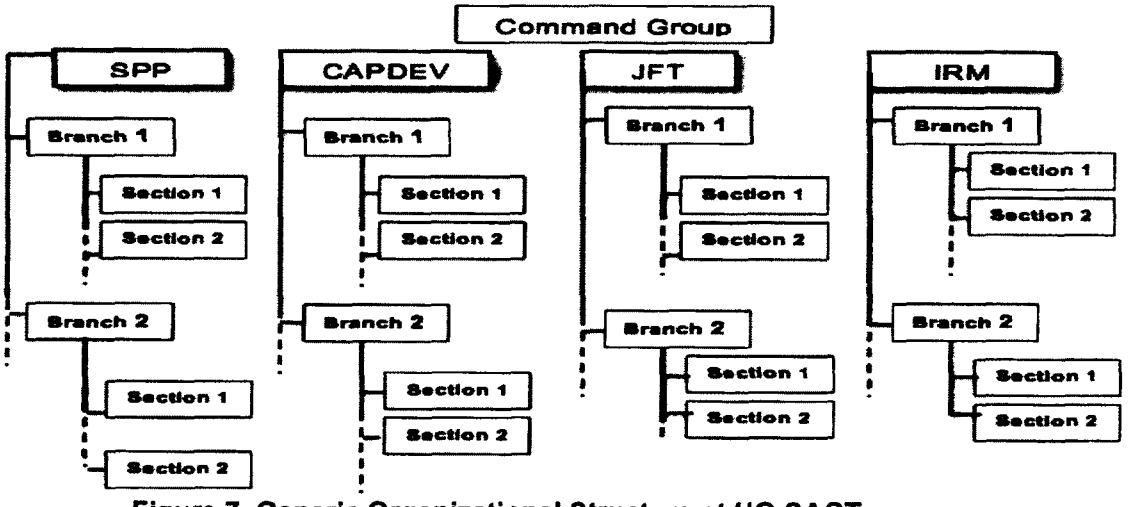

Figure 7. Generic Organizational Structure at HQ SACT.

The number of branches under each directorate ranges from 3 to 26. Likewise, the number of sections under each branch varies from 1 to 4, as to their sizes and functions. Sections are the functional groups at the lowest level at HQ SACT. Sections may consist of 4-12 officers. In some sections, civilian personnel also serve, along with the military personnel. Each section has a distinctive mission that members of the section have to interact interdependently to fulfill. In this respect, the concept of section at HQ SACT satisfies the preconditions of a team defined by Salas et al. (1992), Thompson and Gooler (1996), and Salas et al. (2008), who define team as a distinguishable set of two or more individuals who interact interdependently with a limited life-span of membership in order to accomplish a common goal which is beyond an individual end product.

Nearly each section includes personnel from a variety of nationalities, with different levels of military service, different language proficiencies, and different cultural backgrounds. Civilian personnel are embedded in the sectional structure and they typically have a longer tenure than military personnel. The turnover rate in SACT headquarters is high among military personnel, due to their 2-4 year term-of-service mandate. In a sense, turnover may also have an effect on team performance. However, this is the case for all coalition forces, since the personnel are assigned for a short time, usually from a minimum of six months to three or four years. Because it is a part of the current employment system, and it is present constantly for all kinds of multinational coalitions and within NATO, turnover is considered to be a constant, in this context.

An overview of NATO's organizational structure. NATO has a hierarchical organizational structure from the strategic/political level to the tactical level that comprises civilian structure, military structure, and various agencies. Figure 8 illustrates a generic overview of the NATO organizational structure.

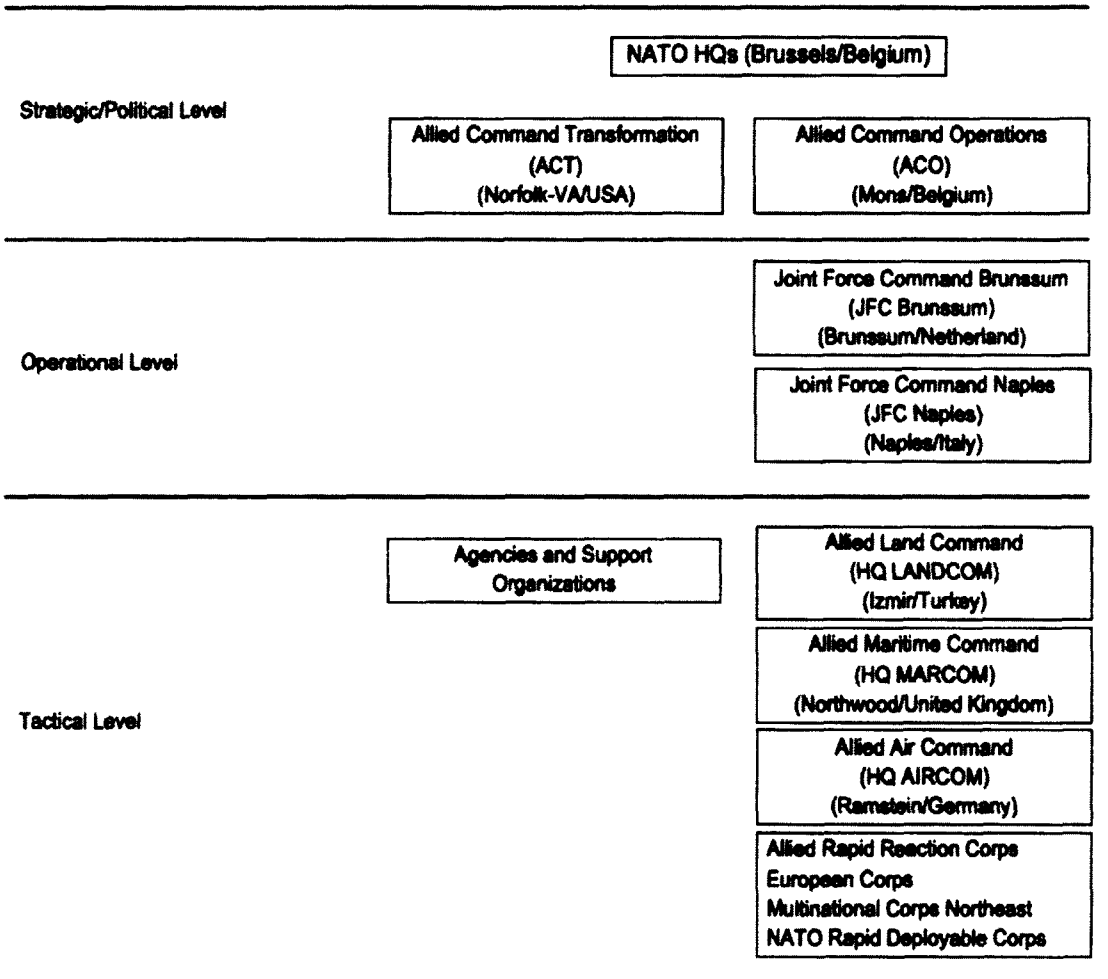

Figure 8. A Generic Overview of NATO Organizational Structure.

NATO Headquarters (NATO HQ) is the political and administrative center of the Alliance that accommodates the highest-level political and military representatives of the member and partner countries. NATO Headquarters is where representatives from all the member states come together to make decisions on a consensus basis. It also offers a venue for dialogue and cooperation between partner countries and NATO member countries, enabling them to work together in their efforts to bring about peace and stability. Roughly, 4,000 civilian and military people work at NATO HQ on a full-time basis. [5]

Allied Command Operations (ACO), along with Allied Command Transformation (ACT or HQ SACT), are the two strategic Headquarters that report to NATO HQ. The role of ACO is to prepare, plan, conduct, and execute NATO military operations, missions, and tasks in order to achieve the strategic objectives of the Alliance. As such, it contributes to the deterrence of aggression and the preservation of peace, security, and the territorial integrity of Alliance.[6]

The operational level consists of two standing Joint Force Commands (JFCs): JFC Brunssum in the Netherlands and JFC Naples in Italy. Both have to be prepared to plan, conduct, and sustain NATO operations of different sizes and scope. Effectively, they need to be able to manage a major joint operation either from their static locations in Brunssum or Naples, or from a deployed headquarters when operating directly in a theatre of operation. In the latter case, the deployed headquarters are referred to as a Joint Task Force HQ or JTFHQ and they should be able to operate for a period of up to one year.

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[5] http://www.nato.int/cps/en/natohq/structure.htm#OA (May 2015)
[6] http://www.aco.nato.int/military_command_structure.aspx (May 2015)

The tactical (or component) level consists of what is called Single Service Commands (SSCs): land, maritime, and air commands. These service-specific commands mainly provide expertise and support to the Joint Force Commands in their own warfare domains.

Besides Single Service Commands, the tactical level also includes a number of agencies and support organizations whose primary missions are to provide expertise, services, and training to NATO on particular fields such as procurement, communication and information systems, science and technology, research and experimentation, disaster response coordination, and strategic, operational, and tactical level training.

Although the functional level or individual role of each HQ and agency of NATO differs from any another, all have organizational structures similar to that of HQ SACT, which cluster down from departments to divisions, branches, and sections. To that end, HQ SACT can be considered as a representative sample of the entire NATO organization by its organizational structure.

The generic structure of typical coalition forces. The US Department of Defense Joint Publication (3-16) Multinational Operations defines a coalition as an arrangement between two or more nations for common action. Coalitions are typically ad hoc, and are formed by different nations, often with different objectives, usually for a single event or for a longer period while addressing a narrow sector of common interest.

In coalitions, participating nations usually form a combined headquarters to plan, coordinate, and conduct operations. The organizational structure of this

headquarters is often similar to that of the headquarters of NATO Joint Force Commands, which comprise divisions, branches, and sections.

Although coalitions usually have multinational combined HQs, contributing nations frequently keep their own units separate. That is, units mainly maintain their national characteristics and perform separate tasks under their national chain of command, which subsequently report to the combined coalition HQs.

In this regard, HQ SACT may also represent a combined coalition HQ by organizational structure.

3.7. Sample Size

There are currently around 80 sections within HQ SACT. Since the aim of this study is to investigate the diversity within teams and its effects on their effectiveness, sections were adopted to be the units of analysis. This may raise some concerns about estimating the power of analysis due to sample size. Van Voorhis and Morgan (2007) argue that larger samples more accurately represent the characteristics of the populations from which they are derived (Cronbach, Gleser, Nanda, & Rajaratnam, 1972; Marcoulides, 1993). In general, the larger the sample size, the narrower the confidence interval. If the sample size is too small, the confidence interval may be too wide to provide useful information (Bonett & Wright, 2011), in turn, this may lead to a Type I error in which the data supports the rejection of a null hypothesis, while, in fact, it is true, or a Type II error in which the data do not support the rejection of a null hypothesis, while, in fact, the null hypothesis is false. Consequently, one of the most frequently asked questions is how large a sample should be (Van Voorhis & Morgan, 2007).

The literature does not provide a consistent answer to this fundamental question (Bonett & Wright, 2011). Green (1991) suggests sample size (N) > 50 + 8 m (where m is the number of Independent Variables) for testing the multiple correlations. Harris (1985) suggests that the number of participants should exceed the number of predictors by at least 50 (i.e., the total number of participants equals the number of independent variables plus 50). Tabachnick and Fidell (1989) suggested that the sample size should be at least 5m (where m is the number of Independent Variables). Van Voorhis and Morgan (2007) argue for regression equations using six or more independent variables, and suggest that an absolute minimum of 10 participants per independent variable is appropriate.

Regarding its conceptual framework, this study had three categories of diversity (Functional, Demographic, and Cultural) that were composed of 5, 3, and 5 independent variables, respectively. Each category was analyzed separately. Therefore, the maximum number of independent variables regressed together was 5. According to Tabachnick and Fidell's (1989) suggestion, a minimum sample size of 5x(5)=25 was adequate for this study, since the study planned to regress a maximum 5 independent variables together in the analyses at a given time. Similar to Tabachnick and Fidell's (1989) suggestion, Van Voorhis and Morgan (2007) recommend an approximate sample size of 10x(5)=50, while Harris (1985) recommends a minimum of 50+(5)=55, and Green (1991) a minimum 50+8x(5)=90 teams for this study. The survey utilized in the study generated a sample size of 47 teams, which satisfied Tabachnick and

Fidell's (1989) and Van Voorhis and Morgan's (2007) suggestions. This sample size was considered adequate for the analyses, keeping in mind that it could lead to wider confidence intervals to capture the effects of diversity.

3.8. Data Collection

Data Collection Instrument.

This study mainly utilized Hofstede's Values Survey Module (VSM-94) to collect data on independent variables. VSM-94 was obtained from Prof. Hofstede's webpage (www.geerthofstede.com) with a pre-provided permission for free use for research purposes. This module already involved nine independent variables of the conceptual model employed in this study: all cultural diversity variables (5), all demographic diversity variables (3), and one out of five functional diversity variables (1, education level). Four more questions were added to the module for other functional diversity variables (language proficiency, multinational experience, military branch/civilian, rank/pay grade) based on the existing literature as explained in research design and the definition of variables. Additionally, two team-level control variables were introduced to the questionnaire: the use of standing operating procedures, and the directorate. This questionnaire is referred as the Multinational Team Diversity Profiling Questionnaire for the rest of the study. The Multinational Team Diversity Profiling questionnaire can be found in Appendix A.

A second questionnaire was designed to assess the team performance based on Staples and Webster's (2008) eight-factor measure of team performance. This module is referred as the Team Performance Questionnaire

for the rest of the study. The Team Performance Questionnaire can be also found in Appendix A.

The VSM-94 survey involves 20 content questions (four for each of the five dimensions) for cultural diversity, which are scored on five-point Likert scale. Table 11 presents the distribution of questions within VSM-94 as they relate to each of Hofstede's five dimensions.

Table 11. VSM 94 Distribution of Questions by Dimension

Dimension	Questions
Power Distance	3, 6, 14, and 17
Individualism-Collectivism	1,2,4, and 8
Masculinity-Femininity	5, 7, 15, and 20
Uncertainty Avoidance	13, 16, 18, and 19
Long Term-Short Term Orientation	9, 10, 11, and 12

Hofstede (2001) has developed detailed index formulas for each of the five dimensions. The index formula for each dimension is outlined as follows in Table 12.

For example, Power Distance is defined as the extent to which the less powerful members of institutions and organizations within a society expect and accept that power is distributed unequally. The index formula is PDI = –35m(03) +35m(06) +25m(14) –20m(17) –20 in which m(03) is the mean score for question 03, etc.

Table 12. Hofstede's VSM-94 Index Formulas for Each Cultural Dimension

Dimensions	Index Formulas
Power Distance	PDI = -35m(03) +35m(06) +25m(14) -20m(17) -20
Individualism-Collectivism	IND = -50(01) +30m(02) +20m(04) -25m(08) +130
Masculinity-Femininity	MAS = 60m(05) -20m(07) +20m(15) -70m(20) +100
Uncertainty Avoidance	UAI = 25m(13) +20m(16) -50m(18) -15m(19) +120
Long-Short Term Orientation	LTO = +45m(09) – 30m(10) – 35m(11) + 15m(12) + 67

Since this study was concerned about the differences in the cultural perspectives of individuals, the "m", the mean score for question, was replaced by the value (1, 2, 3, 4, or 5) of the responses of individuals from the survey. The study aimed to capture raw individual cultural perspectives; thus, a correlation with national cultural values was unlikely and should not have been sought (Hofstede, 2001).

Data Collection Procedure.

Since the aim was to investigate the diversity within team, team was adopted to be unit of analysis. Each section at HQ SACT is considered a team.

The Old Dominion University's Engineering Human Subjects Review Committee (EHSRC) determined that this project was exempt from Institutional Review Board (IRB) review, according to federal regulations. The approval of the EHSRC was attained for the survey to be administered. The exempt letter and the approval email from EHSRC can be seen in Appendix B. Organizational permission from HQ SACT was also obtained to allow for the administration of the Multinational Team Diversity Profiling Survey and the Team Performance

Survey. The surveys were administered online by email via institutional area network and via internet-based survey tools. The responses were automatically stored in the investigator's personal, password- protected account. For analysis purposes, the responses were transferred into Excel forms with codes. The code list of names has been kept in a separate physical location from the data files at all times. Both the code list and the data file have been secured with passwords.

Additionally, a personnel continuity plan was obtained from the Human Resource Management Branch, which is open to all personnel and includes data on the Directorate, branch, section, name, position, rank, nationality, and turnover date for each individual. The personnel continuity plan illustrated data in a team construct, so that team size and team composition could also be seen. This personnel continuity plan was utilized to build the database for the study.

The members of sections, including the section head, were asked to answer the multinational team diversity-profiling questionnaire. Section heads, together with branch heads, were requested to answer the Team Performance Questionnaire. The responses were inserted on to the personnel continuity plan based on the name of the sections provided by repondents in order to build the database. Six rounds of email were sent to HQ personnel who belonged to a section or who were supervising one as a branch head. Additionally, personal one-on-one conversations, face-to-face or by phone, were also used to encourage those staff, section heads, and branch heads whose participation was crucial to the data collection. As a result of this persistent determination, the survey yielded high rates of participation. Table 13 summarizes the number of

surveys distributed, the number of participants, and the number of responses used in the analysis for branch heads (BH), section heads (SH) and staff officers (SO) respectively.

Table 13. Figures for Survey Participation

	BH	SH	SO	TOTAL
Survey distributed	31	74	374	479
Participants	23 (74%)	49 (66%)	197 (53%)	269 (56%)
Used in analysis	22 (71%)	43 (58%)	173 (46%)	238 (50%)

The Team Performance Questionnaire was emailed to 31 branch heads, out of which 23 (74%) responded the survey. The Multinational Team Diversity Profiling Questionnaire and The Team Performance Questionnaire were emailed to 74 section heads, out of which 49 (68%) responded the surveys. Finally, the Multinational Team Diversity Profiling Questionnaire was emailed to 374 staff officers, out of which 197 (53%) responded the survey. In total, 479 personnel were asked to take the survey, and a 56% participation rate was achieved, which accounted for 269 participants.

Not all of the data could be used in the analysis. The responses were used if only the number of participants constituted the whole or, at least, the majority of their teams. The database built on the personnel continuity plan was able to show the members of a section who responded and who did not responded the survey. If the number of respondents in a section was equal to or

less than the half size of that section, then that section and the data provided by its members were excluded from the analyses.

Table 14. Source of Data

	Variables	Number of Data Through Survey	Number of Data from Personnel Continuity Plan	Total
Independent variables	PD	216		216
	IND	216		216
	MAS	216		216
	UAV	216		216
	LTO	216		216
	Nationality	216	54	270
	Age	216		216
	Gender	216	54	270
	Education Level	216		216
	Language Proficiency	216		216
	Multinational Experience	216		216
	Military Branch	216	54	270
	Rank	216	54	270
Control Variables	SOP Availability	216		216
	Directorate	216	54	270
	Team Size		47	47
Dependent Variable	Team Performance Ratings	47		47

In the end, the responses of 22 BH, 43 SH, and 173 SO that came from 47 teams were included in the study; 18 full teams that all of the team members responded and 29 partial teams that the majority of the team members responded. With regards to Team Performance Ratings, four teams lacked BH ratings and another four teams lacked SH ratings.

For partial teams, the personnel continuity plan provided six additional pieces of data for each member: nationality, gender, military branch, rank, team size and directorate. All of these additional data were incorporated to the data sets. Table 14 above exhibits the number of data sets obtained through the survey and provided by the personnel continuity plan.

3.9. Statistical Hypotheses

- Research Question 1: What is the relationship between within-team functional diversity and team performance?

  $H1_A$: There is a significant relationship between within-team functional diversity and team performance.

  $H1_N$: There is no significant relationship between within-team functional diversity and team performance.

- Research Question 2: What is the relationship between within-team demographic diversity and team performance?

  $H2_A$: There is a significant relationship between within-team demographic diversity and team performance.

  $H2_N$: There is no significant relationship between within-team demographic diversity and team performance.

- Research Question 3: What is the relationship between within-team cultural diversity and team performance?

  $H3_A$: There is a significant relationship between within-team cultural diversity and team performance.

$H3_N$: There is no significant relationship between within-team cultural diversity and team performance.

- Research Question 4: What is the relationship between aggregated categorical within-team diversity and team performance?

  $H4_A$: There is a significant relationship between aggregated categorical within-team diversity and team performance.

  $H4_N$: There is no significant relationship between aggregated categorical within-team diversity and team performance.

- Research Question 5: Does the effect of within-team diversity on team performance differ significantly by the functional directorate within which team operates?

  $H5_A$: The effect of within-team diversity on team performance differs significantly by the functional directorate within which team operates.

  $H5_N$: The effect of within-team diversity on team performance does not differ significantly by the functional directorate within which team operates.

- Research Question 6: Does the effect of within-team diversity on team performance differ significantly by the use of Standard Operating Procedures (SOP)?

$H6_A$: The effect of within-team diversity on team performance differs significantly by the use of Standard Operating Procedures (SOP).

$H6_N$: The effect of within-team diversity on team performance does not differ significantly by the use of Standard Operating Procedures (SOP).

- Research Question 7: Does the effect of within-team diversity on team performance differ significantly by the team size?

$H7_A$: The effect of within-team diversity on team performance differs significantly by the team size.

$H7_N$: The effect of within-team diversity on team performance does not differ significantly by the team size.

3.10. Data Analysis Technique

This study aimed to investigate the impact of three types of diversity on team effectiveness, and the moderating role of selected team level factors on the relationship between diversity and team effectiveness, given the diversity dimensions and team effectiveness criterion prescribed up to this point. Upon collection of the data, the degree of team diversity for each dimension was computed by two different diversity (heterogeneity) indices: the ***refined Blau's diversity index*** (Biemann & Kearney, 2009) for categorical variables (Educational Level, Rank/Pay Grade, Military Branch, Nationality, and Gender), and ***Standard Deviation*** (Harrison & Klein, 2008) for interval and continuous

variables (Language Proficiency, Multinational Experience, Age, and Hofstede's five cultural dimensions) as shown in Table 15.

The refined Blau's diversity index is best used for categorical variables, since it depends on the frequency of a particular category in the group. However, it can't be used for continuous variables unless the continuous data are divided into a number of intervals that can be considered as categories. Also, it does not produce as sensitive results as does the Standard Deviation. Unless the intervals are determined by an empirical objective, some adjacent data would likely be separated into different categories in a somewhat arbitrary way and would be treated differently, such as the data at the bottom of an interval and the data at the top of the following interval.

Table 15. Diversity Type and Indices per Variable

Variables	Diversity Type	Diversity Index
Education Level	Variety	Refined Blau's Diversity Index
Military Branch		
Rank/Pay Grade		
Nationality		
Gender		
Language Proficiency	Separation	Standard Deviation
Multinational Experience		
Age		
Power Distance		
Uncertainty Avoidance		
Individualism		
Masculinity		
Long Term Orientation		

The refined Blau's diversity index, which also accounts for team size, reads as follows:

$$\text{Blau}_{N=}\ 1-\sum\frac{Ni(Ni-1)}{N(N-1)} \qquad \text{(Eq. 5)}$$

where N_i is the absolute frequency of group members in the i^{th} dimension and N is the total number of group members.

The equation of Standard Deviation reads as follows:

$$SD_N=\sqrt{\frac{\sum(Si-Smean)^2}{n}} \qquad \text{(Eq. 6)}$$

where S_i is the individual value for the i^{th} dimension, S_{mean} is the average value of the N^{th} team for the same dimension, and n is the team size.

In computing team diversity indices, team size was determined by the number of data for that particular dimension within the team. For example, in a team with five members, if the data set includes the educational level for all members, then the real team size, five, was taken into computation; if the data set includes the education level for only four members, then the number of available data, four, was taken into computation.

Having computed team diversity indices for functional, demographic and cultural categories, the multiple regression statistical method was employed to test the null hypotheses.

Multiple regression analysis is one of the major methods of statistical analysis in applied research across many scientific fields (Bonett & Wright,

2011). For descriptive purposes, the coefficient of determination, usually denoted by R^2, that assesses the strength of association between the response variable and the predictor variable, and the regression coefficients are the important parameters of the multiple regression model. The researcher should also report confidence intervals for these parameters.

This computation was applied to three diversity categories. Then the relationship between the diversity dimensions and team performance was tested three more times by holding team size, SOP availability, and directorate constant to predict their role in the relationship. The bootstrapping method was also employed to better predict the effect of diversity on team performance when the variable of directorate was controlled. Bootstrapping (Efron, 1979) is basically a random resampling of the sample to enable better inferences about the population when the sample size is small. IBM SPSS (Statistical Package for the Social Sciences) was utilized to analyze the data.

CHAPTER 4

ANALYSES AND FINDINGS

The purpose of this study is to examine the relationship between ***team diversity*** and ***team effectiveness*** in a multinational military environment. This chapter provides details of the analyses and findings of the study. The main question for this descriptive research is stated below:

The Main Question. What is the relationship between functional, demographic, and cultural diversity on team effectiveness in a multinational, multicultural military environment?

This chapter seeks to answer this question by analyzing the data collected through HQ SACT in three steps. For the first step, descriptive statistics for the sample were described, along with team performance indices (TPI). For the second step, team diversity indices (TDI) were calculated for the functional, demographic, and cultural variables. For the third step, the relationship between TDI and TPI was analyzed through multiple regression models for each hypothesis. Finally, the chapter concludes with a discussion on the validity and reliability of the research.

4.1. Sample Characteristics

The sample contained 47 teams whose sizes ranged from 2 to 18, as detailed in Table 16. Figure 9 and Table 17 compares team size with the number of respondents in that team for each team. The sample had 18 teams for which

all members responded the survey and 29 teams for which the majority of the team members responded.

Table 16. Distribution of Teams by Team Size

Actual Team Size	Number of Teams
2	4
3	7
4	7
5	11
6	1
7	5
8	5
9	3
10	2
12	1
18	1
Total	47

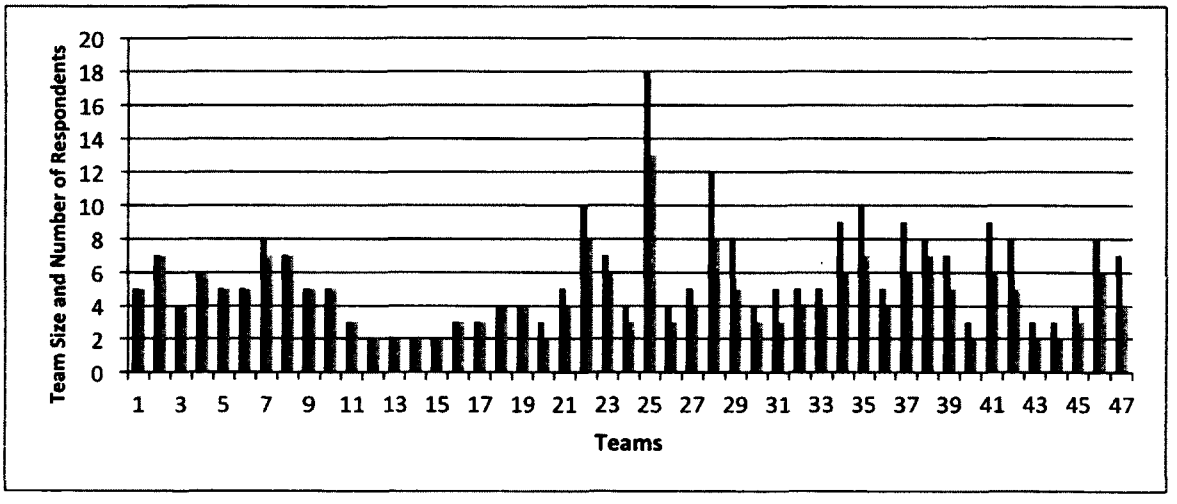

Figure 9. Comparison of Team Size and the Number Of Respondents by Team

Table 17. Average Response Rate by Team

Team #	Team Size	# of Respondents	%	Team #	Team Size	# of Respondents	%
1	5	5	100.00%	**25**	18	13	72.22%
2	7	7	100.00%	**26**	4	3	75.00%
3	4	4	100.00%	**27**	5	4	80.00%
4	6	6	100.00%	**28**	12	8	66.67%
5	5	5	100.00%	**29**	8	5	62.50%
6	5	5	100.00%	**30**	4	3	75.00%
7	8	7	87.50%	**31**	5	3	60.00%
8	7	7	100.00%	**32**	5	4	80.00%
9	5	5	100.00%	**33**	5	4	80.00%
10	5	5	100.00%	**34**	9	6	66.67%
11	3	3	100.00%	**35**	10	7	70.00%
12	2	2	100.00%	**36**	5	4	80.00%
13	2	2	100.00%	**37**	9	6	66.67%
14	2	2	100.00%	**38**	8	7	87.50%
15	2	2	100.00%	**39**	7	5	71.43%
16	3	3	100.00%	**40**	3	2	66.67%
17	3	3	100.00%	**41**	9	6	66.67%
18	4	4	100.00%	**42**	8	5	62.50%
19	4	4	100.00%	**43**	3	2	66.67%
20	3	2	66.67%	**44**	3	2	66.67%
21	5	4	80.00%	**45**	4	3	75.00%
22	10	8	80.00%	**46**	8	6	75.00%
23	7	6	85.71%	**47**	7	4	57.14%
24	4	3	75.00%	**Total**	270	216	80.00%

The sample of 47 teams included individuals from 28 nations. Table 18 elaborates the number of individuals by nationality included in the analysis. The United Kingdom followed by the United States and Germany had the highest representation (14.07%) in the sample. Seven nations (Austria, Azerbaijan,

Hungary, Latvia, Slovakia, Slovenia, Ukraine) had only one representative, while three nations (Albania, Bulgaria, Lithuania) had only two.

Table 18. Distribution of Sample by Nationality

	Country	Representation	Percentage
1	Albania	2	0.74%
2	Austria	1	0.37%
3	Azerbaijan	1	0.37%
4	Belgium	4	1.48%
5	Bulgaria	2	0.74%
6	Canada	7	2.59%
7	Czech Republic	3	1.11%
8	Denmark	6	2.22%
9	Estonia	3	1.11%
10	France	22	8.15%
11	Germany	33	12.22%
12	Greece	13	4.81%
13	Hungary	1	0.37%
14	Italy	24	8.89%
15	Latvia	1	0.37%
16	Lithuania	2	0.74%
17	Netherlands	12	4.44%
18	Norway	8	2.96%
19	Poland	4	1.48%
20	Portugal	4	1.48%
21	Romania	4	1.48%
22	Slovakia	1	0.37%
23	Slovenia	1	0.37%
24	Spain	15	5.56%
25	Turkey	20	7.41%
26	Ukraine	1	0.37%
27	United Kingdom	38	14.07%
28	USA	37	13.70%
	Total	270	100.00%

The minimum, maximum, and the mean age for the sample were 28, 65, and 45.56, respectively. The median age was 45.50. Tables 18 and 19 and

Figure 10 provide descriptive statistics for the variable age. The maximum age, 65 (case number 212), was identified as an outlier.

Table 19. Descriptive Statistics for Variable Age

	N	Minimum	Maximum	Mean	Std. Deviation
Age	216	28.00	65.00	45.5602	6.25550
Valid N	216				

Table 20. Percentiles for Variable Age

		Percentiles						
		5	10	25	50	75	90	95
Weighted Average	AGE	36.0000	38.0000	41.0000	45.5000	50.0000	54.0000	57.0000
Tukey's Hinges	AGE			41.0000	45.5000	50.0000		

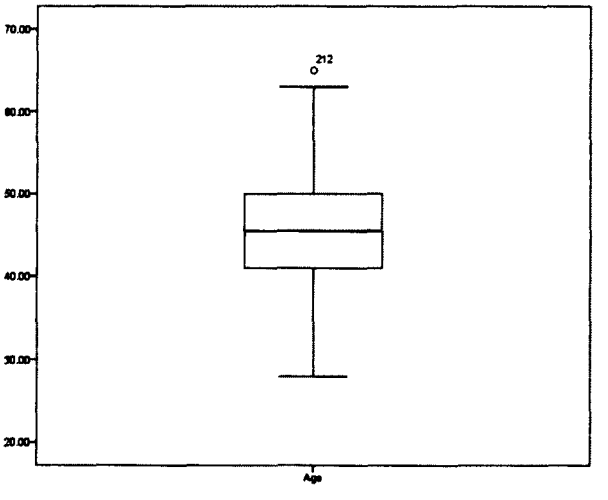

Figure 10. Box Plot for Variable Age

The sample included only 10 females out of 270 individuals, which accounted for 3.7% of the sample size (Table 21). The NATO Annual Diversity Report, dated 01 August 2014, pointed out that women represented 15% of all personnel at HQ SACT and 16% for NATO-wide in 2013. This suggested that the sample did not adequately represent the population in terms of gender.

Table 21. Distribution of Sample by Gender

Gender	Representation	Percentage
Male	260	96.30%
Female	10	3.70%
Total	270	100.00%

The distribution of sample by military branch is shown in Table 22. The survey captured military branches in six categories: Army, Navy, Air Force, Marine Corps, NATO Civilian, and Contractor. The Army, with a percentage of 38.52, had the highest representation in the sample. The Marine Corps held only 1.48% of the sample. NATO Civilian representation accounted for 15.19% of the entire sample. The sample included no Contractors. Only one of the 16 contractors who were contacted for the participation in the survey responded. However, his team was not included in the study due to the lack of responses from the majority of its members.

Table 22. Distribution of Sample by Military Branch

	Military Branch	Representation	Percentage
1	Army	104	38.52%
2	Navy	68	25.19%
3	Air Force	53	19.63%
4	Marine Corps	4	1.48%
5	NATO Civilian	41	15.19%
6	Contractor	0	0.00%
	Total	270	100.00%

The distribution of sample by rank is shown in Table 23. The survey captured rank in 14 categories: 1-6 being Civilian Pay Grades, 7-8 being Non-Commissioned Officer Ranks (NCO), 9-14 being Officer Ranks. The highest representation occurred at the OF-4 rank, which accounted for 59.26% of the entire sample. The uneven representation among the ranks suggested that the research consider looking at military-civilian distribution in the teams instead of rank. As seen in Table 22, the number of civilians accounted for 15.19% (41/270) of the sample.

Education level was captured in six categories: 1. High school graduate, diploma or the equivalent (for example: GED), 2. Some college credit, no degree, 3. Associate degree or military equivalent, 4. Bachelor's degree or military equivalent, 5. Master's degree or military equivalent, and 6. Doctoral degree or military equivalent.

The sample contained 216 data points for education level that accounted for 80.00% of the sample size. 49.63% (134) of the sample had an education level at the Master's degree level or the military equivalent. It was followed by the Bachelors degree with a percentage of 19.63% (53) (Table 24).

Table 23. Distribution of Sample by Rank

	Rank	Representation	Percentage
1	Lower than A-1 (Engineer) or equivalent	8	2.96%
2	A-1 (Engineer) or equivalent	1	0.37%
3	A-2 (Engineer with experience) or equivalent	16	5.93%
4	A-3 (Senior Engineer) or equivalent	10	3.70%
5	A-4 (Senior Principal Engineer) or equivalent	7	2.59%
6	Upper than A-4 or equivalent	0	0.00%
7	OR-1-5 (NCO)	2	0.74%
8	OR-6-9 and OF-D (NCO)	5	1.85%
9	OF-1 (Lieutenant (Army, Air Force), Sub-Lieutenant)	1	0.37%
10	OF-2 (Captain (Army, Air Force), Lieutenant (Navy))	1	0.37%
11	OF-3 (Major, Lieutenant Commander)	41	15.19%
12	OF-4 (Lieutenant Colonel, Commander)	160	59.26%
13	OF-5 (Colonel, Captain (Navy))	17	6.30%
14	OF-6 and Higher (higher than Colonel, Captain (Navy))	0	0.00%
	Missing	1	0.37%
	Total	270	100.00%

Table 24. Distribution of Sample by Education Level

	Education Level	Representation	Percentage
1	High School Graduate	8	2.96%
2	Some College Credits	2	0.74%
3	Associate Degree	6	2.22%
4	Bachelor's Degree	53	19.63%
5	Master's Degree	134	49.63%
6	Doctoral Degree	13	4.81%
	Missing	54	20.00%
	Total	270	100.00%

Multinational Experience was defined in years. The minimum, maximum, and mean multinational experience for the sample were found to be 0.33, 25.83, and 5.09 years respectively. The median multinational experience was 3.96 years. Tables 24 and 25 and Figure 11 provide descriptive statistics for the variable multinational experience. Eleven cases (52, 71, 90, 102, 111, 115, 137,

159, 162, 212, 215) were identified as outliers; they ranged from 14.42 to 25.83 years.

Table 25. Descriptive Statistics for Variable Multinational Experience

	N	Minimum	Maximum	Mean	Std. Deviation
MultiNationalExperience	216	.33	25.83	5.0927	4.13929
Valid N	216				

Table 26. Percentiles for Variable Multinational Experience

		Percentiles						
		5	10	25	50	75	90	95
Weighted Average	MultiNatExp	.7380	1.5000	2.3300	3.9600	6.5000	10.0550	14.4200
Tukey's Hinges	MultiNatExp			2.3300	3.9600	6.5000		

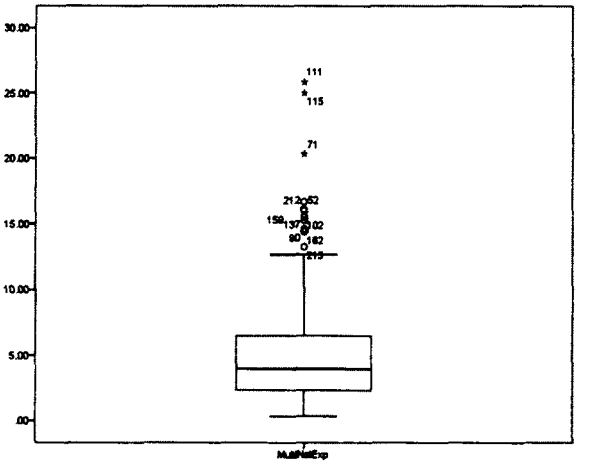

Figure 11. Box plot for Variable Multinational Experience

The sample captured the levels of language proficiency in four categories: Speaking, Listening, Reading, and Writing. The minimum values for the language

skills were found 4, 5, 5, and 4 respectively. The mean for Listening and Reading skills were slightly higher than those for Speaking and Writing skills. The median for Speaking, Listening, Reading, and Writing skills were calculated to be 8, 8, 9, and 8 respectively. Tables 26 and 27 and Figure 12 provide descriptive statistics and box plots for the variable language proficiency.

Table 27. Descriptive Statistics for Variable Language Proficiency

		Speaking	Listening	Reading	Writing
N	Valid	216	216	216	216
	Missing	54	54	54	54
Mean		8.0694	8.4722	8.6204	7.9907
Std. Deviation		1.54311	1.29009	1.20246	1.59648
Minimum		4.00	5.00	5.00	4.00
Maximum		10.00	10.00	10.00	10.00

Table 28. Percentiles for Variable Language Proficiency

		Percentiles						
		5	10	25	50	75	90	95
Weighted Average	Speaking	6.0000	6.0000	7.0000	8.0000	10.0000	10.0000	10.0000
	Listening	6.0000	7.0000	8.0000	8.0000	10.0000	10.0000	10.0000
	Reading	6.8500	7.0000	8.0000	9.0000	10.0000	10.0000	10.0000
	Writing	5.0000	6.0000	7.0000	8.0000	10.0000	10.0000	10.0000
Tukey's Hinges	Speaking			7.0000	8.0000	10.0000		
	Listening			8.0000	8.0000	10.0000		
	Reading			8.0000	9.0000	10.0000		
	Writing			7.0000	8.0000	10.0000		

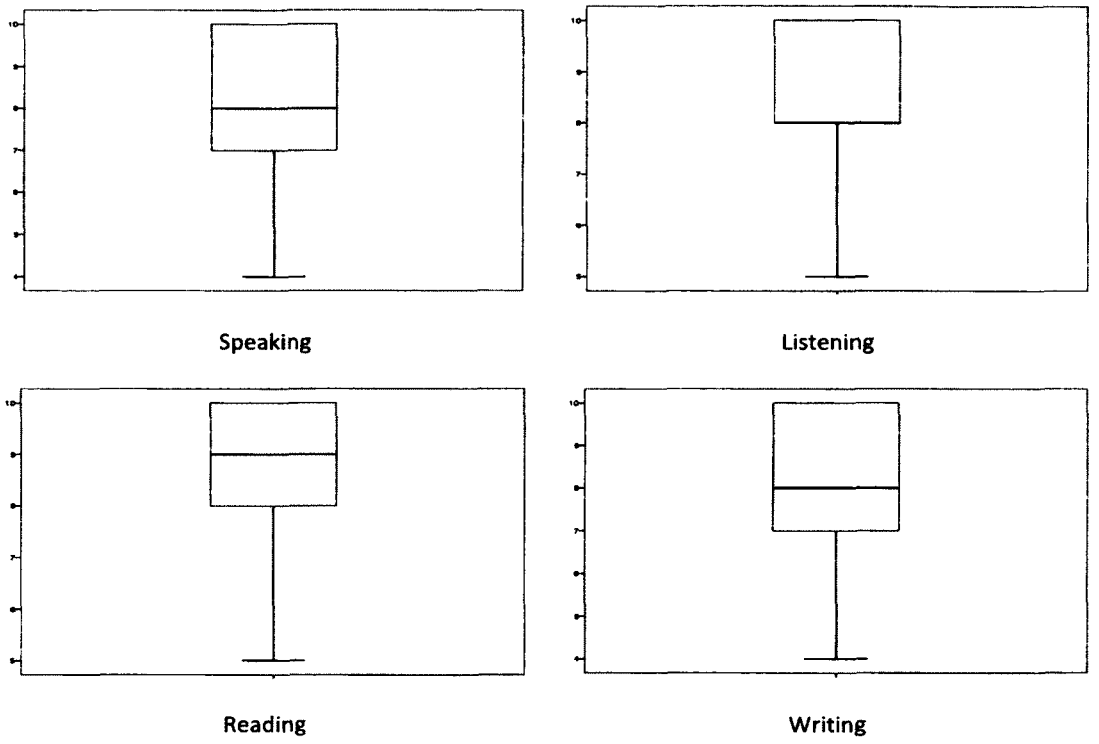

Figure 12. Box Plots for Variable Language Proficiency

The survey questioned the usage of Standard Operating Procedures (SOP) in five categories: Never/Don't have SOPs, seldom, sometimes, usually, always. Table 29 illustrates the distribution of sample by SOP usage.

Table 29. Distribution of Sample by SOP Usage

	Use of SOP	Representation	Percentage
1	Never/ Don't have SOPs	25	9.26%
2	Seldom	67	24.81%
3	Sometimes	79	29.26%
4	Usually	41	15.19%
5	Always	4	1.48%
	Missing	54	20.00%
	Total	270	100.00%

The sample contained teams from four directorates. The Capability Development Directorate had the highest representation in the sample, with 29 teams. Table 30 illustrates descriptive statistics for the variable directorate.

Table 30. Distribution of Teams by Directorate

	Directorate	Total # of Teams in Directorate	# of Teams in Sample	% in Directorate	% in Sample
1	Resources & Management (RM)	19	6	66.67%	12.77%
2	Strategic Plans and Policy (SPP)	4	3	75.00%	6.38%
3	Capability Development (CAPDEV)	40	29	72.50%	61.70%
4	Joint Force Trainer (JFT)	9	9	100.00%	19.15%
	Total	72	47	65.27%	100.00%

A 7-point Likert scale on eight criteria captured the team performance ratings from two sources: Team Section Head (SH-team leader) and Team Branch Head (BH-first supervisor). 39 teams out of the 47 had performance ratings from both sources. Four teams lacked SH ratings, and another four teams lacked BH ratings. In order to test whether it was statistically appropriate to include these 8 teams with performance ratings a single rater in the, the t-test was employed to see if the means of ratings on all eight performance criteria from SHs were significantly different from the means of ratings from BHs. The results of the t-test, as seen in Tables 30 and 31, suggest that the variances of ratings on all eight performance criteria were the same and that there were no statistically significant differences between the means of SH and BH ratings on each criterion.

Based on the results displayed in Tables 30 and 31, the eight teams with missing ratings from one of the sources were included in the model. After inclusion of team performance ratings from single raters, the arithmetic means were calculated for each team to find Team Performance Indices (TPI).

Table 31. Descriptive Statistics of Performance Indicators for Branch and Section Head

Performance Criteria	Source	N	Mean	Std. Deviation	Std. Error Mean
Criteria1	BH	43	5.3488	1.06645	.16263
	SH	43	5.1860	1.07473	.16389
Criteria2	BH	43	4.9302	1.43751	.21922
	SH	43	5.0233	1.37128	.20912
Criteria3	BH	43	4.9302	1.12113	.17097
	SH	43	5.0233	1.16473	.17762
Criteria4	BH	43	5.1163	1.00497	.15326
	SH	42	4.8571	1.15972	.17895
Criteria5	BH	43	4.9767	1.05759	.16128
	SH	43	5.2326	1.17184	.17870
Criteria6	BH	43	4.9302	1.29827	.19798
	SH	43	4.7209	1.22135	.18625
Criteria7	BH	43	5.3023	1.33693	.20388
	SH	43	5.0930	1.39410	.21260
Criteria8	BH	43	5.4186	1.25798	.19184
	SH	43	5.2093	1.24515	.18988

Tables 32 and 33 and Figure 13 exhibit descriptive statistics for team performance indices (TPI). The minimum performance index was 3.06, and the maximum was 6.56 on a seven-point scale. The mean index was 5.08 as the median rating was 5.06. One case (case number 40) was identified as an outlier with a value of 3.06.

Table 32. t-Test results, Group Statistics

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Criteria1	Equal variances assumed	0.09	0.77	0.71	84	0.48	0.16	0.23
	Equal variances not assumed			0.71	83.99	0.48	0.16	0.23
Criteria2	Equal variances assumed	1.6	0.21	-0.31	84	0.76	-0.09	0.3
	Equal variances not assumed			-0.31	83.81	0.76	-0.09	0.3
Criteria3	Equal variances assumed	0.44	0.51	-0.38	84	0.71	-0.09	0.25
	Equal variances not assumed			-0.38	83.88	0.71	-0.09	0.25
Criteria4	Equal variances assumed	2.91	0.09	1.1	83	0.27	0.26	0.24
	Equal variances not assumed			1.1	80.78	0.27	0.26	0.24
Criteria5	Equal variances assumed	1.3	0.26	-1.06	84	0.29	-0.26	0.24
	Equal variances not assumed			-1.06	83.13	0.29	-0.26	0.24
Criteria6	Equal variances assumed	0.2	0.66	0.77	84	0.44	0.21	0.27
	Equal variances not assumed			0.77	83.69	0.44	0.21	0.27
Criteria7	Equal variances assumed	0.22	0.64	0.71	84	0.48	0.21	0.29
	Equal variances not assumed			0.71	83.85	0.48	0.21	0.29
Criteria8	Equal variances assumed	0.03	0.86	0.78	84	0.44	0.21	0.27
	Equal variances not assumed			0.78	83.99	0.44	0.21	0.27

Table 33. Descriptive Statistics for Team Performance Indices (TPI)

	N	Minimum	Maximum	Mean	Std. Deviation
TPI	47	3.06	6.56	5.0887	.78255
Valid N	47				

Table 34. Percentiles for Team Performance Indices (TPI)

		Percentiles						
		5	10	25	50	75	90	95
Weighted Average(Definition 1)	TPI	3.6040	4.1160	4.6300	5.0600	5.6900	6.0380	6.4000
Tukey's Hinges	TPI			4.6300	5.0600	5.6600		

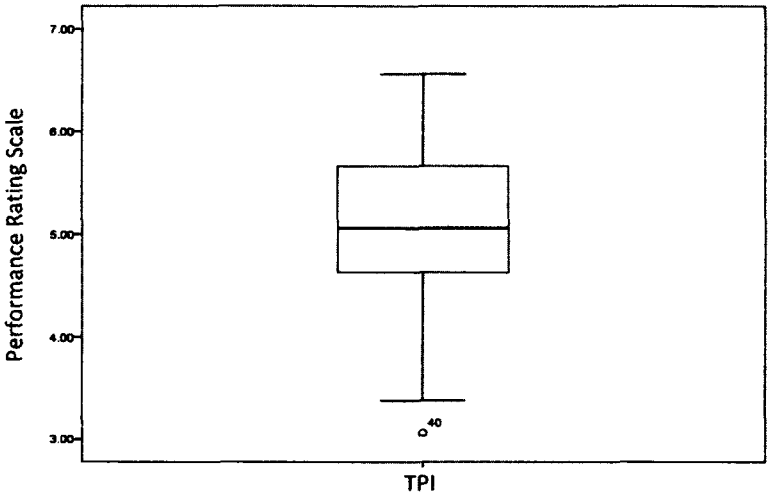

Figure 13. Box Plots for Team Performance Indices (TPI)

Team performance ratings represented the evaluations of teams by their branch heads (BH) and section heads (SH) for the last 6 months. Thus, the time that these evaluators had spent in their current supervisory position is of importance. The minimum time-in-position in the sample was found to be 6 months, satisfying the tenure criteria for raters. Tables 34 and 35 and Figure 14 illustrate descriptive statistics and percentiles for the time-in-position.

Table 35. Descriptive Statistics for Time-in-Position (in months)

	N	Minimum	Maximum	Mean	Std. Deviation
TimeInPos	90	6.00	183.00	29.0889	25.23135
Valid N (listwise)	90				

Table 36. Percentiles for Time-in-Position (in months)

Rater			Percentiles						
			5	10	25	50	75	90	95
Weighted Average(Definition 1)	TimeInPos	BH	8.20	9.00	17.00	23.00	32.00	60.00	67.00
		SH	6.40	7.00	18.00	24.00	33.00	52.40	108.00
Tukey's Hinges	TimeInPos	BH			17.50	23.00	31.00		
		SH			18.00	24.00	32.50		

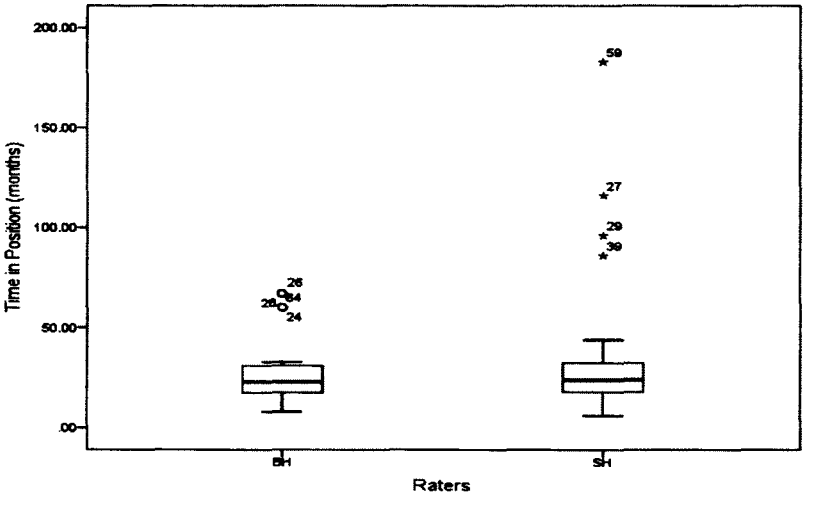

Figure 14. Box Plot for Time-in-Position

4.2. Team Diversity Indices (TDI) and Descriptive Statistics

The Team Diversity Index (TDI) is the degree of within-team diversity on a particular variable. The TDI ranges from a minimum value of 0 to a maximum

value of 1. The values of TDI closer to 0 indicate low within-team diversity; values closer to 1 indicate high within-team diversity, where 0 signifies a fully homogenous team (no diversity) and 1 signifies a fully heterogeneous team (full diversity).

TDI for the functional diversity variables. Appendix C offers the TDI of 47 teams for the functional diversity variables: Education Level, English Language Proficiency, Multinational Experience, Military Branch/Civilian, Rank/Pay Grade. As indicated in the sample characteristics section, the uneven distribution of Rank/Pay Grade suggested investigating military-civilian distribution rather than rank distribution. That is, because almost two thirds of the overall sample of individuals was from the same rank, it didn't vary enough across teams to add value on within-team diversity in terms of rank. For this reason, an additional TDI was computed to capture the team diversity level based on the number of military members and civilian members in the team. Table 37 presents the descriptive statistics for the TDI of functional diversity variables.

Table 37. Descriptive Statistics for TDI of Functional Diversity Variables

		TDI_ EDLEVEL (Note 1)	TDI_ LANGUAGE (Note 2)	TDI_ MNE (Note 2)	TDI_ MILBRANCH (Note 1)	TDI_ RANK (Note 1)	TDI_ MILCIV (Note 1)
N	Valid	47	47	47	47	47	47
	Missing	0	0	0	0	0	0
Mean		.5728	.5937	.2098	.6177	.5513	.1720
Std. Error of Mean		.04291	.04706	.02047	.04666	.04686	.03475
Median		.6667	.7306	.1569	.7121	.6071	0.0000
Std. Deviation		.29415	.32265	.14037	.31990	.32128	.23822
Variance		.087	.104	.020	.102	.103	.057
Skewness		-.769	-.530	**1.915**	**-1.054**	-.573	**1.010**
Std. Error of Skewness		.347	.347	.347	.347	.347	.347
Kurtosis		-.027	-1.341	**3.980**	-.079	-.604	-.508
Std. Error of Kurtosis		.681	.681	.681	.681	.681	.681
Range		1.00	.95	.65	1.00	1.00	.67
Minimum		0.00	0.00	.04	0.00	0.00	0.00
Maximum		1.00	.95	.69	1.00	1.00	.67

Note 1. Refined Blau index was used in computation.
Note 2. Standard deviation was used in computation.

The minimum and maximum values indicated that there were fully homogenous and fully heterogeneous teams in terms of education levels, military branches, and ranks of team members. The average diversity within teams in terms of education level, language proficiency, military branch and rank was around 0.6. However, in terms of multinational experience and military-civilian composition, the average diversity was around 0.2, which implied low within-team diversity. The degree of diversity varied from 0.04 to 0.69 for multinational experience and from 0 to 0.67 for the military-civilian composition.

The means and medians of TDI_EDLEVEL, TDI_LANGUAGE and TDI_RANK implied central tendency. Small standard errors of means across the variables indicated stability within variables. The skewness values for TDI_MNE,

TDI_MILBRANCH and TDI_MILCIV suggested a deviation from symmetry around their means. The kurtosis value for TDI_MNE (3.980) suggested a shape flatter than normal. The skewness and kurtosis values for the variables of TDI_MNE, TDI_MILBRANCH and TDI_MILCIV required assessing their distribution visually to detect the cause of deviation from the goodness of fit.

Figure 15 displays the box plot and the normal Q-Q plot for TDI_MNE. Both plots pointed out influential outliers (case nos: 16, 23, 24, 25, 38) on the higher end. Outliers may cause biased results in regression models if not properly dealt with. One option to reduce the impact of these values is to remove the case. IBM SPSS allows case diagnostics that detect and exclude the cases whose standardized residuals are greater than two standard deviations. This option was utilized for the regression models used within the study.

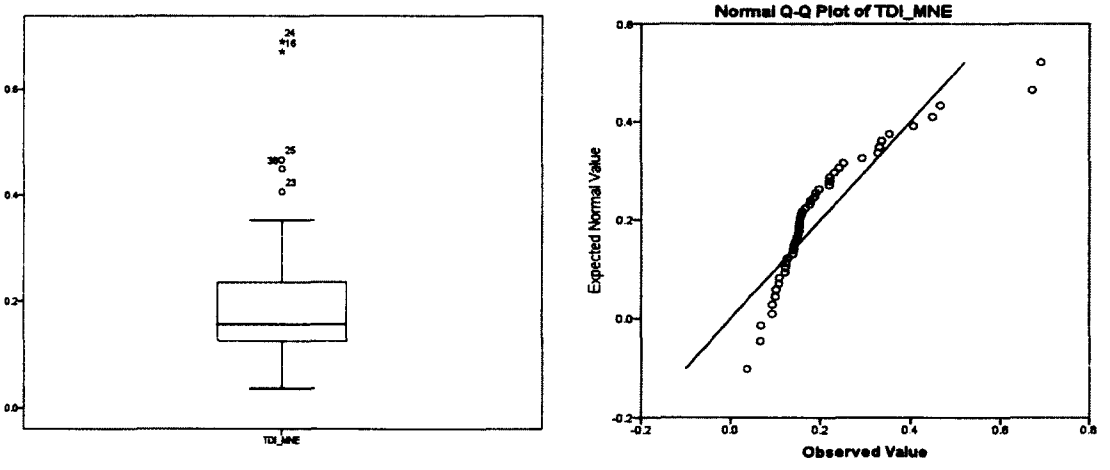

Figure 15. Box Plot and Normal Q-Q Plot for TDI_MNE.

Figure 16 displays the box plot and normal Q-Q plot for TDI_MILBRANCH. Both plots pointed out influential outliers (case no: 19, 21, 30, 31) on the bottom end.

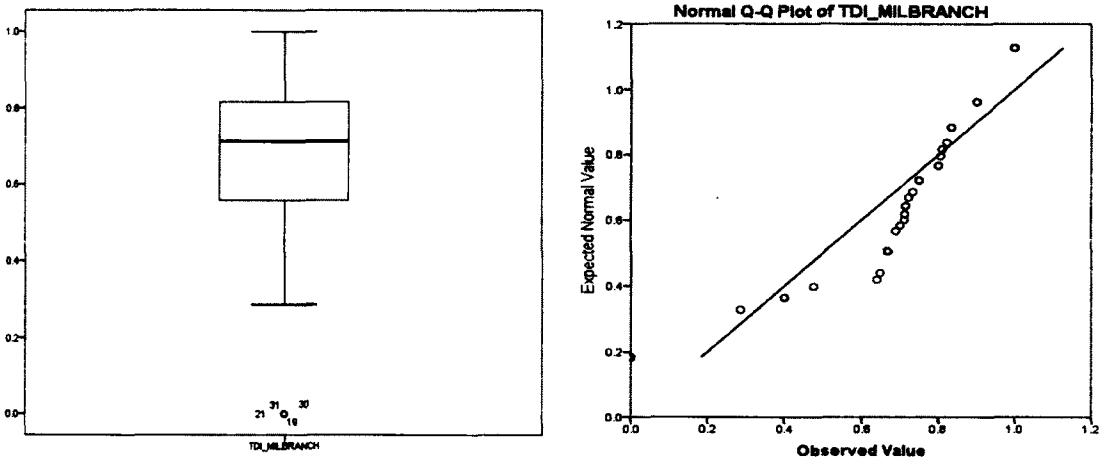

Figure 16. Box Plot and Normal Q-Q Plot for TDI_MILBRANCH.

Figure 17 displays the box plot and normal Q-Q plot for TDI_MILCIV. Both plots pointed out a heavy tail on the bottom end.

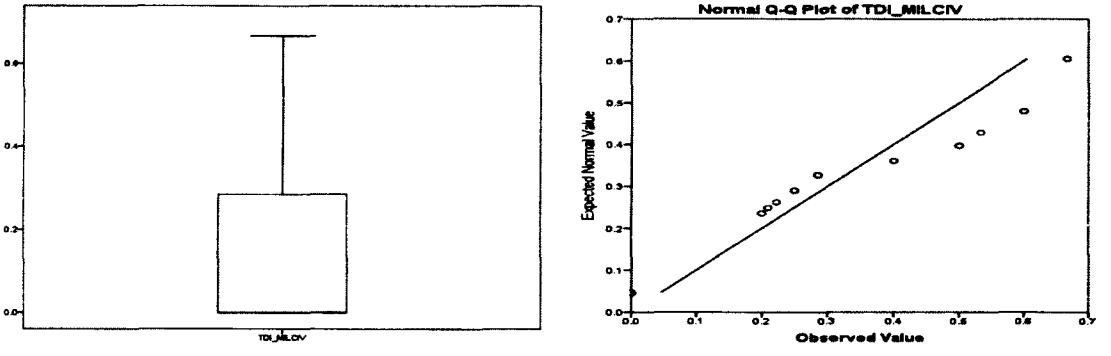

Figure 17. Box Plot and Normal Q-Q Plot for TDI_MILCIV.

A closer look at the frequency table (Table 38) to see the heavy tail revealed that 59.6% of the teams (28 out of 47) were non-diverse or fully homogenous in terms of their military-civilian composition, which meant that these teams were either entirely composed of military personnel or civilian personnel. Four teams out of 47 were comprised fully of civilian personnel (team # 14, 15, 21, and 30) (see Figure 9).

Table 38. Frequency Table for TDI_MILCIV.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	28	59.6	59.6	59.6
	.20	1	2.1	2.1	61.7
	.21	1	2.1	2.1	63.8
	.22	1	2.1	2.1	66.0
	.25	3	6.4	6.4	72.3
	.29	2	4.3	4.3	76.6
	.40	2	4.3	4.3	80.9
	.50	2	4.3	4.3	85.1
	.53	1	2.1	2.1	87.2
	.60	3	6.4	6.4	93.6
	.67	3	6.4	6.4	100.0
	Total	47	100.0	100.0	

The box plots and normal Q-Q plot for all functional diversity TDI can be found in Appendix D.

TDI for the demographic diversity variables. Appendix E encloses the TDI of 47 teams for the demographic diversity variables: Nationality, Age, and Gender.

Table 39 presents the descriptive statistics for the TDI of demographic diversity variables.

Table 39. Descriptive Statistics for TDI of Demographic Diversity Variables

		TDI_NATION (Note 1)	TDI_GENDER (Note 1)	TDI_AGE (Note 2)
N	Valid	47	47	47
	Missing	0	0	0
Mean		.9104	.0749	.2840
Std. Error of Mean		.03035	.02877	.02016
Median		1.0000	0.0000	.2766
Std. Deviation		.20804	.19726	.13818
Variance		.043	.039	.019
Skewness		**-3.808**	**3.115**	.470
Std. Error of Skewness		.347	.347	.347
Kurtosis		**15.039**	**10.624**	1.150
Std. Error of Kurtosis		.681	.681	.681
Range		1.00	1.00	.70
Minimum		0.00	0.00	0.00
Maximum		1.00	1.00	.70

Note 1. Refined Blau index was used in computation.
Note 2. Standard deviation was used in computation.

The minimum and maximum values indicated that there were fully homogenous and fully heterogeneous teams in terms of the nationality and gender of team members. The average diversity within teams in terms of nationality, gender, and age were around 0.9, 0.07, and 0.3 respectively, which indicated that the majority of teams was highly diverse in terms of nationality. However, in terms of gender and age, the average diversity implied low within-team diversity. The degree of diversity varied from 0.00 to 0.70 for age.

Small standard errors of means across the variables indicated stability within variables. The skewness values for TDI_NATION and TDI_GENDER

suggested a deviation from symmetry around their means. The kurtosis value for TDI_NATION and TDI_GENDER suggested flatter shapes than normal. The skewness and kurtosis values for the variables of TDI_NATION and TDI_GENDER required assessing their distribution visually to detect the cause of deviation from the goodness of fit.

Figure 18 displays the box plot and normal Q-Q plot for TDI_NATION. Both plots pointed out influential outliers (case no: 9, 14, 15, 21) on the bottom end and heavy tail on the top end.

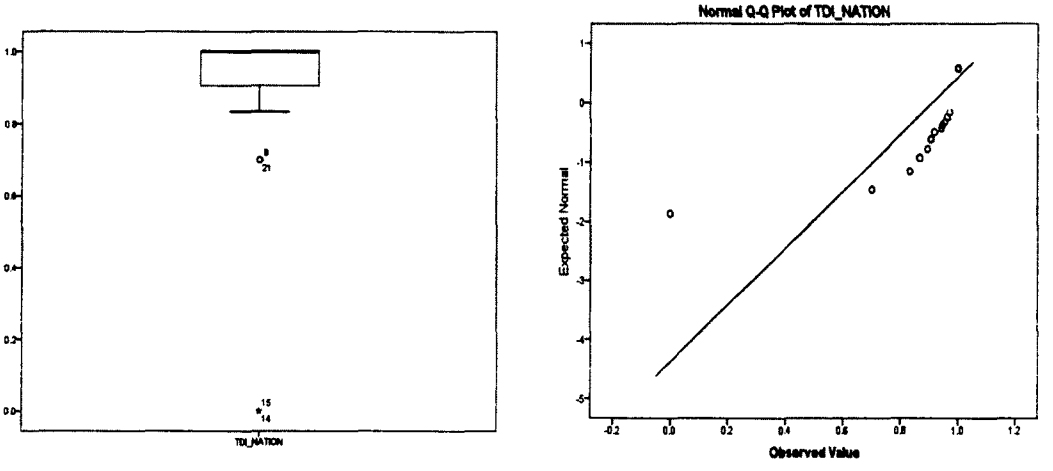

Figure 18. Box Plot and Normal Q-Q Plot for TDI_NATION.

A closer look at the frequency table (Table 40) to see the heavy tail revealed that 55.3% of the teams (26 out of 47) had maximum diversity in terms of nationality.

Table 40. Frequency Table for TDI_NATION.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.3	4.3	4.3
	.70	2	4.3	4.3	8.5
	.83	3	6.4	6.4	14.9
	.87	2	4.3	4.3	19.1
	.89	2	4.3	4.3	23.4
	.90	3	6.4	6.4	29.8
	.92	1	2.1	2.1	31.9
	.94	1	2.1	2.1	34.0
	.94	1	2.1	2.1	36.2
	.95	1	2.1	2.1	38.3
	.96	2	4.3	4.3	42.6
	.97	1	2.1	2.1	44.7
	1.00	26	55.3	55.3	100.0
	Total	47	100.0	100.0	

Figure 19 displays the box plot and normal Q-Q plot for TDI_GENDER. Both plots pointed out outliers (case nos: 14, 18, 25, 26, 32, 37, 47) on the top end and heavy tail on the bottom end.

A closer look at the frequency table (Table 41) to see the heavy tail revealed that 83.0% of the teams (39 out of 47) were non-diverse or fully homogenous in terms of gender, which meant only eight teams consisted of male and female members.

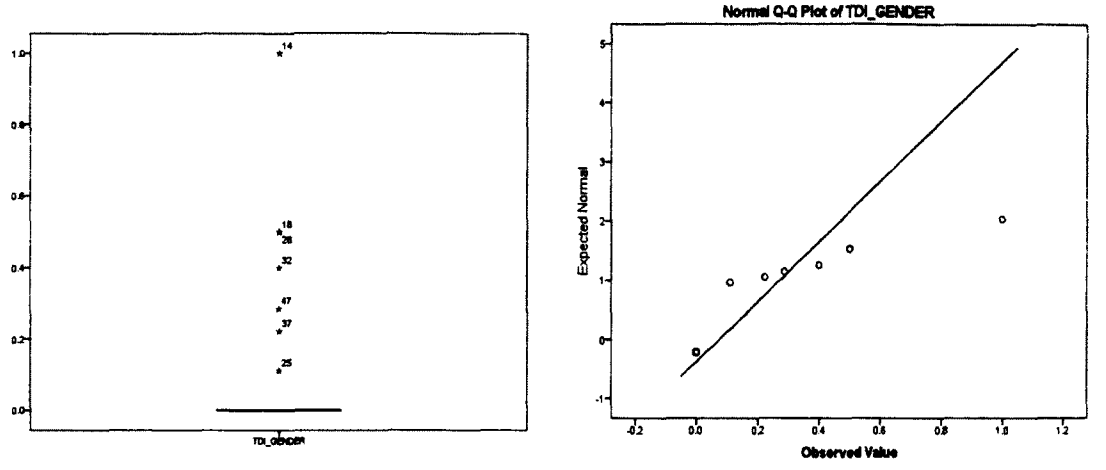

Figure 19. Box Plot and Normal Q-Q Plot for TDI_GENDER.

Table 41. Frequency Table for TDI_GENDER.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	39	83.0	83.0	83.0
	.11	1	2.1	2.1	85.1
	.22	1	2.1	2.1	87.2
	.29	1	2.1	2.1	89.4
	.40	1	2.1	2.1	91.5
	.50	3	6.4	6.4	97.9
	1.00	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

The box plots and normal Q-Q plot for all demographic diversity TDI can be found in Appendix F.

TDI for the cultural diversity variables. Appendix G encloses the TDI of 47 teams for the cultural diversity dimensions: Power Distance (PD),

Individualism (IND), Masculinity (MAS), Uncertainty Avoidance (UAI), and Long-term Orientation (LTO).

Table 42 presents the descriptive statistics for the TDI of cultural diversity dimensions. The maximum values indicated that there was no fully diverse team in terms of cultural dimensions. The average diversity within teams in terms of cultural dimensions was between 1.2 and 2.4, which indicated a low diversity as a whole.

Table 42. Descriptive Statistics for TDI of Cultural Diversity Dimensions

		TDI_PD	TDI_IND	TDI_MAS	TDI_UAI	TDI_LTO
N	Valid	47	47	47	47	47
	Missing	0	0	0	0	0
Mean		.1652	.1381	.1972	.2404	.1216
Std. Error of Mean		.00877	.00721	.01012	.01286	.00894
Median		.1648	.1406	.2000	.2532	.1220
Std. Deviation		.06016	.04941	.06940	.08820	.06128
Variance		.004	.002	.005	.008	.004
Skewness		.136	.168	-.548	-.883	.375
Std. Error of Skewness		.347	.347	.347	.347	.347
Kurtosis		.201	.044	-.156	.722	-.363
Std. Error of Kurtosis		.681	.681	.681	.681	.681
Range		.28	.23	.27	.39	.25
Minimum		.03	.03	.03	0.00	.01
Maximum		.31	.26	.30	.39	.26

Note. Standard deviation is used in computation.

Small standard errors of means across the variables indicated stability within variables. The skewness and kurtosis values for all TDI of cultural dimensions fell within acceptable limits for the goodness of fit.

The box plots and normal Q-Q plot for all cultural diversity TDI can be found in Appendix H.

Owing to the fact that cultural diversity dimensions were all derived from Hofstede's Values Survey Module 1994 (VSM-94), another important measure to check was the reliability of the survey components that generated respective cultural diversity dimensions. Table 43 presents the Cronbach's Alpha values for each cultural diversity dimensions.

Table 43. Descriptive Statistics and Cronbach's Alphas for the Cultural Diversity Dimensions

	Question No.	Mean	Std. Deviation	N	Cronbach's Alpha if Item Deleted	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
PD	QUESTION-3	1.7824	.79174	216	.006	.254	.334
	QUESTION-6	2.0417	.80875	216	.016		
	QUESTION-14	2.9120	1.06384	216	.405		
	QUESTION-17	2.4537	1.19988	216	.359		
IND	QUESTION-1	1.6944	.78306	216	.576	.689	.691
	QUESTION-2	1.9907	.90985	216	.613		
	QUESTION-4	1.9583	.84255	216	.580		
	QUESTION-8	2.0602	.84142	216	.713		
MAS	QUESTION-5	1.7778	.72604	216	.072	.164	.174
	QUESTION-7	2.1204	.95691	216	.128		
	QUESTION-15	2.3611	.88353	216	.125		
	QUESTION-20	2.9491	.93122	216	.190		
UAI	QUESTION-13	2.5046	.74707	216	-.058[a]	.008	.032
	QUESTION-16	2.7176	1.20420	216	.092		
	QUESTION-18	2.7454	1.06311	216	.050		
	QUESTION-19	3.2731	1.07159	216	-.051[a]		
LTO	QUESTION-9	1.8981	.88858	216	.670	.741	.751
	QUESTION-10	2.1898	.82185	216	.643		
	QUESTION-11	2.0926	.76599	216	.682		
	QUESTION-12	2.6574	1.02219	216	.738		

Nunnally (1978) considers an alpha value of 0.8 and above acceptable for ability tests. Kline (1999) argues that a cut-off point of 0.7 is more suitable, and further suggest that, for psychological constructs, values even below 0.7 can be realistically expected because of the diversity of construct being measured. George and Mallery (2003) provide the following rules of thumb: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable" (p. 231).

Based on Kline's (1999), and George and Malery's (2003) notes, and provided that the dimensions in question were part of a cultural construct, only IND and LTO could pass the reliability test. The low alpha values raised doubts about the reliability of VSM-94. Although Hofstede (2001) announced that the questionnaire was designed to capture cultural differences across two or more nations, and it was not a test for comparing individuals, it was assumed for this research that the module would be able reflect the cultural differences of individuals, since the nations were composed of individuals from whom data had been collected. Hofstede (2001) stated that the reliability of the VSM-94 was implicitly tested through its proven validity. Furthermore, he declared if the validity was proven, the reliability must be assumed (Hofstede, 2002). He suggested that the studies on VSM-94 should be seen as ongoing research efforts, since there have been both positive and negative signals about its validity (Hofstede, 2001).

As seen in Table 44, the overall reliability of the VSM-94 was .743, which indicated that the questionnaire had an internal consistency. This eventually required a factor analysis to explore the cultural construct that it was measuring.

Table 44. Cronbach's Alpha for Overall VSM-94 Questionnaire

	Question No.	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Overall VSM-94	1-20	.743	.771	20

Factor analysis for VSM-94. The principal axis factoring (PAF) method and the varimax rotation method were employed. A .3 cut-off point of loading was applied to have a clearer picture of the factors. Four questions (16, 17, 18, 20) were excluded from the analysis, since they didn't have loadings over .3 on any of the factors. Factor analysis generated four factors, as seen in Table 45.

Kaiser, Meyer, Olkin (KMO) and Bartlett's tests were used to test the adequacy of sampling for factor analysis and the level of variance between variables (Table 46). The KMO test suggested that the data was adequate for factor analysis (KMO=.836>.5). Bartlett's test indicated that the correlation matrix of factors was significantly different than an identity matrix (*Chi-square*=944.077, p=.000<001).

Table 45. Rotated Factor Matrix

Questions	Factor 1	2	3	4
1. have sufficient time for your personal or family life	.637			
4. have security of employment	.632			
9. Personal steadiness and stability	.590		.330	
2. have good physical working conditions (good ventilation and lighting, adequate work space, etc.)	.577			
10. Thrift (wisely use of resources, avoidance of unnecessary spending)	.551		.451	
11. Persistence (perseverance)	.542			
3. have a good working relationship with your direct superior	.490	.443		
6. be consulted by your direct superior in his/her decisions		.639		
5. work with people who cooperate well with one another	.522	.602		
7. have an opportunity for advancement to higher level jobs		.533	.360	
8. have an element of variety and adventure in the job		.456		
12. Respect for tradition			.528	
19. A organization's rules should not be broken -not even when the employee thinks it is in the organization's best interest			.502	
13. How often do you feel nervous or tense at work?				.518
15. Most people can be trusted				.463
14. How frequently, in your experience, are subordinates afraid to express disagreement with their superiors?				.360

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.

Table 46. KMO and Bartlett's Test for Factor Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.836
Bartlett's Test of Sphericity	Approx. Chi-Square	944.077
	df	120
	Sig.	.000

A reliability test was performed for the four factors generated by factor analysis. The test yielded the alpha values in Table 47.

Table 47. Cronbach's Alphas for the Generated Factors

	Question No.	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
FACTOR 1	1, 2, 3, 4, 9, 10,11	.830	.830	7
FACTOR 2	5, 6, 7, 8	.699	.706	4
FACTOR 3	12, 19	.423	.423	2
FACTOR 4	13, 14, 15	.399	.413	3

The reliability test disclosed that Factor 1 and Factor 2 attained alpha values over an acceptable level (.830 and .699 respectively). A closer look at the questions constructing the factors to find out the cultural dimensions they were measuring revealed that Factor 1 was more related to the quality of work life, whereas Factor 2 was more related to the assertiveness, or being success-oriented, in work life (Table 48).

Table 48. Labeling Factor 1 and Factor 2

Factors	Questions	Interpretation
FACTOR 1	1. have sufficient time for your personal or family life	Quality of work life (QoWL)
	2. have good physical working conditions (good ventilation and lighting, adequate work space, etc.)	
	3. have a good working relationship with your direct superior	
	4. have security of employment	
	9. Personal steadiness and stability	
	10. Thrift (wisely use of resources, avoidance of unnecessary spending)	
	11. Persistence (perseverance)	
FACTOR 2	6. be consulted by your direct superior in his/her decisions	Assertiveness in Work Life (AiWL)
	5. work with people who cooperate well with one another	
	7. have an opportunity for advancement to higher level jobs	
	8. have an element of variety and adventure in the job	

The average of the individual responses to the constructing questions constituted the individual value in the quality (QoWL) and assertiveness in work life (AiWL), since the questions were measured by a 5-point Likert scale. Then within-team diversity indices (TDI) were computed for 47 teams.

Appendix I encloses the TDI of 47 teams for the QoWL and AiWL. Table 49 presents the descriptive statistics for the TDI_QoWL and TDI_AiWL.

Table 49. Descriptive Statistics for TDI_QoWL and TDI_AiWL.

		TDI_QoWL	TDI_AiWL
N	Valid	47	47
	Missing	0	0
Mean		.2349	.2481
Std. Error of Mean		.01994	.02146
Median		.1996	.2092
Std. Deviation		.13668	.14710
Variance		.019	.022
Skewness		1.631	1.986
Std. Error of Skewness		.347	.347
Kurtosis		4.362	5.797
Std. Error of Kurtosis		.681	.681
Range		.72	.82
Minimum		.06	0.00
Maximum		.77	.82

Note. Standard deviation is used in computation.

The minimum value of TDI_QoWL indicated that there were no non-diverse (fully homogenous) teams in terms of within-team diversity of the individual values of team members regarding the quality of work life. The minimum value of TDI_AiWL indicated that at least one team was fully homogenous in terms of within-team diversity of the individual values of team members regarding the assertiveness in work life. The average diversity within

teams for QoWL and AiWL was around 0.24, which indicated low within-team diversity with regards to the variables. The maximum values were stretched out to the right from the mean, indicating a right-skewed distribution.

Small standard errors of means across the variables indicated stability within variables. The skewness values suggested a deviation from symmetry around their means. The kurtosis values suggested flatter shapes than normal. The skewness and kurtosis values required assessing their distribution visually to detect the cause of deviation from goodness of fit.

Figure 20 displays the box plot and the normal Q-Q plot for TDI_QoWL. Both plots pointed out influential outliers (case nos: 3, 18, 30) on the top end.

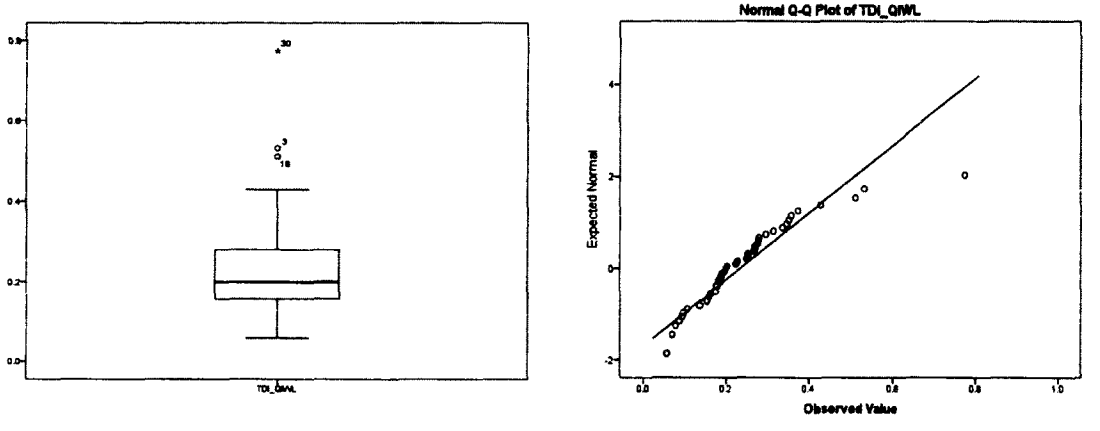

Figure 20. Box Plot and Normal Q-Q Plot for TDI_QoWL.

Figure 21 displays the box plot and the normal Q-Q plot for TDI_AiWL. Both plots pointed out outliers (case nos: 3, 30) on the top end.

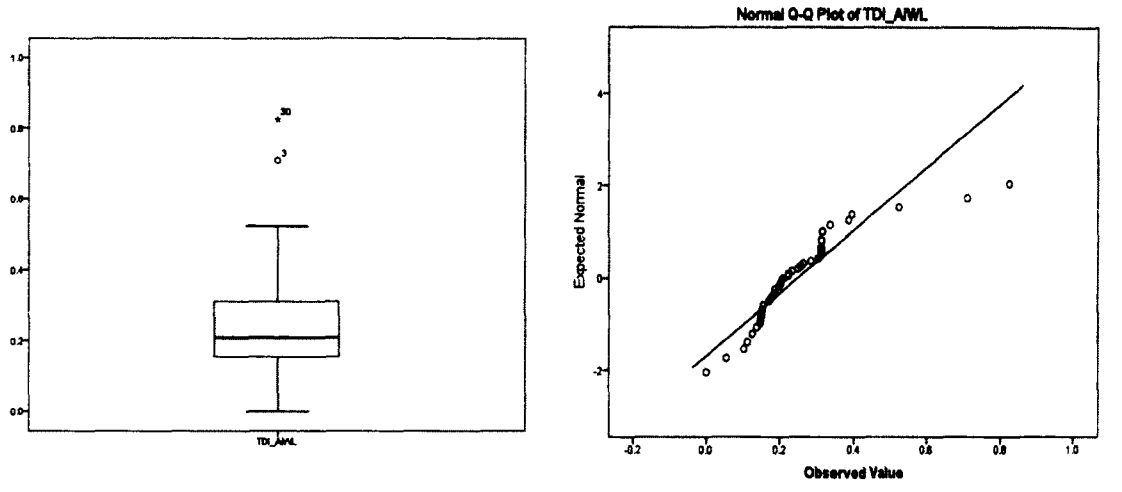

Figure 21. Box Plot and Normal Q-Q Plot for TDI_AIWL.

Descriptive statistics for the aggregated categorical within-team diversity indices. Appendix J encloses the average TDI of 47 teams for the aggregated categorical within-team diversity indices (ACTDI): Functional, Demographic, and Cultural.

Table 50 presents the descriptive statistics for the aggregated categorical TDI (ACTDI). The minimum and maximum values indicated that there were no fully homogenous or fully heterogeneous teams in terms of functional, demographic, and cultural aspects. Small standard errors of means across the variables indicated stability within variables. The skewness value for TDI_CULTURAL suggested a deviation from symmetry around their means. The kurtosis value for TDI_DEMOGRAPHIC and TDI_CULTURAL suggested flatter shapes than normal. The skewness and kurtosis values for the variables of TDI_DEMOGRAPHIC and TDI_CULTURAL required assessing their distribution visually to detect the cause of deviation from goodness of fit.

Table 50. Descriptive Statistics for ACTDI

		TDI_FUNCTIONAL	TDI_DEMOGRAPHIC	TDI_CULTURAL
N	Valid	47	47	47
	Missing	0	0	0
Mean		.5091	.4234	.2419
Std. Error of Mean		.02097	.01320	.01852
Median		.5200	.4200	.2100
Std. Deviation		.14375	.09049	.12700
Variance		.021	.008	.016
Skewness		-.379	-.641	2.445
Std. Error of Skewness		.347	.347	.347
Kurtosis		-.665	6.661	8.334
Std. Error of Kurtosis		.681	.681	.681
Range		.55	.63	.70
Minimum		.23	.05	.10
Maximum		.78	.68	.80

Figure 22 displays the box plot and the normal Q-Q plot for TDI_ DEMOGRAPHIC. Both plots pointed out influential outliers (case nos: 15, 18, 26, 30, 32, 47) on the bottom and the top ends.

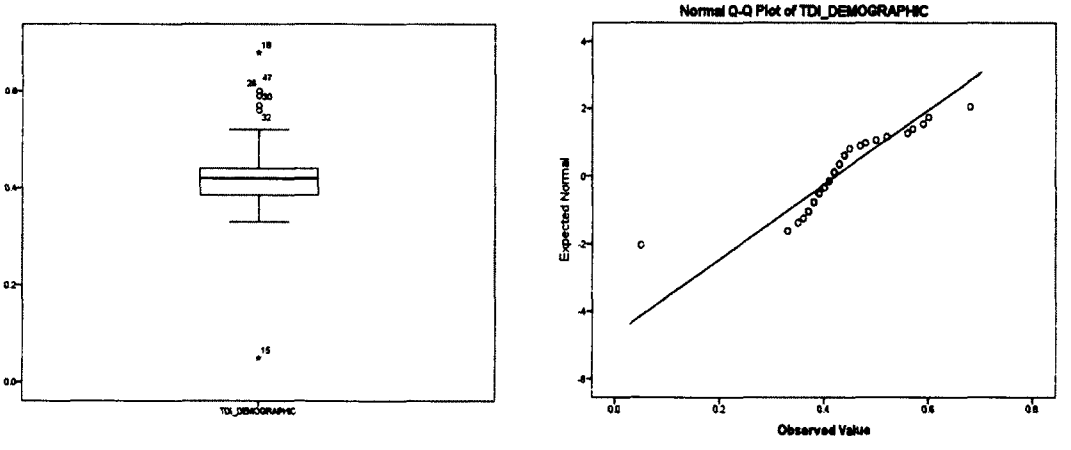

Figure 22. Box Plot and Normal Q-Q Plot for TDI_ DEMOGRAPHIC.

Figure 23 displays the box plot and the normal Q-Q plot for TDI_ CULTURAL. Both plots pointed out influential outliers (case nos: 3, 30) on the top end.

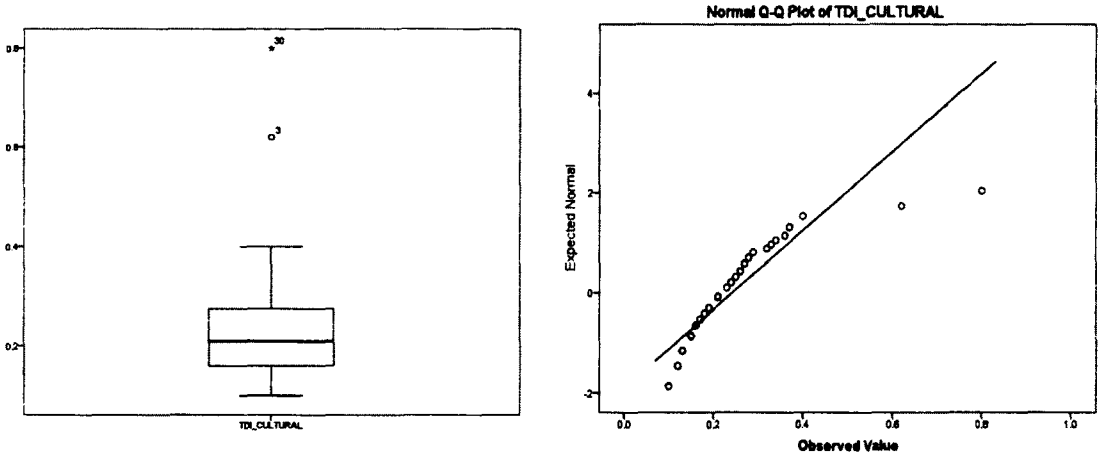

Figure 23. Box Plot and Normal Q-Q Plot for TDI_ CULTURAL.

Descriptive statistics for the control variables. Descriptive statistics for the control variables of team size, use of SOP and directorate are displayed in sample characteristics section.

4.3. Hypotheses Testing

Testing null hypothesis 1.

- $H1_N$: There is no significant relationship between within-team functional diversity and team performance.

Multiple regression analysis was performed to compute the relationship between within-team functional diversity indices (TDI) and the team performance

index (TPI). Two methods were used in this multiple regression analysis: Forced Entry, and Stepwise Backward. Forced entry is a method in which all predictors are put into the model simultaneously. Simply put, forced entry is the regular multiple regression analysis. In stepwise backward regressions, all of the predictors are entered into the model initially, as in forced entry method. Then, predictors are removed from the model, based on the criteria of having probability of F-test larger than 0.1. The stepwise backward method was chosen for the reason that it would run a lower risk of making a Type II error, missing a predictor that does, in fact, predict the outcome (Field, 2009).

The results of the analysis for forced entry method are exhibited in Table 51 through Table 53.

The correlations table (Table 51) demonstrated a correlation between TDI_MNE (within-team diversity in multinational experience) and TDI_RANK (within-team diversity in rank), which was significant at a .05 level (r=.286, p=.026). Despite the significance of this correlation, the coefficient was small and, thus, the predictors were assumed to vary independently. Of all of the predictors, the TDI_MNE correlated best with the TPI (team performance indices), which indicated that this variable would best predict TPI.

Table 51. Correlations among Functional Diversity Predictors

		TPI	TDI_ EDLEVEL	TDI_ LANGUAGE	TDI_ MNE	TDI_ MILBRANCH	TDI_ RANK
Pearson Correlation	TPI	1.000	.228	.073	.446	-.133	.236
	TDI_EDLEVEL	.228	1.000	.011	.161	.078	.200
	TDI_LANGUAGE	.073	.011	1.000	.081	.177	-.093
	TDI_MNE	.446	.161	.081	1.000	.209	.286
	TDI_MILBRANCH	-.133	.078	.177	.209	1.000	-.189
	TDI_RANK	.236	.200	-.093	.286	-.189	1.000
Sig. (1-tailed)	TPI		.061	.312	.001	.187	.055
	TDI_EDLEVEL	.061		.472	.140	.302	.089
	TDI_LANGUAGE	.312	.472		.293	.117	.267
	TDI_MNE	.001	.140	.293		.079	.026
	TDI_MILBRANCH	.187	.302	.117	.079		.102
	TDI_RANK	.055	.089	.267	.026	.102	
N	TPI	47	47	47	47	47	47
	TDI_EDLEVEL	47	47	47	47	47	47
	TDI_LANGUAGE	47	47	47	47	47	47
	TDI_MNE	47	47	47	47	47	47
	TDI_MILBRANCH	47	47	47	47	47	47
	TDI_RANK	47	47	47	47	47	47

Table 52. Model Summary for Functional Diversity

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.536[a]	.288	.201	.69986	.288	3.309	5	41	.013	2.052

a. Predictors: (Constant), TDI_RANK, TDI_LANGUAGE, TDI_EDLEVEL, TDI_MILBRANCH, TDI_MNE

b. Dependent Variable: TPI

The *Multiple* R^2 indicated that the model could explain 28.8% of the variation in TPI, and that change in R^2 was significantly different from zero (F=3.309, p=.013<0.05). The *Adjusted* R^2 suggested that if the model were

derived from the population rather than from a sample, it would account for 8.7% less variance in TPI. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 53 showed that TDI_MNE had a positive effect (b=2.534, p=.003) at 99% CI, and TDI_MILBRANCH had a negative effect (b=-.608, p=.087) at 90% CI on TPI.

Table 53. Coefficients of Functional Diversity Predictors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.514	.383		11.770	.000					
	TDI_EDLEVEL	.444	.362	.167	1.227	.227	.228	.188	.162	.940	1.064
	TDI_LANGUAGE	.198	.326	.082	.607	.547	.073	.094	.080	.960	1.042
	TDI_MNE	2.534	.804	.454	3.154	.003	.446	.442	.416	.837	1.195
	TDI_MILBRANCH	-.608	.347	-.249	-1.754	.087	-.133	-.264	-.231	.865	1.156
	TDI_RANK	.082	.355	.034	.232	.818	.236	.036	.031	.820	1.219

a. Dependent Variable: TPI

The results indicate that a one-unit increase in TDI_MNE would raise the TPI by 2.534 units, and a one-unit increase in TDI_MILBRANCH would decrease the TPI by .608 units. Since the within-team diversity indices (TDI) didn't have units, in order to better interpret the results, the standardized coefficients were used. The standardized coefficients are all measured in standard deviation units and so are comparable; hence, they provide a better interpretation for the predictors. Therefore, Table 37, which presented the descriptive statistics for the

TDI of the functional diversity variables, was rechecked for the standard deviation values of TDI_MNE and TDI_MILBRANCH. With the standard deviations in consideration, the results indicated that as TDI_MNE increased by one standard deviation (.14037), the Team Performance Index (TPI) increased by .454 * standard deviation (.78255) (Table 33). On the other hand, as TDI_MILBRANCH increased by one standard deviation (.31990), the Team Performance Index (TPI) decreased by .249 * standard deviation (.78255). In plain English, the results revealed that if the multinational experience levels of team members differed highly from one another, it would likely affect the performance of the team positively. It was the opposite, though, in terms of military branches (army, navy, air force, marine corps, civilian) that the team members belonged to. If the military branches of team members differed greatly from one another, it would have a negative impact on the performance of the team. In practice, the computations pointed out, for a 3-member team, a 4-year difference in multinational experience of one member from the others would cause one standard deviation (.14037) increase in within-team diversity, and subsequently a .355 point increase in team performance. Similarly, if one sixth of the members in a team were from a different military branch, it would reduce team performance by .195 points. For a 3-member team, the reduction in team performance would be approximately .390 points. The effects of other predictors on TPI were found to be not significant.

As suggested in the sections of sample characteristics and descriptive statistics, the diversity in military-civilian composition instead of the diversity in

rank was introduced the model. Tables 54 and 55 display the model summary and the coefficients, with TDI_MILCIV introduced.

Table 54. Model Summary with TDI_MILCIV Introduced.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.547[a]	.299	.214	.69413	.299	3.500	5	41	.010	2.048

a. Predictors: (Constant), TDI_MILCIV, TDI_LANGUAGE, TDI_EDLEVEL, TDI_MILBRANCH, TDI_MNE

Introducing TDI_MILCIV to the model slightly increased the prediction power of the model (R^2 = .299, previously R^2 = .288). With TDI_MILCIV in the model, both TDI_MNE and TDI_MILBRANCH had significant effects on TPI at 95% CI (p<0.05). The positive effect of TDI_MNE (b=2.271, p=.010) slightly decreased, while the negative effect of TDI_MILBRANCH (b=-.738, p=.044) slightly increased. The increase in TDI_MILBRANCH implied that TDI_MILCIV could explain some of the variation in TPI otherwise accounted for by TDI_MILBRANCH. The effect of TDI-MILCIV on TPI was not found to be statistically significant.

Table 55. Coefficients with TDI_MILCIV Introduced.

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Toler-ance	VIF
1	(Constant)	4.665	.362		12.893	.000					
	TDI_EDLEVEL	.353	.374	.133	.943	.351	.228	.146	.123	.865	1.156
	TDI_LANGUAGE	.196	.323	.081	.606	.548	.073	.094	.079	.966	1.035
	TDI_MNE	2.271	.844	.407	2.692	.010	.446	.388	.352	.747	1.339
	TDI_MILBRANCH	-.738	.355	-.302	-2.077	.044	-.133	-.309	-.272	.811	1.233
	TDI_MILCIV	.482	.563	.147	.856	.397	.283	.133	.112	.583	1.715

a. Dependent Variable: TPI

The results of the analysis for the stepwise backward method with all of the functional diversity TDI included are exhibited in Tables 56 and 57. Only TDI_MNE and TDI_MILBRANCH could enter the model in the stepwise backward method, which meant that both predictors contributed substantially to the model's ability to predict the TPI.

Table 56. Model Summary and ANOVA test for Stepwise Method.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA				Durbin-Watson
					F	df1	df2	Sig. F	
1	0.502	.252	.218	.69229	7.406	2	44	.002	2.001

Predictors: (Constant), TDI_MILBRANCH, TDI_MNE

Dependent Variable: TPI

Multiple R^2 indicated that TDI_MNE and TDI_MILBRANCH alone could explain 25.2% of the variation in TPI.

Table 57. Coefficients for Stepwise Backward Method.

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tole-rance	VIF
1	(Constant)	4.865	.249		19.537	.000					
	TDI_MNE	2.760	.744	.495	3.712	.001	.446	.488	.484	.956	1.046
	TDI_ MILBRANCH	-.578	.326	-.236	-1.770	.084	-.133	-.258	-.231	.956	1.046

a. Dependent Variable: TPI

The coefficient beta for TDI_MNE was found to be statistically significant at 99% CI, and for TDI_MILBRANCH at 90% CI. Null hypothesis 1 was rejected.

Testing null hypothesis 2.

- $H2_N$: There is no significant relationship between within-team demographic diversity and team performance.

Multiple regression analysis was performed to compute the relationship between within-team demographic diversity indices (TDI) and the team performance index (TPI). The forced entry and stepwise backward methods were employed again for the analysis.

The results of the analysis for the forced entry method are exhibited in Tables 58 through 60.

The correlations table demonstrated a correlation between TDI_NATION (within-team diversity in nationality) and TDI_GENDER (within-team diversity in

gender), which was significant at .005 level (r=-.458, p=.001). Despite the significance of this correlation, the coefficient was small and, thus, the predictors were assumed to vary independently. Of all of the predictors, TDI_AGE seemed to be correlated best with the TPI (team performance indices) at 0.01 level (r=.396, p=.003), which indicated that this variable would best predict TPI.

Table 58. Correlations Among Demographic Diversity Predictors

		TPI	TDI_NATION	TDI_GENDER	TDI_AGE
Pearson Correlation	TPI	1.000	-.027	.149	.396
	TDI_NATION	-.027	1.000	-.458	.178
	TDI_GENDER	.149	-.458	1.000	.043
	TDI_AGE	.396	.178	.043	1.000
Sig. (1-tailed)	TPI		.428	.159	.003
	TDI_NATION	.428		.001	.116
	TDI_GENDER	.159	.001		.386
	TDI_AGE	.003	.116	.386	
N	TPI	47	47	47	47
	TDI_NATION	47	47	47	47
	TDI_GENDER	47	47	47	47
	TDI_AGE	47	47	47	47

Table 59. Model Summary for Demographic Diversity

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.419[a]	.176	.118	.73508	.176	3.055	3	43	.038	2.016

a. Predictors: (Constant), TDI_AGE, TDI_GENDER, TDI_NATION

b. Dependent Variable: TPI

Multiple R^2 indicated that the model could explain 17.6% of the variation in TPI, and the change in R^2 was significantly different from zero (F=3.055, p=.038<0.05). *Adjusted* R^2 suggested that if the model were derived from the population, rather than from a sample, it would account for 5.8% less variance in TPI. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 60. Coefficients of Demographic Diversity Predictors

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.526	.579		7.820	.000					
	TDI_NATION	-.182	.601	-.048	-.303	.763	-.027	-.046	-.042	.751	1.331
	TDI_GENDER	.433	.624	.109	.694	.492	.149	.105	.096	.774	1.291
	TDI_AGE	2.448	.871	.400	2.811	.007	.396	.394	.389	.949	1.054

a. Dependent Variable: TPI

A regression analysis, Table 60, showed that TDI_AGE shows a positive relationship with team performance (b=2.448, p=.007) at the 99% confidence interval. The results indicated that a one-unit increase in TDI_AGE would raise the TPI by 2.448 units. In terms of he standardized coefficient, the results indicated that as TDI_AGE increased by one standard deviation (.13818) (Table 39), the Team Performance Index (TPI) increased by .400* standard deviation (.78255) (Table 33). In plain English, the results revealed that larger differences between the ages of team members is associated with increased team

performance. In practice, the computations pointed out that, for a three-member team, a six-year age difference of one member from the others would likely lead to one standard deviation (.13818) increase in within-team diversity, and subsequently a .313 point increase in team performance.

The relationship between other predictors, TDI_NATION and TDI_GENDER and TPI were not found to be statistically significant.

The results of the stepwise backward regression method with all f the demographic diversity of TDI included are exhibited in Tables 61 and 62. Only TDI_AGE could enter the model in the stepwise backward method, which meant that it alone contributed substantially to the model's ability to predict the TPI.

Table 61. Model Summary and ANOVA test for Stepwise Backward Method.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA				Durbin-Watson
					F	df1	df2	Sig. F	
1	0.396	.157	.138	.72682	8.355	1	45	.006	1.920

Predictors: (Constant), TDI_AGE
Dependent Variable :TPI

The Multiple R^2 indicated that TDI_AGE alone could explain 15.7% of the variation in TPI.

Table 62. Coefficients for Stepwise Backward Method.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tole-rance	VIF
1 (Constant)	4.399	.261		16.884	.000					
TDI_AGE	2.424	.839	.396	2.891	.006	.396	.396	.396	1.000	1.000

a. Dependent Variable: TPI

The coefficient beta for TDI_AGE was found to be statistically significant at 99% CI. Null hypothesis 2 was rejected.

Testing null hypothesis 3.

- $H3_N$: There is no significant relationship between within-team cultural diversity and team performance.

Two data sets were used to test the hypothesis 3:

1) Hofstede's (2001) cultural dimensions IND (individualism vs. collectivism) and LTO (long-term vs. short-term orientation) that passed the reliability test (Appendix G), and

2) Cultural dimensions, QoWL (quality of work life) and AiWL (assertiveness in work life), generated through factor analysis.

Multiple regression analysis was performed to compute the relationship between within-team cultural diversity indices (TDI) and the team performance index (TPI). The forced entry and stepwise backward methods were employed again for the analysis.

The results of the analysis for the forced entry method are exhibited in Tables 63 through 65 for the first data set.

Table 63. Correlations Among Cultural Diversity Predictors (First Data Set)

		TPI	TDI_IND	TDI_LTO
Pearson Correlation	TPI	1.000	.206	-.022
	TDI_IND	.206	1.000	-.069
	TDI_LTO	-.022	-.069	1.000
Sig. (1-tailed)	TPI		.082	.442
	TDI_IND	.082		.323
	TDI_LTO	.442	.323	
N	TPI	47	47	47
	TDI_IND	47	47	47
	TDI_LTO	47	47	47

The correlations table demonstrated no statistically significant correlations between two within-team diversity indices (TDI). Of the two predictors, the TDI_IND seemed to offer a statistically significant correlation with the TPI (team performance indices) at 0.1 level (r=.206, p=.082); however, the coefficient is too trivial to make reasonable predictions on the outcome.

Table 64. Model Summary for Cultural Diversity (First Data Set)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.206[a]	.043	-.001	.78316	.043	.978	2	44	.384	1.618

a. Predictors: (Constant), TDI_LTO, TDI_IND

b. Dependent Variable: TPI

R^2 indicated that the model could explain only 4.3% of the variation in TPI; however, the change in R^2 was not significantly different from zero (F=.978, p=.384>0.1). This simply pointed out that the change in R^2 could have been a factor of chance. *Adjusted* R^2 also suggested that if the model were derived from the population, rather than from a sample, the predictive power would be zero. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 65. Coefficients of Cultural Diversity Predictors (First Data Set)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tole-rance	VIF
1 (Constant)	4.649	.425		10.938	.000					
TDI_IND	3.257	2.343	.206	1.390	.171	.206	.205	.205	.995	1.005
TDI_LTO	-.100	1.889	-.008	-.053	.958	-.022	-.008	-.008	.995	1.005

a. Dependent Variable: TPI

The regression analysis, Table 65, showed that the effects of both predictors on TPI were statistically not significant. The part correlations were the unique correlations of the predictors on the dependent variable. The part correlation of TDI_IND was too trivial, and the part correlation of TDI_LTO was almost zero.

The stepwise backward regression method also emphasized that none of the predictors were contributing to the predictive power of the model when the first data set was used, since none of the predictors could enter the model.

The regression analysis was repeated for the second data set.

The results of the analysis for the forced entry method are exhibited in Tables 66 through 68 for the second data set.

Table 66. Correlations among Cultural Diversity Predictors (Second Data Set)

		TPI	TDI_QoWL	TDI_AiWL
Pearson Correlation	TPI	1.000	-.303	-.207
	TDI_QoWL	-.303	1.000	.607
	TDI_AiWL	-.207	.607	1.000
Sig. (1-tailed)	TPI		.019	.082
	TDI_QoWL	.019		.000
	TDI_AiWL	.082	.000	
N	TPI	47	47	47
	TDI_QoWL	47	47	47
	TDI_AiWL	47	47	47

The correlations table demonstrated very significant correlations between two within-team diversity indices (TDI) at the 0.001 level (r=.607, p=.000). Although the coefficient of the correlation was not high enough to cause multicollinearity (r=.607<.80), it was still substantial enough to suggest that both variables varied considerably together. That is, almost half of the teams which were diverse in QoWL were also diverse in AiWL. The TDI_QoWL had a statistically significant correlation with the TPI (team performance indices) at the 0.05 level (r=-.303, p=.019), and TDI_AiWL also had significant correlation at the 0.1 level (r=-.207, p=.082). Both the correlation between predictors and the correlation with TPI pointed out that the stepwise method would better predict the

unique effects of the predictors on the dependent variable. Nevertheless, the forced entry method was employed first to enable comparison of the results.

Table 67. Model Summary for Cultural Diversity (Second Data Set)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.304[a]	.092	.051	.76246	.092	2.242	2	44	.118	1.743

a. Predictors: (Constant), TDI_AiWL, TDI_QoWL

b. Dependent Variable: TPI

Multiple R^2 indicated that the model could explain only 9.2% of the variation in TPI; however, the change in R^2 was not significantly different from zero (F=2.242, p=.118>0.1). This simply pointed out that the change in R^2 could have been a factor of chance. The *adjusted* R^2 also suggested that if the model were derived from the population, rather than from a sample, the predictive power would be 5.1%. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 68. Coefficients of Cultural Diversity Predictors (Second Data Set)

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.512	.241		22.893	.000					
	TDI_QoWL	-1.608	1.035	-.281	-1.554	.127	-.303	-.228	-.223	.632	1.582
	TDI_AiWL	-.193	.961	-.036	-.201	.842	-.207	-.030	-.029	.632	1.582

a. Dependent Variable: TPI

The regression analysis, Table 68, showed that the effects of both predictors on TPI were not statistically significant. The part correlations were the unique correlations of the predictors on the dependent variable. The part correlation of TDI_QoWL was small, and the part correlation of TDI_AiWL was much smaller. When the zero-order correlations and part correlations were compared, it seemed that TDI_AiWL lost much of its explanatory power of variance in TPI.

The stepwise backward regression method was run for the second data set of cultural diversity dimensions. The results are exhibited in Tables 69 and 70. Only the predictor TDI_QoWL could enter the model.

Table 69. Model Summary and ANOVA Test for Cultural Diversity (2nd Data Set)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA				Durbin-Watson
					F	df1	df2	Sig. F	
1	.303[b]	.092	.071	.75429	4.540	1	44	.039	1.738

Predictors: (Constant), TDI_QoWL (TDI_AiWL couldn't enter the model)

Dependent Variable: TPI

The stepwise backward method computed the same level of predictive power for the model (R^2=.092). However, this time, the F-ratio was statistically significant at .05 level (F=4.540>1[7], p=.039<.05), pointing out that the change in R^2 was not a factor of chance; the predictor could explain 9.2% of the variation in TPI. The *adjusted* R^2 also suggested that if the model were derived from the population, rather than from a sample, the predictive power would be 7.1%. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 70. Coefficients of Cultural Diversity Predictors (Second Data Set)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	5.494	.221		24.915	.000					
TDI_QoWL	-1.734	.814	-.303	-2.131	.039	-.303	-.303	-.303	1.000	1.000

a. Dependent Variable: TPI

The regression analysis, Table 70, showed that TDI_QoWL had a negative effect (b=-1.734, p=.039) at 95% CI on TPI. The results indicated that a one-unit increase in TDI_QoWL would decrease the TPI by 1.734 units. In terms of standardized coefficient, the results indicated that as TDI_QoWL increased by one standard deviation (.13668) (Table 49), the Team Performance Index (TPI) decreased by .303* standard deviation (.78255) (Table 33). In plain English, the

[7] If the improvement due to fitting the regression model is much greater than the inaccuracy within the mode,l then the value of F will be greater than 1 and Sig F is the probability of obtaining the value of F by chance.

results revealed that if the understanding of the quality of work life or the quality expectations in work life among team members differed highly from one another, it would likely affect the performance of the team negatively. In practice, recalling that the scale of quality of work life ranged from 1 to 5 points, the computations pointed out that, for a 3-member team, a .4-point difference of a member from the others in the perception of quality of work life would cause one standard deviation (.13668) increase in within-team diversity, and subsequently a .237 point decrease in team performance.

One rational reason for the different results obtained from two cultural data sets could be that Hofstede's equations were utilized for the first data set, in order to compute the cultural dimensions. The equations were designed to calculate national indices on cultural dimensions based on the mean scores of matched samples of respondents across two or more nations. The equations didn't directly reflect the respondents' viewpoint on the survey questions; rather they reflected the values computed through a series of calculations. The statistically significant effect found between the cultural diversity and the team performance when the direct reflections of individual viewpoints were used explicitly implied that the Hofstede's equations didn't accurately capture individual perspectives of cultural dimensions.

Provided the negative relationship with TDI_QoWL and TPI, the null hypothesis 3 was rejected.

Testing null hypothesis 4.

- $H4_N$: There is no significant relationship between aggregated categorical within-team diversity and team performance.

As a measure of the aggregated categorical within-team diversity index for a category, the average of the Team Diversity Indices within that particular category was used. That is, the aggregated demographic within-team diversity index was the average of TDI_NATION, TDI_AGE, and TDI_GENDER, and it was labeled as TDI_Demographic. Likewise, the aggregated functional within-team diversity index was labeled as TDI_Functional, and the aggregated cultural within-team diversity index as TDI_Cultural.

Multiple regression analysis was performed to compute the relationship between the aggregated categorical within-team diversity indices (ACTDI) and the team performance index (TPI). The forced entry and stepwise backward methods were employed for the analysis.

The results of the analysis for the forced entry method are exhibited in Tables 71 through 73.

The correlations table demonstrated a correlation between TDI_FUNCTIONAL (aggregated functional within-team diversity index) and TDI_DEMOGRAPHIC (aggregated demographic within-team diversity index), which was significant at the .001 level (r=-.536, p=.000). Although the coefficient of the correlation was not high enough to cause multicollinearity (r=.536<.80), it was still substantial enough to suggest that both variables varied considerably together. That is, almost half of the teams which were diverse in functional

attributes were also diverse in demographic traits. All of the predictors seemed to be significantly correlated with the TPI (team performance indices) at 0.05 level.

Table 71. Correlations among ACTDI

		TPI	TDI_ FUNCTIONAL	TDI_ DEMOGRAPHIC	TDI_ CULTURAL
Pearson Correlation	TPI	1.000	.263	.280	-.281
	TDI_FUNCTIONAL	.263	1.000	.536	.047
	TDI_DEMOGRAPHIC	.280	.536	1.000	.257
	TDI_CULTURAL	-.281	.047	.257	1.000
Sig. (1-tailed)	TPI		.037	.028	.028
	TDI_FUNCTIONAL	.037		.000	.376
	TDI_DEMOGRAPHIC	.028	.000		.041
	TDI_CULTURAL	.028	.376	.041	
N	TPI	47	47	47	47
	TDI_FUNCTIONAL	47	47	47	47
	TDI_DEMOGRAPHIC	47	47	47	47
	TDI_CULTURAL	47	47	47	47

Table 72. Model Summary for ACTDI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.470[a]	.221	.167	.71464	.221	4.063	3	43	.013	1.834

a. Predictors: (Constant), TDI_CULTURAL, TDI_FUNCTIONAL, TDI_DEMOGRAPHIC

b. Dependent Variable: TPI

R^2 indicated that the model could explain only 22.1% of the variation in TPI, and the change in R^2 was significantly different from zero (F=4.063, p=.013<0.05). The *adjusted* R^2 suggested that if the model were derived from the population, rather than fom a sample, it would account for 5.4% less variance in

TPI. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 73. Coefficients of ACTDI

Model		Unstandardized Coefficients		Standar-dized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tole-rance	VIF
1	(Constant)	4.172	.528		7.899	.000					
	TDI_ FUNCTIONAL	.605	.874	.111	.693	.492	.263	.105	.093	.704	1.421
	TDI_ DEMOGRAPHIC	2.726	1.434	.315	1.901	.064	.280	.278	.256	.659	1.518
	TDI_ CULTURAL	-2.264	.864	-.367	-2.621	.012	-.281	-.371	-.353	.923	1.084

a. Dependent Variable: TPI

The regression analysis, Table 73, showed that TDI_DEMOGRAPHIC had a positive effect (b=2.726, p=.064) at 90% CI on TPI while TDI_CULTURAL had a negative effect (b=-2.264, p=.012) at 95% CI. In terms of standardized coefficients, the results indicated that as TDI_ DEMOGRAPHIC increased by one standard deviation (.09049) (Table 50), the Team Performance Index (TPI) increased by .315* standard deviation (.78255) (Table 33). In plain English, the results revealed that if the demographics of team members differed highly from one another, it would likely affect the performance of the team positively. Likewise, as TDI_ CULTURAL increased by one standard deviation (.127) (Table 50), the Team Performance Index (TPI) decreased by .367* standard deviation (.78255). In simple words, the results indicated that if the cultural aspects of team

members differed highly from one another, it would likely affect the performance of the team negatively.

The effect of TDI_FUNCTIONAL on TPI was found to be statistically not significant.

The results of the stepwise backward regression method with all ACTDI included are exhibited in Tables 74 and 75. As in the forced entry method, only TDI_DEMOGRAPHIC and TDI_CULTURAL could enter the model in stepwise backward method, which meant that both predictors contributed substantially to the model's ability to predict the TPI.

Table 74. Model Summary and ANOVA test for Stepwise Backward Method.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA				Durbin-Watson
					F	df1	df2	Sig. F	
1	0.461	.212	.176	.7104	5.925	2	44	.005	1.800

Predictors: (Constant), TDI_CULTURAL, TDI_DEMOGRAPHIC

Dependent Variable: TPI

Multiple R^2 indicated that TDI_DEMOGRAPHIC and TDI_CULTURAL together could explain 21.2% of the variation in TPI. The F-ratio is statistically significant at a .05 level (F=5.925>1, p=.005<.05), pointing out that the change in R^2 was not a factor of chance.

Table 75. Coefficients for Stepwise Backward Method.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.268	.507		8.423	.000					
	TDI_DEMOGRAPHIC	3.266	1.198	.378	2.727	.009	.280	.380	.365	.934	1.071
	TDI_CULTURAL	-2.331	.853	-.378	-2.731	.009	-.281	-.381	-.365	.934	1.071

a. Dependent Variable: TPI

The coefficient betas for TDI_DEMOGRAPHIC and TDI_CULTURAL were found to be statistically significant at 99% CI (Table 75). Null hypothesis 4 was rejected.

Testing null hypothesis 5.

- $H5_N$: The effect of within-team diversity on team performance does not differ significantly by the functional directorate within which team operates.

Teams in the sample belonged to four different directorates. As explained in Chapter 3, two of the directorates deal with management-related tasks while the remaining two deal more with transformation-related tasks. The teams were split up as to the type of tasks that their directorates performed, as seen in Table 76.

Table 76. Division of the Teams by the Type of Tasks

Directorate	Type of Tasks	Number of Teams	Percent.	Dummy Variable
Resources & Management (RM)	Management Related Tasks[a]	15	31.91%	0
Joint Force Trainer (JFT)				
Strategic Plans and Policy (SPP)	Transformation Related Tasks[b]	32	68.09%	1
Capability Development (CAPDEV)				
Total	47		100.00%	

[a] Analyzing, organizing, planning, scheduling, provisioning, overseeing, administering, delivery etc.
[b] Developing strategy and policy, generating new capabilities for future requirements, shaping the future of the organization.

Multiple regression analysis was performed to compute the relationship between the aggregated categorical within-team diversity indices (ACTDI) and the team performance index (TPI), while controlling for the directorates by a dummy variable, labeled as "directorate", where zero denoted managerial directorates, and one did transformational directorates. The forced entry and Stepwise backward methods were employed for the analysis. Since the number of managerial type of directorates was small (15), the *bootstrapping method* was also utilized, in order to be able to obtain more accurate results. As may be recalled from Chapter 3, bootstrapping draws repeated samples (of the same size) from the data at hand a large number of times in order to create a large pool of samples. Then it uses these samples to make estimates through regression analysis.

The results of the analysis for the forced entry method are exhibited in Tables 77 through 79.

The correlations table (Table 77) demonstrated a negative correlation between Directorate and TDI_CULTURAL, which was significant at the .1 level

(r=-.237, p=.055). However, the correlation between Directorate and TPI was quite small and statistically not significant.

In Table 78, *multiple* R^2 indicated that the model could explain 23.1% of the variation in TPI, and change in R^2 was significantly different from zero (F=3.150, p=.024<0.05). The *adjusted* R^2 suggested that if the model were derived from the population, rather than from a sample, it would account for 7.3% less variance in TPI. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 77. Correlations among Variables

		TPI	Directorate	TDI_ Functional	TDI_ Demographic	TDI_ Cultural
Pearson Correlation	TPI	1.000	.180	.263	.281	-.281
	Directorate	.180	1.000	.105	-.040	-.237
	TDI_ Functional	.263	.105	1.000	.536	.047
	TDI_ Demographic	.281	-.040	.536	1.000	.257
	TDI_ Cultural	-.281	-.237	.047	.257	1.000
Sig. (1-tailed)	TPI		.112	.037	.028	.028
	Directorate	.112		.241	.394	.055
	TDI_ Functional	.037	.241		.000	.376
	TDI_ Demographic	.028	.394	.000		.041
	TDI_ Cultural	.028	.055	.376	.041	
N	TPI	47	47	47	47	47
	Directorate	47	47	47	47	47
	TDI_ Functional	47	47	47	47	47
	TDI_ Demographic	47	47	47	47	47
	TDI_ Cultural	47	47	47	47	47

Table 78. Model Summary for ACTDI as Controlled for Directorate

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.480[a]	.231	.158	.71828	.231	3.150	4	42	.024	1.833

a. Predictors: (Constant), TDI_Cultural, TDI_Functional, Directorate, TDI_Demographic

b. Dependent Variable: TPI

A regression analysis, Table 79, showed that the effect of Directorate on TPI was not significant. Hence, when controlled for Directorate, the directions and the effects of ACTDI on TPI remained almost unchanged, just as their levels of significance did.

Table 79. Coefficients of ACTDI as Controlled for Directorate

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.041	.561		7.208	.000					
	Directorate	.169	.233	.102	.725	.472	.180	.111	.098	.928	1.078
	TDI_ Functional	.524	.885	.096	.592	.557	.263	.091	.080	.692	1.444
	TDI_ Demographic	2.783	1.444	.322	1.928	.061	.281	.285	.261	.657	1.522
	TDI_ Cultural	-2.120	.890	-.344	-2.381	.022	-.281	-.345	-.322	.877	1.140

a. Dependent Variable: TPI

The results of the bootstrap method are shown in Table 80. The directions and magnitudes of the effects on TPI remained unchanged. The levels of significance for TDI_DEMOGRAPHIC increased from .1 to .05, and for

TDI_CULTURAL from .05 to .01. The bias values indicated the expected differences in coefficients if a sample of the same size directly were drawn from the population.

Table 80. Bootstrap Coefficients of ACTDI as Controlled for Directorate

Model		B	Bootstrap[a]				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	4.041	-.032	.646	.001	2.646	5.207
	Directorate	.169	-.021	.282	.550	-.410	.722
	TDI_Functional	.524	-.018	1.016	.583	-1.431	2.630
	TDI_Demographic	2.783	.154	1.378	.036	.333	5.844
	TDI_Cultural	-2.120	-.030	.778	.008	-3.678	-.506

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

The results of the stepwise backward regression method are exhibited in Tables 81 and 82. As in the forced entry method, Directorate could not enter the model. The results were the same as those in the forced entry method.

Table 81. Model Summary and ANOVA test for Stepwise Backward Method.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA					Durbin-Watson
					R Square Change	F	df1	df2	Sig. F	
3	.461	.212	.177	.7101	.212	5.933	2	44	.005	1.801

Predictors: (Constant), TDI_Cultural, TDI_Demographic

Dependent Variable: TPI

Table 82. Coefficients for Stepwise Backward Method.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
3	(Constant)	4.268	.506		8.426	.000					
	TDI_ Demographic	3.270	1.197	.378	2.731	.009	.281	.381	.365	.934	1.071
	TDI_ Cultural	-2.329	.853	-.378	-2.730	.009	-.281	-.381	-.365	.934	1.071

a. Dependent Variable: TPI

The results of analysis suggested that the effects of within-team diversity on team performance did not differ significantly by the directorate to which the teams belonged. Thus, null hypothesis 5 was not rejected.

Testing null hypothesis 6.

- $H6_N$: The effect of within-team diversity on team performance does not differ significantly by the use of Standard Operating Procedures (SOP).

The data capturing the degree of SOP usage were collected on a five-point scale: 1) never/don't have SOP, 2) seldom, 3) sometimes, 4) usually, 5) always. A team with more than half of the team members having a rate of 3 or above was considered as a team that uses SOP. The teams were split up as to the use of SOP, as seen in Table 83.

Table 83. Division of the Teams by The use of SOP

SOP Usage	Majority of Team Checked	Number of Teams	Percentage	Dummy Variable
Teams not using SOP	1 or 2	20	42.55%	0
Teams using SOP	3, 4 or 5	27	57.45%	1
Total		47	100.00%	

A multiple regression analysis was performed to compute the relationship between aggregated categorical within-team diversity indices (ACTDI) and the team performance index (TPI) while controlling for the use of SOP by a dummy variable, labeled as "SOP_Usage", where zero denoted the teams that do not use SOP in performing their tasks, and one denoted the teams that use SOP. The forced entry and Stepwise backward methods were employed for the analysis.

The results of the analysis for the forced entry method are exhibited in Tables 84 through 86.

The correlations table demonstrated positive correlations between SOP_Usage and TPI at the .001 level (r=.551, p=.000), and TDI_Demographic at the .05 level (r=.244, p=.049). SOP_Usage had also a negative correlation with TDI_Cultural at the .005 level ((r=-.388, p=.004).

Table 84. Correlations among Variables

		TPI	SOP_ Avail	TDI_ Functional	TDI_ Demographic	TDI_ Cultural
Pearson Correlation	TPI	1.000	.551	.263	.281	-.281
	SOP_Usage	.551	1.000	.189	.244	-.388
	TDI_Functional	.263	.189	1.000	.536	.047
	TDI_Demographic	.281	.244	.536	1.000	.257
	TDI_Cultural	-.281	-.388	.047	.257	1.000
Sig. (1-tailed)	TPI		.000	.037	.028	.028
	SOP_Usage	.000		.102	.049	.004
	TDI_Functional	.037	.102		.000	.376
	TDI_Demographic	.028	.049	.000		.041
	TDI_Cultural	.028	.004	.376	.041	
N	TPI	47	47	47	47	47
	SOP_Usage	47	47	47	47	47
	TDI_Functional	47	47	47	47	47
	TDI_Demographic	47	47	47	47	47
	TDI_Cultural	47	47	47	47	47

Table 85. Model Summary for ACTDI as Controlled for SOP Availability

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.596[a]	.355	.293	.65790	.355	5.771	4	42	.001	2.281

a. Predictors: (Constant), TDI_Cultural, TDI_Functional, SOP_Usage, TDI_Demographic

b. Dependent Variable: TP
I

The *Multiple* R^2 indicated that the model could explain 35.5% of the variation in TPI, and change in R^2 was significantly different from zero (F=5.771, p=.001<0.005). The *Adjusted* R^2 suggested that if the model were derived from the population, rather than from a sample, it would account for 6.3% less

variance in TPI. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 86. Coefficients of ACTDI as Controlled for SOP Availability

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.063	.488		8.332	.000					
	SOP_Usage	.673	.228	.430	2.948	.005	.551	.414	.365	.723	1.383
	TDI_ Functional	.560	.804	.103	.697	.490	.263	.107	.086	.704	1.421
	TDI_ Demographic	1.402	1.395	.162	1.005	.321	.281	.153	.125	.590	1.694
	TDI_ Cultural	-.991	.905	-.161	-1.095	.280	-.281	-.167	-.136	.713	1.403

Dependent Variable: TPI

The regression analysis, Table 86, showed that the effect of SOP_Usage on TPI was significant at 99% CI. When controlled for SOP availability, the effects of TDI_Demographic and TDI_Cultural became smaller and statistically not significant. In other words, SOP_Usage, alone, could explain the 35.5% of the variation in TPI accounted for by the model. In plain English, the use of SOP in a team would likely reduce the effects of demographic and cultural differences on team performance.

The results of the stepwise backward regression method are exhibited in Tables 87 and 88. SOP_Usage was the only variable that could enter

the final model. The results computed by the stepwise backward method were the same as those in the forced entry method.

Table 87. Model Summary and ANOVA Test for Stepwise Backward Method.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA					Durbin-Watson
					R Square Change	F	df1	df2	Sig. F	
4	.551[d]	.304	.288	.66021	.304	19.628	1	45	.000	2.340

d. Predictors: (Constant), SOP_Usage

A stepwise backward regression analysis computed the unique portion of SOP_Usage in explaining the variation in TPI to be 30.4%. The change in the R^2 was significant at the .001 levels.

Table 88. Coefficients for Stepwise Backward Method.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
4	(Constant)	4.593	.148		31.112	.000					
	SOP_Usage	.863	.195	.551	4.430	.000	.551	.551	.551	1.000	1.000

Dependent Variable: TPI

The effect of SOP_Usage on TPI was found to be higher by .190 and statistically more significant.

The results of the analysis suggested that the effects of within-team diversity on team performance differed significantly by the use of SOP in teams. Thus, null hypothesis 6 was rejected.

Testing null hypothesis 7.

- $H7_N$: The effect of within-team diversity on team performance does not differ significantly by the team size.

The team size was introduced to the model as an interval variable. The distribution of teams by their size is seen in Table 89.

Table 89. Distribution of the Teams by Size

Team Size	Number of Teams	Team Size	Number of Teams
2	4	**8**	5
3	7	**9**	3
4	7	**10**	2
5	11	**12**	1
6	1	**18**	1
7	5	**Total**	**47**

A multiple regression analysis was performed to compute the relationship between aggregated categorical within-team diversity indices (ACTDI) and team performance index (TPI) while controlling for the team size. The forced entry and Stepwise backward methods were employed for the analysis.

The results of the analysis for the forced entry method are exhibited in Tables 90 through 92.

The correlations table demonstrated a small negative (but not statistically significant) correlation between TeamSize and TPI (r=-.170, p=.130). TeamSize had also a small positive correlation with TDI_Demographic at .1 level (r=.220, p=.071).

Table 90. Correlations among Variables

		TPI	TeamSize	TDI_ Functional	TDI_ Demographic	TDI_ Cultural
Pearson Correlation	TPI	1.000	-.170	.265	.280	-.280
	TeamSize	-.170	1.000	.155	.220	.067
	TDI_Functional	.265	.155	1.000	.541	.046
	TDI_Demographic	.280	.220	.541	1.000	.259
	TDI_Cultural	-.280	.067	.046	.259	1.000
Sig. (1-tailed)	TPI		.130	.038	.030	.030
	TeamSize	.130		.152	.071	.328
	TDI_Functional	.038	.152		.000	.380
	TDI_Demographic	.030	.071	.000		.041
	TDI_Cultural	.030	.328	.380	.041	
N	TPI	46	46	46	46	46
	TeamSize	46	46	46	46	46
	TDI_Functional	46	46	46	46	46
	TDI_Demographic	46	46	46	46	46
	TDI_Cultural	46	46	46	46	46

Table 91. Model Summary for ACTDI as Controlled for Team Size

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.526[a]	.277	.206	.70454	.277	3.926	4	41	.009	1.799

a. Predictors: (Constant), TDI_Cultural, TDI_Functional, TeamSize, TDI_Demographic

b. Dependent Variable: TPI

The *multiple* R^2 indicated that the model could explain 27.7% of the variation in TPI, and the change in R^2 was significantly different from zero (F=3.926, p=.009<0.01). The *adjusted* R^2 suggested that if the model were derived from the population rather than from a sample, it would account for 7.1% less variance in TPI. The Durbin-Watson test signified that the residuals for any two observations were uncorrelated or independent (no autocorrelation).

Table 92. Coefficients of ACTDI as Controlled for Team Size

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.371	.533		8.194	.000					
	TeamSize	-.089	.050	-.244	-1.789	.081	-.170	-.269	-.238	.949	1.053
	TDI_ Functional	.678	.867	.125	.783	.438	.265	.121	.104	.697	1.436
	TDI_ Demographic	3.122	1.442	.360	2.165	.036	.280	.320	.288	.637	1.570
	TDI_ Cultural	-2.237	.853	-.363	-2.623	.012	-.280	-.379	-.348	.920	1.087

a. Dependent Variable: TPI

A regression analysis, Table 92, showed that the effect of TeamSize on TPI was negative and significant at 90% CI. Small teams seemed to perform better than the large teams did. When controlled for team size, the effects of both TDI_Demographic and TDI_Cultural on TPI seemed to get slightly smaller; TDI_Demographic: b=3.122, b_s=.360 vs. b=3,266, b_s=.378 (Table 75), TDI_Cultural: b=-2.237, b_s=-.363 vs. b=-2,331, b_s=-.378 (Table 75). When considered with the correlations table, this suggested that the effects of within-team diversity on team performance didn't differ by the team size.

The results of the stepwise backward regression method are exhibited in Tables 93 and 94. TeamSize, along with TDI_Demographic and TDI_Cultural, could enter the final model. The results computed by stepwise backward method were similar to those in the forced entry method.

Table 93. Model Summary and ANOVA Test for Stepwise Backward Method.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA					Durbin-Watson
					R Square Change	F	df1	df2	Sig. F	
2	.516	.266	.214	.70128	.266	5.078	3	42	.004	1.737

Predictors: (Constant), TDI_Cultural, TeamSize, TDI_Demographic

Dependent Variable: TPI

A multiple R^2 suggested that three variables accounted for 26.6% variation in TPI. The change in R^2 was found to be significantly different from zero at the .005 level.

Table 94. Coefficients for Stepwise Backward Method.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
2	(Constant)	4.471	.516		8.670	.000					
	TeamSize	-.087	.049	-.239	-1.764	.085	-.170	-.263	-.233	.951	1.051
	TDI_ Demographic	3.725	1.213	.430	3.070	.004	.280	.428	.406	.892	1.122
	TDI_ Cultural	-2.315	.843	-.376	-2.745	.009	-.280	-.390	-.363	.933	1.072

Dependent Variable: TPI

Compared to the results computed by the forced entry method, the stepwise backward method calculated slightly higher effects for TDI_Demographic and TDI_Cultural at higher significance levels.

Overall, the results of this analysis suggested that the effects of within-team diversity on team performance did not differ significantly by team size. Thus, null hypothesis 7 was not rejected.

4.4. Validity and Reliability

Validity refers to whether an instrument measures what it was designed to measure. Validity is a necessary, but not sufficient, condition of a measure. A second consideration is reliability, which is the ability of the measure to produce the same results under the same conditions (Field, 2009).

Table 95 illustrates the validity types and definitions, along with the tools and means employed to check the validity of the research for that particular validity type.

Table 95. Validity Types, Definitions, and Tools for Validity Check

Type	Definition	Validity Check
Internal Validity	Internal Validity is the degree to which researchers use unbiased inputs and suggest unbiased inferences (Drost, 2011).	✓ Sample selection (random sampling) ✓ Expert review
Construct Validity	Construct validity refers to how well a researcher translated or transformed a concept, idea, or behavior – that is a construct – into a functioning and operating reality, the operationalization (Trochim, 2006).	✓ Theoretical Background ✓ Explanation of the assumptions, limitations, and delimitations[8] ✓ Expert review
External Validity	External validity is the extent to which the findings may be generalized to population (Trochim, 2006).	✓ Use of already validated models ✓ Definition of the population ✓ Clarification of the sampling characteristics ✓ Identification of data collection tools and process ✓ Expert review

[8] *Assumptions* are things that are out of the researcher's control, but if they disappear, the study would become irrelevant. *Limitations* are the potential weaknesses in the study and are out of researcher's control. *Delimitations* are those characteristics that limit the scope and define the boundaries of the study. The delimitations are in researcher's control. Delimiting factors include the choice of objectives, the research questions, variables of interest, theoretical perspectives that the researcher adopted, and the population the researcher chose to investigate (Simon, 2011).

Reliability is the consistency of measurement over time or the stability of measurement over a variety of conditions. The most commonly used technique to estimate reliability is with a measure of association, the correlation coefficient, often termed the reliability coefficient (Rosenthal & Rosnow, 1991). The reliability check concerning this research included the reliability of the diversity measures, the multiple regression model, and the variables employed.

Table 96 displays the definitions of reliability and suggests the tools employed for reliability check.

Table 96. Reliability definitions and Tools for Reliability Check

	Explanation	**Reliability Check**
Reliability	▪ Reliability is the extent to which measurements are repeatable when different persons perform the measurements, on different occasions (Drost, 2011). ▪ Reliability is consistency of measurement (Bollen, 1989), ▪ Stability of measurement over a variety of conditions in which basically the same results should be obtained (Nunnally, 1978).	✓ Cultural Diversity Dimension indices: PD, IND, MAS, UAI, LTO. • Hofstede (2001) • Factor Analysis • KMO and Bartlett's Test • Cronbach's alpha ✓ Within-team diversity indices • Refined Blau (Biemann and Kearney, 2009) • Standard Deviation (Harrison and Klein, 2007). ✓ Multiple Regression Model (Field, 2009) (Note) • Variable types • Non-zero variance • No perfect multicolinearity • Homoscedasticity • Independent errors • Normally distributed errors • Independence • Linearity

Note. See Table 97.

Table 97. Confirming the Assumptions for Multiple Regression Models

Subject	Assumption	Confirmation
Variable types	All predictor variables must be quantitative or categorical (with two categories), and the outcome variable must be quantitative, continuous.	Definitions of variables (Chapter 3)
Non-zero variance	The predictors should have some variation in value (i.e. they do not have variances of 0).	Descriptive Statistics
No perfect multi-co-linearity	There should be no perfect linear relationship between two or more of the predictors.	Colinearity Diagnostics Variance Inflation Factors (VIF)
Homoscedasticity	The residuals at each level of the predictors should have the same variance.	Standardized Residuals (ZRESID) vs. Standardized Predicted Values (ZPRED) plots (Appendix K)
Independent errors	For any two observations the residual terms should be uncorrelated (lack of autocorrelation).	Durbin-Watson tests
Normally distributed errors	It is assumed that the residuals in the model are random, normally distributed variables with a mean of 0.	Normal P-P plots (Appendix K)
Independence	All of the values of the outcome variable are independent.	Random sampling
Linearity	The mean values of the outcome variable for each increment of the predictors lie along a straight line.	Partial plots

CHAPTER 5

CONCLUSION

The trend of deploying multinational coalition or alliance forces to respond to emerging threats in the past two decades has become a mainstream approach. Beyond the advantages presented by coalitions and alliances, the literature suggests that multinational forces have raised a new set of challenges in achieving their mission: managing the demographic, functional, and cultural diversity introduced by the individuals from various nations that compose the coalition/alliance. In order to develop a strategy to properly manage the diversity, the first step should be gaining awareness about the role of diversity in teamwork in multinational coalitions or alliance forces. How does the diversity affect the performance of a multinational military team in a positive or a negative way? How significant are the effects?

A large number of researchers have considered diversity a "double-edged sword" as they discovered that diversity could pose risks, as well as benefits, to teamwork. The literature concerning teams in civilian environments asserts that demographic diversity has generally negative effects on teamwork, while functional diversity has generally positive effects in problem solving, decision-making, creativity, innovation, and transformation; cultural diversity has both positive and negative effects, since this type of diversity has been usually distilled from some aspects of demographic and functional diversities. Furthermore, the

literature emphasizes that increased diversity may have dysfunctional effects on group process and performance.

Although extensive research efforts have been dedicated to the area of team diversity and its effect on team effectiveness, a systematic literature review reveals that relatively little research exists that looks at the impact of diversity on teams within multinational context, and there is even less for the teams within multinational and multicultural military environments. To that end, the findings for civilian teams have to be confirmed, as well as those for multinational military teams that operate in environments with unique characteristics and constraints.

This study aimed at understanding the relationship between team diversity and team performance in a multinational military environment. The conceptual framework was inspired by both the I-P-O (Input-Process-Output) (McGrath, (1984) and the IMOI (Input Mediator Output Input) (Ilgen et al., 2005) theoretical models, and "The Multicultural Team Effectiveness Model" proposed by Halverson and Tirmizi (2008), which all basically assumed that the degree of diversity in a team had a direct relationship to team effectiveness.

Diversity in teams was studied in terms of three main categories: Functional Diversity, Demographic Diversity, and Cultural Diversity. The diversity dimensions under each category were selected from prominent diversity dimensions in literature, particularly those on military teams. In an effort to shed more light on the effects of diversity on team effectiveness, this research also employed three team level control variables: team size, the use of standard operating procedures (SOP) that teams conformed to in performing their duties,

and the directorate within which team functions. Team effectiveness was measured based on performance assessments from the team leader and the immediate supervisor, who in fact were responsible to conduct personnel performance evaluations for their staff by organizational regulations. A multiple regression statistical method was utilized in analyses.

5.1. Findings and Discussion

The summary of the findings and overall results of analyses is depicted in Table 98. In a nutshell, all three categories of within-team diversity were found to have statistically significant effects on team performance. When the aggregated effects of all of the variables within each diversity category were examined, it was discovered that the demographic diversity had a significant, positive aggregated effect and that the cultural diversity had a significant, negative aggregated effect on team performance, while the functional diversity had no statistically significant aggregated effects. When the model was controlled for directorate and team size, the analyses revealed that the effects of within-team diversity on team performance didn't differ significantly. However, when the model was controlled for use of Standard Operating Procedure (SOP), the effects of within-team diversity on team performance became trivial or non-existent. The following paragraphs discuss the findings for each hypothesis in detail.

$H1_A$. There is a significant relationship between within-team functional diversity and team performance.

The Functional Diversity category had five variables: Education Level, Language Proficiency, Multinational Experience, Military Branch, and Rank.

Table 98. Summary of Findings and Results

	Hypothesis in Alternative Form	Summary of Findings (Standardized Coefficients and Significance)			Inference [a]	Conclusion
$H1_A$	There is a significant relationship between within-team functional diversity and team performance.	***forced entry Method***			As TDI_MNE **increased** by one standard deviation (0.14037) (Table 37), the Team Performance Index (TPI) **increased** by 0.407 * standard deviation (0.78255) (Table 33). As TDI_MILBRANCH **increased** by one standard deviation (0.31990) (Table 37), the Team Performance Index (TPI) **decreased** by 0.302 * standard deviation (0.78255) (Table 33).	Supported
		TDI_EDLEVEL	0.167	0.227		
		TDI_LANGUAGE	0.082	0.547		
		TDI_MNE	**0.454**	**0.003*** **		
		TDI_MILBRANCH	**-0.249**	**0.087***		
		TDI_RANK	0.034	0.818		
		forced entry Method with TDI_MILCIV				
		TDI_EDLEVEL	0.133	0.351		
		TDI_LANGUAGE	0.081	0.548		
		TDI_MNE	**0.407[a]**	**0.010** **		
		TDI_MILBRANCH	**-0.302[a]**	**0.044** **		
		TDI_MILCIV	0.147	0.397		
		Stepwise Backward Method				
		TDI_MNE	**0.495**	**0.001*** **		
		TDI_MILBRANCH	**-0.236**	**0.084***		
$H2_A$	There is a significant relationship between within-team demographic diversity and team performance.	***Forced Entry Method***			As TDI_AGE **increased** by one standard deviation (0.13818) (Table 39), the Team Performance Index (TPI) **increased** by 0.400 * standard	Supported
		TDI_NATION	-0.048	0.763		
		TDI_GENDER	0.109	0.492		
		TDI_AGE	**0.400[a]**	**0.007*** **		

Table 98. Summary of Findings and Results (Continued)

	Hypothesis in Alternative Form	Summary of Findings (Standardized Coefficients and Significance)			Inference [a]	Conclusion
$H3_A$	There is a significant relationship between within-team cultural diversity and team performance.	***Forced Entry Method (1st Data Set)***			As TDI_QoWL **increased** by one standard deviation (0.13668) (Table 49), the Team Performance Index (TPI) **decreased** by 0.303 * standard deviation (0.78255) (Table 33).	Supported
		TDI_IND	0.206	0.171		
		TDI_LTO	-0.008	0.958		
		Stepwise Backward Method (1st Data Set)				
		- No predictors entered model				
		Forced Entry Method (2nd Data Set)				
		TDI_QoWL	-0.281	0.127		
		TDI_AiWL	-0.036	0.842		
		Stepwise Backward Method (2nd Data Set)				
		TDI_QoWL	**-0.303[a]**	**0.039****		
$H4_A$	There is a significant relationship between aggregated categorical within-team diversity and team performance.	***Forced Entry Method***			As TDI_ DEMOGRAPHIC **increased** by one standard deviation (.09049) (Table 50), the Team Performance Index (TPI) **increased** by .378 * standard deviation (.78255) (Table 33). As TDI_ CULTURAL **increased** by one standard deviation (.127) (Table 50), the Team Performance Index (TPI) **decreased** by .378 * standard deviation (.78255) (Table 33).	Supported
		TDI_FUNCTIONAL	0.111	0.492		
		TDI_DEMOGRAPHIC	**0.315**	**0.064***		
		TDI_CULTURAL	**-0.367**	**0.012****		
		Stepwise Backward Method				
		TDI_DEMOGRAPHIC	**0.378[a]**	**0.009*****		
		TDI_CULTURAL	**-0.378[a]**	**0.009*****		

Table 98. Summary of Findings and Results (Continued)

	Hypothesis in Alternative Form	Summary of Findings (Standardized Coefficients and Significance)			Inference [a]	Conclusion
$H5_A$	The effect of within-team diversity on team performance differs significantly by the functional directorate within which team operates.	***Forced Entry Method***			As TDI_ DEMOGRAPHIC **increased** by one standard deviation (.09049) (Table 50), the Team Performance Index (TPI) **increased** by .378 * standard deviation (.78255) (Table 33). **(Not Changed)** As TDI_ CULTURAL **increased** by one standard deviation (.127) (Table 50), the Team Performance Index (TPI) **decreased** by .378 * standard deviation (.78255) (Table 33). **(Not Changed)**	Not Supported
		DIRECTORATE	0.169[b]	0.472		
		TDI_FUNCTIONAL	0.96	0.557		
		TDI_DEMOGRAPHIC	**0.322**	**0.061***		
		TDI_CULTURAL	**-0.344**	**0.022****		
		Bootstrap Method				
		DIRECTORATE	0.169[b]	0.550		
		TDI_FUNCTIONAL	0.96	0.583		
		TDI_DEMOGRAPHIC	**0.322**	**0.036****		
		TDI_CULTURAL	**-0.344**	**0.008*****		
		Stepwise Backward Method				
		TDI_DEMOGRAPHIC	**0.378[a]**	**0.009*****		
		TDI_CULTURAL	**-0.378[a]**	**0.009*****		
H6	The effect of within-team diversity on team performance differs significantly by the use of Standard Operating Procedures (SOP).	***Forced Entry Method***			The effects of TDI_DEMOGRAPHIC and TDI_CULTURAL became smaller and statistically not significant when controlled for SOP availability.	Supported
		SOP_Usage	**0.673[b]**	**0.005*****		
		TDI_FUNCTIONAL	0.103	0.490		
		TDI_DEMOGRAPHIC	0.162[a]	0.321		
		TDI_CULTURAL	-0.161[a]	0.280		
		Stepwise Backward Method				
		SOP_Usage	**0.863[b]**	**0.000*****		

Table 98. Summary of Findings and Results (Continued)

	Hypothesis in Alternative Form	Summary of Findings (Standardized Coefficients and Significance)			Inference [a]	Conclusion
$H7_A$	The effect of within-team diversity on team performance differs significantly by the team size.	***Forced Entry Method***			As TDI_ DEMOGRAPHIC **increased** by one standard deviation (.09049) (Table 50), the Team Performance Index (TPI) **increased** by .430 * standard deviation (.78255) (Table 33). **(Not Changed significantly)**	Not Supported
		TeamSize	**-0.089[b]**	**0.081***		
		TDI_FUNCTIONAL	0.125	0.438		
		TDI_DEMOGRAPHIC	**0.360**	**0.036****		
		TDI_CULTURAL	**-0.363**	**0.012****		
		Stepwise Backward Method			As TDI_ CULTURAL **increased** by one standard deviation (.127) (Table 50), the Team Performance Index (TPI) **decreased** by .376 * standard deviation (.78255) (Table 33). **(Not Changed significantly)**	
		TeamSize	**-0.087[b]**	**0.085***		
		TDI_DEMOGRAPHIC	**0.430[a]**	**0.004*****		
		TDI_CULTURAL	**-0.376[a]**	**0.009*****		

* Significant at 0.1 level
** Significant at 0.05 level
*** Significant at 0.01 level or lower levels
[a] Inferences were made based on this value.
[b] Unstandardized coefficients

Analyses showed that the level of diversity in multinational experience among team members had a positive relationship with the team performance. That is, the more different the multinational experience of team members was, the better the team performed. Conversely, a team of individuals with similar multinational experience demonstrated a less effective performance. The results implied that it wouldn't matter if all of the team members either had low multinational experience or high multinational experience; their performance would likely be inferior to the performance of a team whose members had varying lengths of multinational experience. One could consider the result of having different lengths of multinational experience among team members as an indication of better collaboration among team members towards the team outcome.

The second variable found to have a significant relation to team performance was the diversity in military branches: Army, Navy, Air Force, Marine Corps, and Civilian. The effect of the diversity in military branches on team performance seemed to be a negative one. That is, the less diverse the team in terms of military branches was, the better the team performed. In other words, a team with all members from the same military branch would likely perform better, as compared to a team with all of its members from different military branches.

The effects of diversity in education levels, language proficiency, and rank were found to be not significant in the analyses, although they had been expected to have significant effects. One underlying reason for this might have

been the insufficient variation in the diversity levels among teams, in terms of the variables in question. However, the frequency tables in Appendix L that illustrated the distribution of diversity levels of the 47 teams suggested a balanced and sufficient variation in diversity for all three variables. Another reason could be the sample characteristics. The sample characteristics were rechecked and it was noted that, although different, the individual characteristics regarding these variables were too similar within the sample to produce conclusive results regarding the effects of diversity. For example, 87% of the sample had Bachelor's and Master's degrees, and only 13% had the other four different levels of education. The mean Language Proficiency was around 8.3 out of 10 points; the first quartile was 7 or 8, the second quartile 8 or 9 and the third quartile 10 for speaking, listening, reading, and writing skills. As to the distribution of rank, the major cluster occurred at the rank of OF-4 that accounted for 59% of all sample, although there were 14 levels of rank. Following OF-4, OF-3, OF-6, and A-2 had highest representations in the sample with 15%, 6%, and 6% respectively. The other ranks had lower representations between 0% and 3%. In a sense, although the teams seemed diverse in education level, language proficiency, and rank, the differences among the individual characteristics of team members were so trivial that they counterbalanced the effects of diversity.

In an effort to get a better variation, the variable RANK was converted to another variable, MILCIV, that referred to the military-civilian composition of a team. After conversion, a representation of 85% and 15% was obtained for military and civilian individuals respectively. However, the effect of diversity in

military-civilian composition was found, similar to that of rank, to be not significant.

$H2_A$. There is a significant relationship between within-team demographic diversity and team performance.

The Demographic Diversity category had three variables: Nationality, Gender, and Age.

Analyses suggested that the diversity in the ages of team members had a positive relationship with the team performance. That is, the more different the ages of team members were from one another, the better the team performed. Conversely, the closer the ages of team members to one another, the less effectively the team performed. These results implied that team members would collaborate better as their ages varied more. This may stem from the better exchange of information from older and more experienced members to younger and less experienced ones. Another reason could be the universal social contract that advises respect for the older and sympathy with the younger. One might also consider in the first place that age may signify the seniority among team members. This might be right for the NATO countries from eastern Europe, since their promotion systems are usually based on the length of the service in military, thus personnel get to higher ranks as their ages grow older. However, the promotion systems of the western European NATO countries, the United States of America, and Canada are totally different and are based on the merit of individual credentials; therefore, it is common to see young senior or old junior military personnel, especially at higher ranks such as OF-4 and OF-5, in these

countries. Owing to the fact that the sample for this study was mainly composed of military personnel from aforementioned countries, we may conclude that age is unlikely to signify seniority among team members in the NATO context.

The effects of diversity in nationality and gender were found to be not significant in the analyses. Yet, based on the literature review, they were both expected to have significant effects. The frequency tables in Appendix L that illustrated the distribution of the diversity levels of the 47 teams for the variables of nationality and gender suggested an unbalanced and insufficient variation in diversity for these two variables, which in turn led to inconclusive results. For instance, the sample had 26 (55%) fully diverse teams in terms of nationality, 19 (41%) highly diverse (0.70 and higher) teams, and only two (4%) non-diverse teams. When it came to gender, the sample had 39 (83%) non-diverse teams, seven (15%) merely diverse (0.50 and lower) teams, and only one (2%) fully diverse team.

$H3_A$. There is a significant relationship between within-team cultural diversity and team performance.

Within-team cultural diversity was analyzed through two different data sets. The first data set consisted of the diversity measures in Hofstede's cultural dimensions, Individualism (IND) and Long Term Orientation (LTO), since these two were the only ones that passed the reliability test. The second data set contained the diversity measures in two work related cultural dimensions: Quality of Work Life (QoWL) and Assertiveness in Work Life (AiWL), which were acquired by means of a factor analysis of Hofstede's VSM-94.

Analyses suggested that the effects of within-team diversity in the IND and LTO dimensions on team performance were not significant. However, this result was inconclusive and could be misleading, due to the facts that these two variables were computed through Hofstede's equations designed to calculate national indices on cultural dimensions as opposed to the individual values, and that the other three dimensions, PD, UAV, and MAS, couldn't pass the reliability tests.

On the other hand, within-team diversity in QoWL was found to have a significant and negative relation to team performance. That is, the more different the perceptions of quality of work life within a team were, the less effectively the team performed. Conversely, the higher the unanimity on the perception of quality of work life within team was, the better the team performed. A better interpretation of the result might be that team performance would likely decline in parallel to the degree of how much differently team members value the following quality aspects of work life:

- Having sufficient time for your personal or family life,
- Having good physical working conditions (good ventilation and lighting, adequate work space, etc.),
- Having a good working relationship with your direct superior,
- Having security of employment,
- Personal steadiness and stability,
- Thriftiness (wisely use of resources, avoidance of unnecessary spending), and

- Persistence (perseverance).

The effect of diversity in assertiveness in work life was found to be not significant in the analyses. The frequency table in Appendix L that illustrates the distribution of diversity levels of 47 teams for the variable AiWL suggests a balanced and sufficient variation in diversity for the variable. The analysis also revealed a high correlation between AiWL and QoWL that implied that what they really measured were not the same, yet similar. In a sense, as defined in Hofstede's "Masculinity/Femininity" dimension, being low in quality of work life indicates being high in assertiveness in work life and vice versa. To that end, one could conclude that the diversity in QoWL also controlled much of the effect of the diversity in AiWL on team performance when they were entered the model together.

$H4_A$. There is a significant relationship between aggregated categorical within-team diversity and team performance.

The average of the within-team diversity for the variables that compose a category was taken as the aggregated diversity measure for that particular category. For instance, the average of within-team diversity for nationality, gender, and age was regarded as the aggregated Demographical diversity.

Analyses revealed that the effects of both the aggregated demographical diversity and the aggregated cultural diversity on team performance were significant. The level of aggregated demographical diversity had a positive relation to team performance, while the level of aggregated cultural diversity had a negative one. That is, the overall within-team diversity in demographic aspects

would likely foster team performance. On the other hand, the overall within-team diversity in cultural aspects would likely diminish team performance. Although the literature review suggests that demographical diversity, in general, negatively affects the group performance, its effect might be quite different in a multinational military context. To that end, this finding was considered important.

The effect of aggregated functional diversity on team performance was not found to be significant in the analyses. The frequency table in Appendix L that illustrates the distribution of diversity levels of 47 teams for the aggregated functional within-team diversity index suggests a balanced and sufficient variation in diversity. The results indicate that overall functional diversity within a team has no or minor impact on the team performance. The literature regarding the civilian multinational context suggest a significant positive relationship between functional diversity and team performance. In a multinational military context, however, since the tasks were usually standardized, and pertinent training was provided through the military training system, so that any individual regardless of his/her functional peculiarities could fulfill those tasks, the effects of functional diversity could be trivial.

$H5_A$. The effect of within-team diversity on team performance differs significantly by the functional directorate within which team operates.

The results demonstrated that the directorates to which the teams belonged neither had a statistically significant relationship with team performance nor altered the effects of within-team diversity on team performance. The literature review suggested that functional diversity had generally positive effects

in the problem solving, decision-making, creativity, innovation, and transformation fields. Since two of the four directorates at HQ SACT were mainly dealing with innovation and transformation, it was assumed that the within-team functional diversity would have a similar impact on the performance of the teams in these two directorates. However, the analyses didn't support this assumption for the multinational military context.

$H6_A$. The effect of within-team diversity on team performance differs significantly by the use of Standard Operating Procedures (SOP).

The analyses discovered that the use of SOP for a team had a statistically significant relationship with team performance and also significantly curbed the effects of within-team diversity on team performance. The results indicated that the effects of within-team diversity on team performance were diminished when the team used SOP. In other words, the use of SOP counterbalanced both the positive effect of demographic diversity and the negative effect of cultural diversity. This result also supported the assumption that the tasks, in a military context, were usually standardized, and that pertinent training was provided through the military training system in order to allow individuals to accomplish their tasks regardless of his/her functional, demographic or cultural attributes.

$H7_A$. The effect of within-team diversity on team performance differs significantly by the team size.

Team size was found to have a significant and negative relationship with team performance. That is, the smaller the team, the better it performed. However, this didn't mediate the effects of within-team diversity on the team

performance. In other words, regardless of team size, the within-team demographic and cultural diversities had significant impacts on the team performance.

5.2. Conclusion

The study presented empirical evidence that within-team diversity plays a significant role on the team performance in multinational military environment. Diversity in multinational experience and age were found to be the factors that best promote the performance of multinational military teams, whereas diversity in military branch and perception of quality of work life were the factors that most undermine it. The influence of within-team disparities in education level, English language proficiency, rank, nation, and gender was found to be minor and was not significant in a multinational military context. When the overall effects of the functional, demographic, and cultural diversities were taken into consideration, it was seen that the level of demographic diversity in a team enhanced team performance. This contrasted with the teams' level of cultural diversity, which weakened team performance. The role of functional diversity on team performance was found to be minor and not significant. When controlled by directorate, the use of SOP within the team, and team size, the analyses showed that only use of SOP altered and counterbalanced the effects of demographic and cultural diversities on team performance. Another key finding was that the team size had a significant negative correlation with team performance, while the use of SOP had a significant positive correlation.

Although the literature review concerning teams in the civilian environment suggested that demographic diversity had generally negative effeccts, functional

diversity had generally positive effects, and cultural diversity had both positive and negative effects on teamwork, the results of this study could only support the negative effects of cultural diversity. In contrast, the results indicated positive effects on team performance for demographic diversity and no or minor effects for functional diversity, even in the directorates dealing with innovation and transformation tasks.

The conceptual model developed to analyze the effects of diversity on team performance worked well. It has proven to be a promising model for future research in the field.

The diversity measurements, refined Blau and Standard Deviation, were adequately effective in measuring within-team diversity by taking into account the team size.

One significant finding of the study was the revelation that Hofstede's cultural dimensions were not able to reflect cultural values of individuals. To that end, the analyses suggested that either VSM-94 or the equations computing five cultural dimensions should not be used at the individual level.

Finally, this study adds to an emerging body of literature examining the notion of the multinational multi-cultural military team. It further suggests that research on multinational military teams can benefit from a deeper exploration on within-team diversity, which occurs by default when individuals from different nations, cultures, and backgrounds are brought together to achieve a mission.

5.3. Implications

There are few studies on multinational, multicultural teams, and even fewer on multinational military teams. But none of them have investigated the

role of within-team diversity on team performance for functional, demographic, and cultural diversity together in a multinational, multicultural military context.

The literature stresses the multiculturalism in military teams as a pressing future challenge that requires additional research in order to address the potential issues stemming from the differences among the team members, whose nationalities, cultures and professional backgrounds are vastly dissimilar. As research in civilian context has noted, as it studies the significant effects of diversity on team processes and outcome, increasingly both managers and researchers want to learn how diversity can be managed in ways that can both minimize its risks and promote its benefits.

This study presents a unique effort to explore within-team diversities in multinational, multicultural military settings, and their impacts on team performance. The methodology employed is also unique in that it divides diversity into three categories, computing within-team diversities and investigating the relationship between within-team diversity and team performance. Another advantage of the methodology is that it can be easily implemented in civilian settings, as well.

For military organizations, the research findings have practical benefits. By providing a solid conceptual framework for detecting the effects of diversity on teamwork, it allows further examination of the topic for different military headquarters or units when needed.

The study discerned that having team members with varying ages and multinational experience was good for teamwork on multinational military teams,

and that this should be encouraged by leaders whenever possible. One systematic means to achieving this is to organize military teams in such a way that varying ranks between OF-1 and OF-4 would be present in the teams, since rank naturally controls the age and multinational experience.

On the other hand, having team members from different military branches, or having team members who perceive and think differently about quality and assertiveness in their work lives, created a degrading effect on team performance; leaders should develop ways and means to mitigate their negative effects. Reorganizing teams in a way that there would be less variety in the military branches of team members could be a means to reduce the negative effects. In addition, training on joint collaboration also would likely contribute toward mitigation of those effects. Also, cultural training could help team members understand one another's perception of quality and assertiveness in work life, and could encourage them to bear each other and to collaborate better. It is also feasible, if the recruiting system allows, to apply cultural tests and interviews to distinguish the team members who care more about quality of life, and to employ them on teams, while employing those who are more assertive in work life mainly in the tasks that requires less teamwork.

One of the key findings of the study was that the use of standard operating procedures (SOP) for the team would likely counterbalance the effects of within-team diversity on the team performance. The results implied that the members of a multinational team would collaborate and fulfill their tasks better if they knew how, when, and what to do with whom. To that end, one might infer that

identifying processes, community of interest, milestones, and end states, and standardizing procedures within teams might limit the creativity of the individuals, yet would help team members from different nations, cultures, and backgrounds to cooperate effectively.

The study found the effects of functional and demographic diversity on team performance were different from what the literature review suggested, which in turn implied that the dynamics of diversity could be different in multinational multicultural military settings.

The results of the study shed light on the role of demographic, functional, and cultural diversity on the performance of multinational military teams, and create an upfront situational awareness on what military coalitions should expect to experience with respect to diversity in relation with teamwork from the onset. The results, by identifying the significance of within-team diversity effects on team performance, suggest that it is likely worth the investment in relevant training or technology that may help mitigate the negative effects of diversity while capitalizing on its positive effects. Carte and Chidambaram (2004) suggest that the reductive capabilities of collaborative technologies are beneficial for newly formed diverse teams to overcome the negative effects of diversity.

The findings of this research could also be generalized for other headquarters of NATO and other coalition forces.

The implications to academia are to expand the current body of knowledge in the area of within-team diversity and team effectiveness in multinational, multicultural military settings. This research is among the first

empirical work to conceptualize the relationship between the diversity in a team and its effectiveness in multinational, multicultural military context. In that respect, this research contributes to the discipline of engineering management by providing a model to improve our understanding and ability to predict the effectiveness of multinational military teams by assessing the level of diversity within the teams.

5.4. Assumptions

The primary assumption for the research was that HQ SACT would represent the other HQ and agencies of NATO and the combined HQ of coalition forces.

Although the functional levels or individual roles of each HQ and agency of NATO differ, all have similar organizational structures to that of HQ SACT. That is, they cluster down from departments to divisions, branches, and sections. In that respect, regardless of the context and scope of the their mission, it was assumed that teams would function in similar way and that the effects of diversity on team performance would follow similar patterns, even for the teams in different HQ and agencies of NATO. To that end, HQ SACT was assumed to be able to provide a representative sample for the entirety of NATO.

In coalitions, participating nations usually form a combined headquarters to plan, coordinate, and conduct operations. The organizational structure of this headquarters is often similar to the headquarters of NATO Joint Force Commands, which comprise divisions, branches, and sections, and ultimately similar to that of HQ SACT. In this regard, it was also assumed that HQ SACT

would provide a representative sample for the combined HQ of coalition forces, as well.

The secondary assumption was about the construct of cultural diversity. It was presumed that, although Hofstede's (2001) cultural dimensions were designed to capture differences in values at national level, they would also be able to reflect differences at individual level. If not, the Values Survey Model (VSM) -94, at least, could be utilized to construct cultural dimensions at the individual level.

Hofstede's (2001) construct of cultural dimensions turned out to be not appropriate at individual level. However, VSM-94 provided adequate reliability and content to allow for the construction of two different cultural dimensions at the individual level.

5.5. Limitations and Delimitations

There are no previous studies that specifically search for the relationship between diversity and team effectiveness in multinational and multicultural military settings. This study brought out a unique conceptual model by combining theoretical models for teamwork and diversity.

The research built the cultural diversity framework based on Hofstede's (2001) cultural construct. Since his construct turned out to be not applicable at the individual level, the findings and implications concerning cultural diversity remain limited. Despite the new cultural construct that the study was able to extract from the Hofstede's (2001) VSM-94 through factor analysis, the effects of

cultural diversity on team effectiveness couldn't be analyzed to the full extent, as had been conceptualized.

The data and analysis methods used in the research design were limited in certain areas, since the research focused solely on the examination of the role of diversity on team effectiveness in multinational and multicultural military settings. The management of diversity, the ways and means to promote positive effects and mitigate negative effects, and other confounding variables affecting team effectiveness, concept, or strategy development with respect to diversity, and the pros and cons of diversity were all out of the scope of this study.

The data were collected through HQ SACT based on the assumption that it would represent both the other HQ and agencies of the NATO, and the combined headquarters of coalition forces. However, HQ SACT has a unique mission of training and transformation that is different than those of others. Moreover, each HQ and agency of NATO has complimentary, yet different roles and responsibilities. Likewise, the missions of combined headquarters of coalition forces may vary significantly. Furthermore, the complexity of tasks, the battle rhythm, and the tempo and stress level for each HQ might be different, as well. Thus, to the degree that role, mission, tasks, and tempo of an HQ influence team performance, this constitutes a limitation to the extrapolation of the results to the other multinational and multicultural military headquarters.

The sample size, while technically acceptable, was still low. Theoretically, 25 teams were sufficient at a minimum for the analyses, yet the literature suggested a larger sample size for less-biased results. The study managed to

gather data from 47 teams out of 80 at HQ SACT. The sample size provided adequate predicting power for some variables to have conclusive results. Nonetheless, for the functional diversity, the education level in particular, and for the directorate, the results were not as anticipated, which, in turn, might have stemmed from the low sample size. To that end, a larger sample size might have made the results more conclusive and generalizable.

The number of respondents in the teams poses a limitation to the study, as well. The sample had only 18 teams with all elements (staff officers, section heads, and branch heads) participating in the survey. For the remaining 29 teams, the majority of the team members responded to the survey with both their section heads and branch heads or either one participating. For these 29 teams, team diversity indices were computed based on the number of respondents in the teams, not based on the actual team size. Therefore, there may have been some cases in which the non-participating member of the team was more influential on the team performance than the participating members, and this was not accounted for in the analyses. Furthermore, the team diversity indices computed based on the respondents may not have reflected the actual degrees of within-team diversity due to the non-respondents. The actual degrees of within-team diversity might have been higher or lower than the computed values. Nevertheless, since the respondents and the teams they comprised were chosen on random basis, the impact of missing members on the analyses was assumed to be minimal.

The sample did not adequately represent the population in terms of gender. The sample included only 10 females out of 270 individuals, which accounted for 3.7% of the sample size, as opposed to women's 15% representation among all personnel at HQ SACT. The data revealed that there were other female participants in the survey, however, since the majority of their team failed to participate, their teams were not included in the sample.

With respect to the analyses, the study focused on quantitative indicators for the most influential factors as identified in the previous literature. Qualitative factors and less influential factors were out of the scope of this study, for feasibility purposes.

5.6. Future Research Directions

This research was one of the first of its kind in terms of the multinational military settings and the conceptual model employed. The results present evidence that the conceptual model and the methodologies employed worked well in predicting the relationship between within-team diversity and team effectiveness. The study utilized a sample only from HQ SACT. In that regard, this study may be replicated for other multinational military organizations to explore whether the effects of diversity on team effectiveness follow similar patterns, or if the findings are really generalizable to other multinational military organizations and headquarters.

Since the research is focused solely on the examination of the role of diversity on team effectiveness in multinational and multicultural military settings, there is still room for further research on the management of diversity, the ways and means to promote positive effects and to mitigate negative effects, concept

or strategy development with respect to diversity, and the pros and cons of diversity in multinational military settings.

One significant contribution to the field might be the investigation of the mediating and confounding factors between within-team diversity and team performance such as the role, mission, tasks, and tempo of multinational military organization.

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APPENDICES

APPENDIX A: SURVEY QUESTIONNAIRES

MULTINATIONAL TEAM DIVERSITY PROFILING QUESTIONNAIRE

(Adapted from Prof. Geert Hofstede's VSM 94)

Please think of **an ideal job**, **disregarding your present job**. In choosing an ideal job, how important would it be to you to ... (please circle one answer in each line across):

1 = of utmost importance

2 = very important

3 = of moderate importance

4 = of little importance

5 = of very little or no importance

1. have sufficient time for your personal or family life	1 2 3 4 5
2. have good physical working conditions (good ventilation and lighting, adequate work space, etc.)	1 2 3 4 5
3. have a good working relation-ship with your direct superior	1 2 3 4 5
4. have security of employment	1 2 3 4 5

5. work with people who cooperate well with one another 1 2 3 4 5
6. be consulted by your direct superior in his/her decisions 1 2 3 4 5
7. have an opportunity for advancement to higher level jobs 1 2 3 4 5
8. have an element of variety and adventure in the job 1 2 3 4 5

In your private life, how important is each of the following to you? (please circle one answer in each line across):

9. Personal steadiness and stability 1 2 3 4 5
10. Thrift (wisely use of resources, avoidance of unnecessary spending) 1 2 3 4 5
11. Persistence (perseverance) 1 2 3 4 5
12. Respect for tradition 1 2 3 4 5

In your professional work life:

13. How often do you feel nervous or tense at work?
    1. never
    2. seldom
    3. sometimes
    4. usually
    5. always

14. How frequently, in your experience, are subordinates afraid to express disagreement with their superiors?

1. very seldom
2. seldom
3. sometimes
4. frequently
5. very frequently

To what extent do you agree or disagree with each of the following statements? (please circle one answer in each line across):

1 = strongly agree

2 = agree

3 = undecided

4 = disagree

5 = strongly disagree

15. Most people can be trusted	1 2 3 4 5
16. One can be a good manager without having precise answers to most questions that subordinates may raise about their work	1 2 3 4 5
17. An organization structure in which certain subordinates have two bosses should be avoided at all costs	1 2 3 4 5

18. Competition between staff usually does more harm than good 1 2 3 4 5

19. A organization's rules should not be broken - not even when the employee thinks it is in the organization's best interest 1 2 3 4 5

20. When people have failed in life it is often their own fault 1 2 3 4 5

Some information about yourself:

21. Which country are you from? Please type.

22. How old are you?

23. Are you:

    1. Male
    2. Female

24. Are you:

    1. Army
    2. Navy
    3. Air Force
    4. Marine Corps or equivalent
    5. NATO civilian
    6. Contractor

25. Your rank / pay grade (STANAG 2116):

Civilian Pay Grades
1. Lower than A-1 (Engineer) or equivalent
2. A-1 (Engineer) or equivalent
3. A-2 (Engineer with experience) or equivalent
4. A-3 (Senior Engineer) or equivalent
5. A-4 (Senior Principal Engineer) or equivalent
6. Upper than A-4 or equivalent
Military Ranks
7. OR-1-5 (NCO)
8. OR-6-9 and OF-D (NCO and Warrant Officer)
9. OF-1 (Lieutenant (Army, Air Force), Sub-Lieutenant)
10. OF-2 (Captain (Army, Air Force), Lieutenant (Navy))
11. OF-3 (Major, Lieutenant Commander)
12. OF-4 (Lieutenant Colonel, Commander)
13. OF-5 (Colonel, Captain (Navy))
14. OF-6 and Higher (Upper than Colonel, Captain (Navy))

26. What is the highest degree or level of school you have completed? If currently enrolled, highest degree to be received?

1. High school graduate, diploma or the equivalent (for example: GED)
2. Some college credit, no degree
3. Associate degree or military equivalent
4. Bachelor's degree or military equivalent
5. Master's degree or military equivalent
6. Doctoral degree or military equivalent
7. Other (please clarify)

27. How many years of experience in multinational military environment (coalition forces, multinational military HQs, NATO or non-NATO) do you have in years?

28. How long have you been in the current position? (in months)

29. On a scale from zero to ten, please select and circle your level of proficiency in English in speaking, Listening/understanding, reading and writing skills as to the following definition table of proficiency levels.

Levels / Skills	Speaking	Listening	Reading	Writing
Elementary Proficiency	1	1	1	1
	2	2	2	2
Fair (Limited Working Proficiency)	3	3	3	3
	4	4	4	4
Good (Minimum Proficiency)	5	5	5	5
	6	6	6	6
Very Good (Full Professional)	7	7	7	7
	8	8	8	8
Excellent (Native)	9	9	9	9
	10	10	10	10

Levels	Proficiency Skills
No Practical Proficiency	No particular skills
Elementary Proficiency	-Adequate for routine courtesy and minimum practical needs related to traveling, obtaining food, and lodging, giving and understanding simple directions, asking for assistance. -Ability to write is limited to simple lists of common items or a few short sentences.
Fair	-Adequate for simple social and routine job needs as giving and understanding instructions and discussing projects within very familiar subject-matter fields. Word-meanings often unknown, but quickly learned. -Can draft routine social correspondence and meet limited professional need.
Good (Minimum Proficiency)	-Adequate for all practical and social conversations, discussions and correspondence in a known field. -Can draft official correspondence and reports in a special field.
Very Good (Full Professional)	-Broad, precise, and appropriate to the subject and the occasion. -Can draft all levels of prose pertinent to professional needs.
Excellent (Native)	-Completely equal to a native speaker of the language.

30. How often do you use Standard Operating Procedures (SOP) in conducting your tasks?

1. never/ Don't have SOPs
2. seldom
3. sometimes
4. usually
5. always

31. Please choose your directorate from the list.

    (List of directorates was provided)

32. Please choose your section from the list.

    (List of sections was provided)

Thank you very much for your cooperation!

TEAM PERFORMANCE QUESTIONNAIRE

(Adapted from Staples & Webster's (2008) Team Performance Questionnaire)

1. How long have you been in the current position (in months)?
2. Please choose your branch from the list.

   (List of branches was provided)

3. Please think about your team's performance. How did your team rate on each of the following factors during the past 6 month?

   (List of sections to be rated was provided based on the branch selected)

Criteria	Poor			Mediocre			Exceptional
The quantity or amount of work produced by the team.	1	2	3	4	5	6	7
The number of innovations or new ideas introduced by the team.	1	2	3	4	5	6	7
Reputation for work excellence.	1	2	3	4	5	6	7
Attainment of team production or service goals.	1	2	3	4	5	6	7
The quality or accuracy of work.	1	2	3	4	5	6	7
Efficiency of team operations.	1	2	3	4	5	6	7
Morale of team personnel.	1	2	3	4	5	6	7
Adherence to schedule and budget.	1	2	3	4	5	6	7

Thank you very much for your cooperation!

APPENDIX B: EHSRC EXEMPT LETTER AND APPROVAL EMAIL

EHSRC EXEMPT LETTER

OFFICE OF THE VICE PRESIDENT FOR RESEARCH
[redacted]
4111 Monarch Way, Suite 203
Norfolk, Virginia 23508
[redacted]
Office of Research
1 Old Dominion University
Norfolk, Virginia 23529
Phone(757) 683-3460
Fax(757) 683-5882

DATE:	April 1, 2015
TO:	MUSTAFA UTOGLU
FROM:	Old Dominion University Engineering Human Subjects Review Committee
PROJECT TITLE:	[706932-3] The role of diversity on team effectiveness in multinational, multicultural military environment.
REFERENCE #:	ENGR-15-03
SUBMISSION TYPE:	Amendment/Modification
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	
REVIEW CATEGORY:	Exemption category # 6.2

Thank you for your submission of Amendment/Modification materials for this project. The Old Dominion University Engineering Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Stacie Ringleb at 757-683-6363 or sringleb@odu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Engineering Human Subjects Review Committee's records.

EHSRC APPROVAL EMAIL

Date: 04/01/2015 03:05 PM

From: <no-reply@irbnet.org>

Subject: IRBNet Board Action

Please note that Old Dominion University Engineering Human Subjects Review Committee has taken the following action on IRBNet:

Project Title: [706932-3] The role of diversity on team effectiveness in multinational, multicultural military environment.

Principal Investigator: MUSTAFA UTOGLU

Submission Type: Amendment/Modification

Date Submitted: April 1, 2015

Action: APPROVED

Effective Date: April 1, 2015

Review Type: Exempt Review

Should you have any questions you may contact Stacie Ringleb at sringleb@odu.edu.

Thank you,

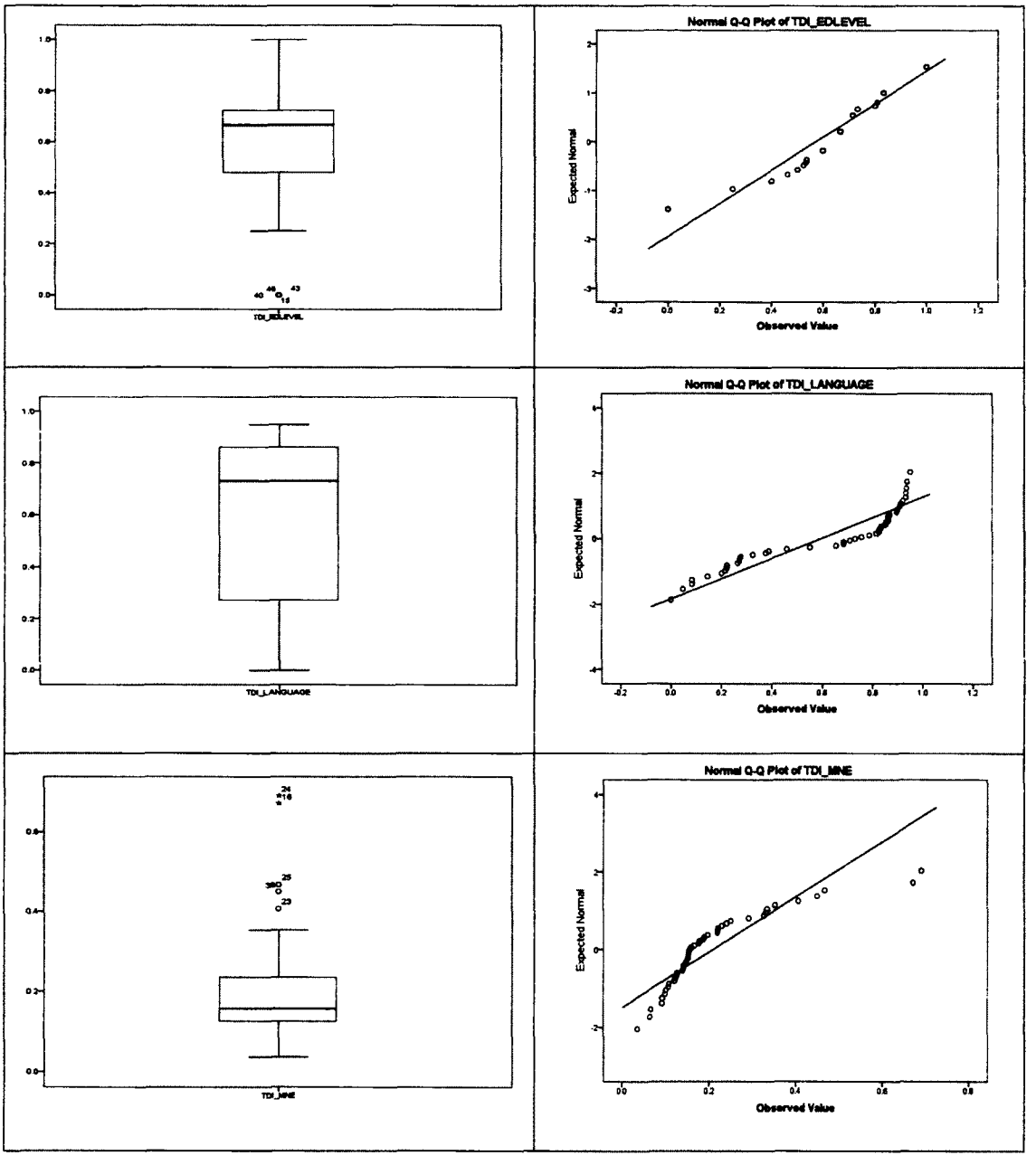
The IRBNet Support Team

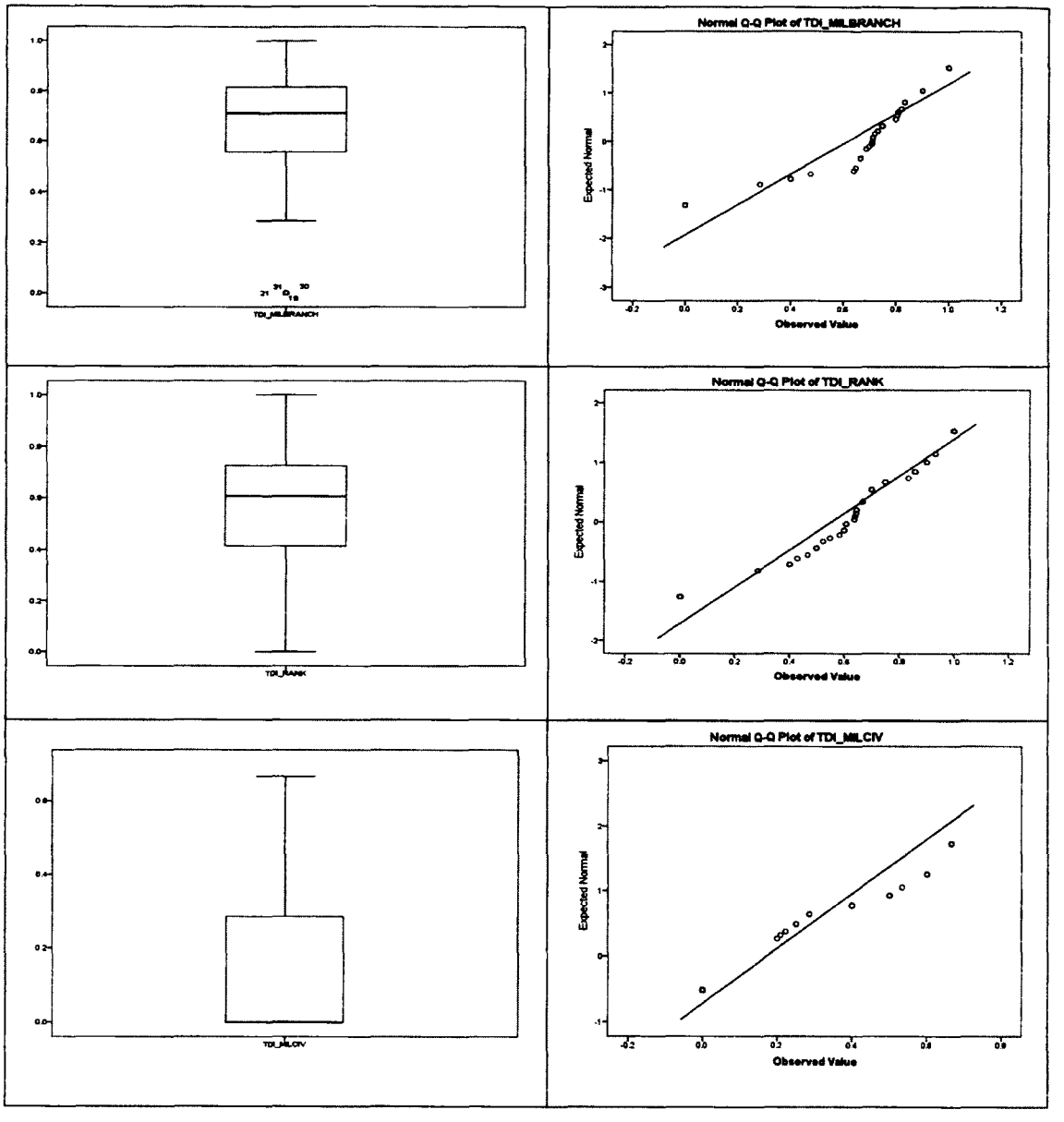
www.irbnet.org

APPENDIX C: TEAM DIVERSITY INDICES FOR FUNCTIONAL DIVERSITY VARIABLES

Team No.	TDI-EDLEVEL	TDI-LANGUAGE	TDI-MNE	TDI-MILBRANCH	TDI-RANK	TDI-MIL-CIV
1	0.40	0.22	0.13	0.40	0.00	0.00
2	0.71	0.32	0.17	0.29	0.29	0.00
3	0.83	0.14	0.25	0.83	0.50	0.00
4	0.73	0.28	0.09	0.73	0.93	0.53
5	0.40	0.22	0.09	0.00	0.60	0.00
6	0.00	0.46	0.04	0.80	0.40	0.00
7	0.52	0.55	0.15	0.82	0.61	0.00
8	0.81	0.08	0.20	0.81	0.86	0.29
9	0.60	0.20	0.35	0.90	0.90	0.60
10	0.60	0.38	0.24	0.90	0.40	0.40
11	0.00	0.27	0.19	1.00	0.00	0.00
12	1.00	0.08	0.07	1.00	0.00	0.00
13	0.00	0.22	0.22	0.00	1.00	0.00
14	1.00	0.00	0.19	0.00	1.00	0.00
15	0.00	0.00	0.15	0.00	1.00	0.00
16	0.67	0.27	0.67	0.67	1.00	0.67
17	0.67	0.05	0.07	0.67	0.00	0.00
18	1.00	0.39	0.33	0.83	1.00	0.50
19	0.50	0.26	0.15	0.00	0.50	0.00
20	1.00	0.94	0.29	1.00	0.67	0.67
21	0.83	0.86	0.22	0.00	0.70	0.00
22	0.54	0.79	0.14	0.69	0.47	0.00
23	0.60	0.68	0.41	0.71	0.52	0.00
24	0.67	0.92	0.69	1.00	0.50	0.50
25	0.46	0.85	0.47	0.65	0.55	0.21
26	0.67	0.65	0.18	0.83	0.67	0.00
27	0.50	0.83	0.34	0.70	0.70	0.60
28	0.25	0.86	0.16	0.71	0.64	0.00
29	0.80	0.91	0.23	0.71	0.43	0.00
30	0.67	0.93	0.11	0.00	0.83	0.00
31	0.67	0.95	0.18	0.00	0.00	0.00
32	0.67	0.82	0.33	0.80	0.90	0.60
33	0.83	0.73	0.10	0.90	0.70	0.40
34	0.60	0.90	0.22	0.64	0.64	0.00
35	0.71	0.90	0.15	0.71	0.64	0.20
36	0.67	0.76	0.10	0.40	0.60	0.00
37	0.53	0.87	0.14	0.81	0.58	0.22
38	0.71	0.71	0.45	0.75	0.61	0.25
39	0.40	0.83	0.15	0.67	0.67	0.00
40	0.00	0.81	0.12	1.00	0.00	0.00
41	0.60	0.93	0.11	0.72	0.00	0.00
42	0.60	0.86	0.12	0.75	0.64	0.25
43	0.00	0.83	0.16	0.67	0.00	0.00
44	1.00	0.68	0.12	0.67	0.67	0.67
45	0.67	0.85	0.15	0.67	0.00	0.00
46	0.00	0.91	0.14	0.75	0.75	0.25
47	0.83	0.93	0.14	0.48	0.86	0.29

APPENDIX D: BOX PLOTS AND NORMAL Q-Q PLOTS FOR FUNCTIONAL DIVERSITY TDI

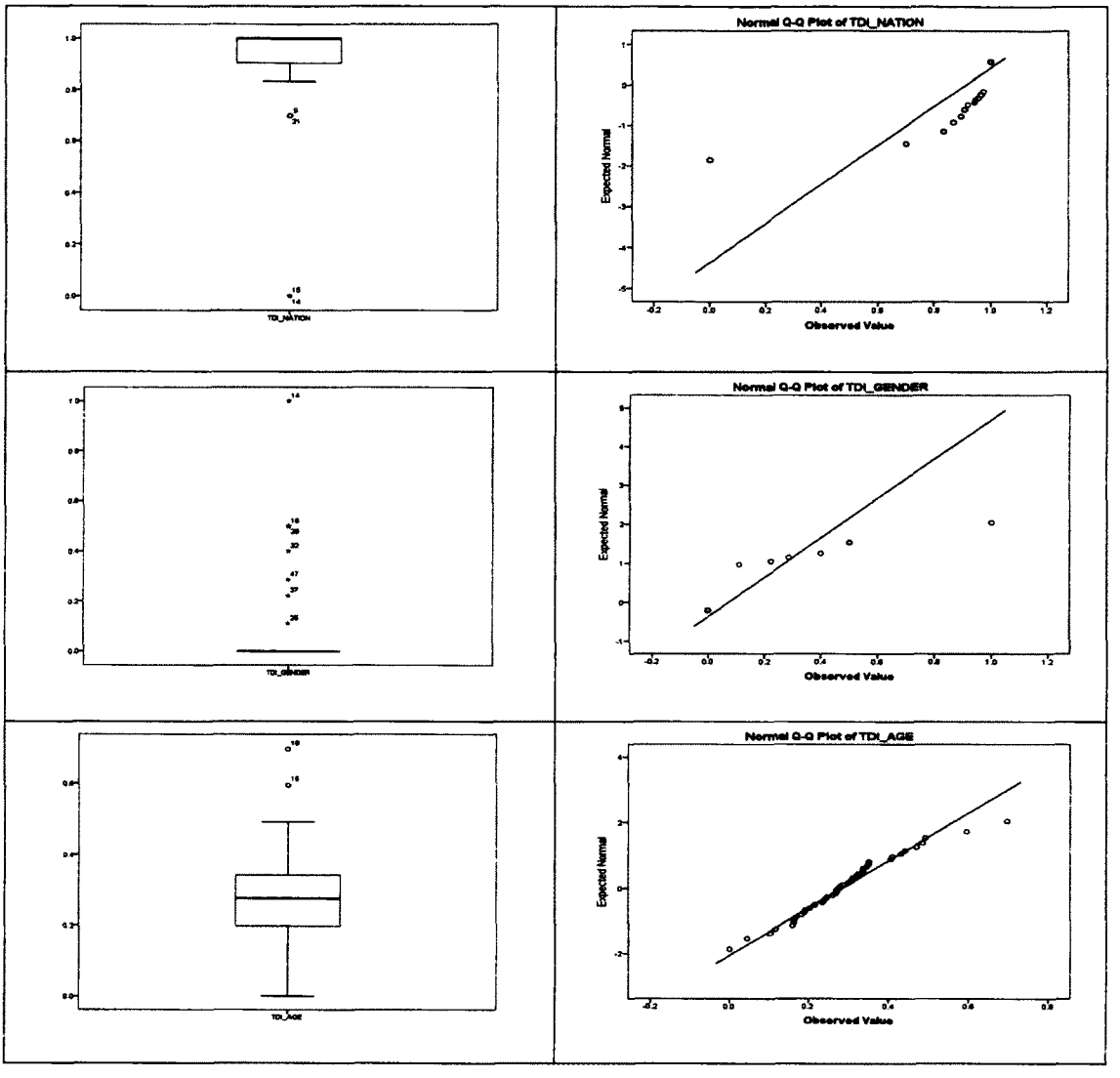



Normal Q-Q Plot of TDI_MILBRANCH
Expected Normal
Observed Value
Normal Q-Q Plot of TDI_RANK
Expected Normal
Observed Value
Normal Q-Q Plot of TDI_MILCIV
Expected Normal
Observed Value

APPENDIX E: TEAM DIVERSITY INDICES FOR DEMOGRAPHIC DIVERSITY VARIABLES

Team No.	TDI-NATION	TDI-GENDER	Standardized TDI-AGE
1	1.00	0.00	0.16
2	0.90	0.00	0.19
3	0.83	0.00	0.30
4	0.87	0.00	0.27
5	1.00	0.00	0.26
6	1.00	0.00	0.31
7	1.00	0.00	0.24
8	0.90	0.00	0.34
9	0.70	0.00	0.49
10	1.00	0.00	0.30
11	1.00	0.00	0.04
12	1.00	0.00	0.27
13	1.00	0.00	0.22
14	0.00	1.00	0.00
15	0.00	0.00	0.59
16	1.00	0.00	0.49
17	1.00	0.00	0.20
18	0.83	0.50	0.70
19	1.00	0.00	0.11
20	1.00	0.00	0.41
21	0.70	0.00	0.35
22	1.00	0.00	0.17
23	1.00	0.00	0.34
24	1.00	0.00	0.10
25	0.94	0.11	0.27
26	1.00	0.50	0.31
27	1.00	0.00	0.43
28	0.95	0.00	0.29
29	0.96	0.00	0.32
30	0.83	0.50	0.44
31	1.00	0.00	0.32
32	1.00	0.40	0.28
33	1.00	0.00	0.25
34	0.92	0.00	0.34
35	0.87	0.00	0.28
36	1.00	0.00	0.16
37	0.97	0.22	0.35
38	0.89	0.00	0.41
39	0.90	0.00	0.18
40	1.00	0.00	0.00
41	0.94	0.00	0.17
42	0.96	0.00	0.35
43	1.00	0.00	0.22
44	1.00	0.00	0.24
45	1.00	0.00	0.19
46	0.89	0.00	0.24
47	1.00	0.29	0.47

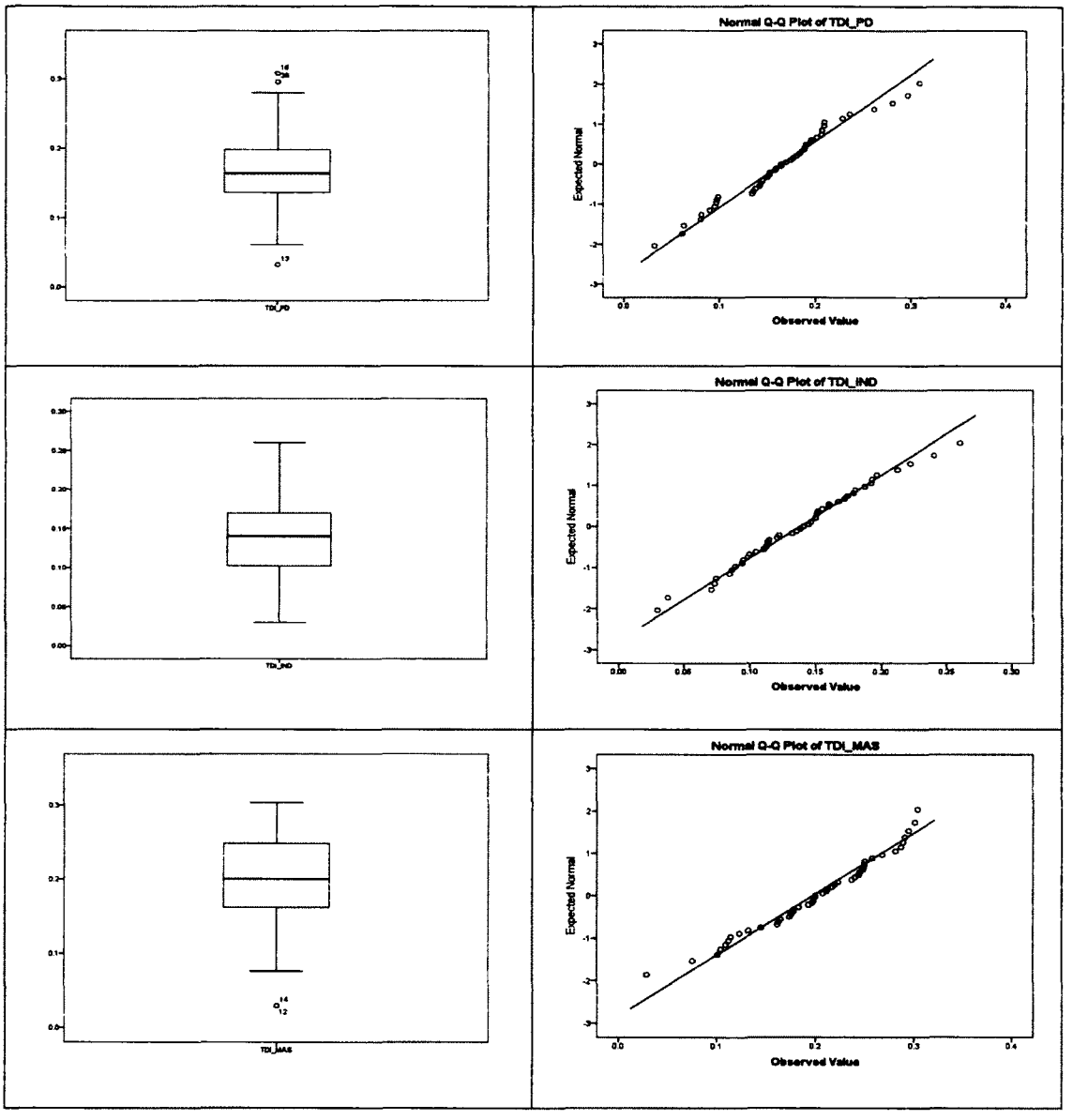
APPENDIX F: BOX PLOTS AND NORMAL Q-Q PLOTS FOR DEMOGRAPHIC DIVERSITY TDI

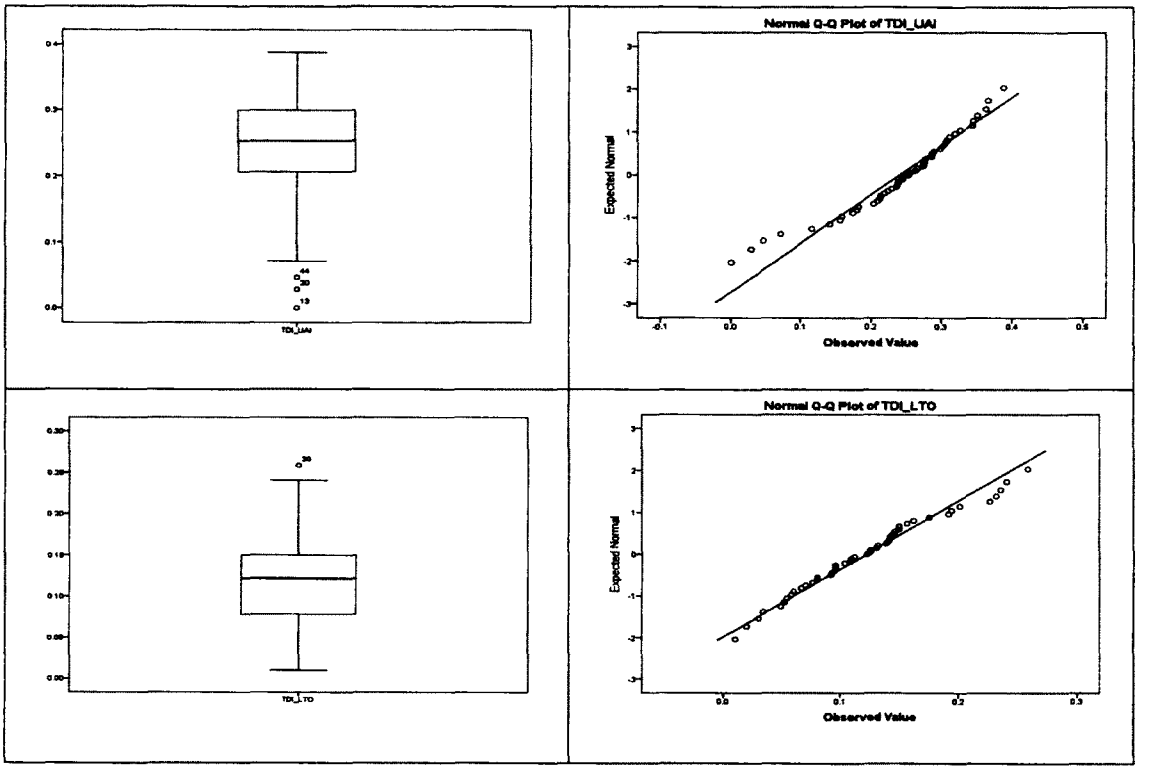


APPENDIX G: TEAM DIVERSITY INDICES FOR CULTURAL DIVERSITY DIMENSIONS

Team No.	TDI-PD	TDI-IND	TDI-MAS	TDI-UAI	TDI-LTO
1	0.19	0.09	0.11	0.28	0.06
2	0.08	0.20	0.15	0.07	0.20
3	0.08	0.10	0.24	0.22	0.07
4	0.16	0.17	0.26	0.26	0.15
5	0.10	0.19	0.22	0.21	0.16
6	0.14	0.14	0.11	0.36	0.13
7	0.14	0.18	0.29	0.37	0.14
8	0.20	0.17	0.16	0.25	0.07
9	0.16	0.09	0.25	0.25	0.23
10	0.26	0.13	0.10	0.34	0.08
11	0.15	0.17	0.27	0.24	0.05
12	0.21	0.03	0.03	0.16	0.02
13	0.03	0.15	0.16	0.00	0.03
14	0.15	0.24	0.03	0.18	0.01
15	0.23	0.15	0.25	0.24	0.15
16	0.31	0.15	0.20	0.31	0.03
17	0.13	0.16	0.13	0.12	0.24
18	0.28	0.11	0.25	0.14	0.24
19	0.19	0.11	0.29	0.24	0.09
20	0.10	0.04	0.12	0.03	0.14
21	0.18	0.16	0.17	0.24	0.14
22	0.21	0.14	0.30	0.32	0.08
23	0.19	0.10	0.29	0.17	0.05
24	0.24	0.08	0.08	0.30	0.05
25	0.15	0.12	0.24	0.33	0.14
26	0.10	0.07	0.17	0.16	0.19
27	0.18	0.14	0.30	0.30	0.11
28	0.17	0.19	0.21	0.29	0.06
29	0.18	0.09	0.20	0.21	0.09
30	0.14	0.15	0.18	0.20	0.26
31	0.06	0.18	0.18	0.39	0.14
32	0.16	0.21	0.18	0.18	0.13
33	0.10	0.10	0.21	0.28	0.12
34	0.14	0.12	0.29	0.23	0.10
35	0.18	0.14	0.20	0.31	0.15
36	0.30	0.11	0.20	0.22	0.16
37	0.21	0.15	0.18	0.29	0.10
38	0.21	0.22	0.19	0.35	0.10
39	0.20	0.16	0.21	0.35	0.19
40	0.19	0.07	0.28	0.27	0.13
41	0.15	0.11	0.22	0.31	0.08
42	0.21	0.10	0.10	0.27	0.12
43	0.06	0.15	0.22	0.27	0.10
44	0.15	0.07	0.24	0.05	0.23
45	0.09	0.26	0.11	0.29	0.11
46	0.17	0.11	0.24	0.26	0.18
47	0.16	0.19	0.25	0.21	0.11

APPENDIX H: BOX PLOTS AND NORMAL Q-Q PLOTS FOR CULTURAL DIVERSITY TDI




Normal Q-Q Plot of TDI_UAI
Expected Normal
Observed Value
Normal Q-Q Plot of TDI_LTO
Expected Normal
Observed Value

APPENDIX I: TEAM DIVERSITY INDICES FOR CULTURAL DIVERSITY DIMENSIONS (QoWL and AiWL)

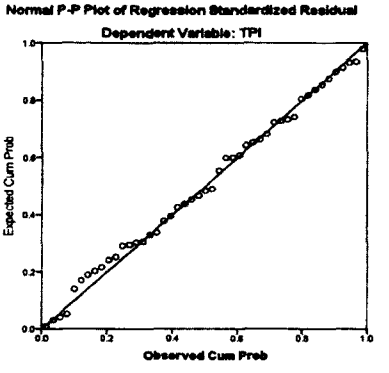
Team No.	TDI-QoWL	TDI-AiWL
1	0.19	0.11
2	0.19	0.15
3	0.53	0.71
4	0.27	0.25
5	0.09	0.21
6	0.28	0.31
7	0.37	0.32
8	0.35	0.18
9	0.31	0.15
10	0.11	0.15
11	0.15	0.16
12	0.43	0.31
13	0.18	0.31
14	0.25	0.31
15	0.18	0.13
16	0.06	0.31
17	0.27	0.16
18	0.51	0.28
19	0.16	0.31
20	0.18	0.19
21	0.17	0.15
22	0.23	0.30
23	0.20	0.22
24	0.09	0.10
25	0.27	0.20
26	0.25	0.39
27	0.08	0.22
28	0.25	0.31
29	0.23	0.19
30	0.77	0.82
31	0.19	0.52
32	0.16	0.26
33	0.30	0.23
34	0.18	0.34
35	0.14	0.21
36	0.34	0.40
37	0.10	0.15
38	0.35	0.32
39	0.28	0.14
40	0.36	0.00
41	0.20	0.17
42	0.28	0.20
43	0.07	0.13
44	0.07	0.19
45	0.06	0.18
46	0.15	0.26
47	0.20	0.05

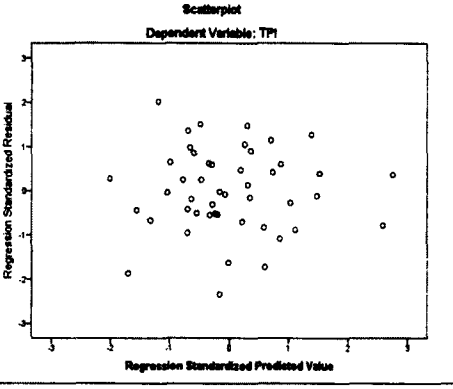
APPENDIX J: AGGREGATED CATEGORICAL WITHIN-TEAM DIVERSITY INDICES FOR FUNCTIONAL, DEMOGRAPHIC AND CULTURAL DIVERSITY DIMENSIONS

Team No.	TDI_Functional	TDI_Demographic	TDI_Cultural
1	0.23	0.39	0.15
2	0.36	0.37	0.17
3	0.51	0.38	0.62
4	0.55	0.38	0.26
5	0.26	0.42	0.15
6	0.34	0.44	0.29
7	0.53	0.41	0.34
8	0.55	0.41	0.27
9	0.59	0.40	0.23
10	0.50	0.43	0.13
11	0.29	0.35	0.16
12	0.43	0.42	0.37
13	0.29	0.44	0.25
14	0.44	0.33	0.28
15	0.23	0.05	0.15
16	0.66	0.50	0.19
17	0.29	0.39	0.21
18	0.71	0.68	0.40
19	0.28	0.37	0.24
20	0.78	0.47	0.18
21	0.52	0.37	0.16
22	0.52	0.42	0.26
23	0.59	0.45	0.21
24	0.76	0.43	0.10
25	0.60	0.44	0.24
26	0.60	0.60	0.32
27	0.61	0.48	0.15
28	0.52	0.41	0.28
29	0.62	0.43	0.21
30	0.51	0.57	0.80
31	0.36	0.44	0.36
32	0.70	0.56	0.21
33	0.65	0.42	0.27
34	0.60	0.42	0.26
35	0.62	0.38	0.17
36	0.50	0.39	0.37
37	0.59	0.52	0.12
38	0.65	0.43	0.33
39	0.54	0.36	0.21
40	0.39	0.33	0.18
41	0.47	0.39	0.19
42	0.60	0.44	0.24
43	0.33	0.41	0.10
44	0.63	0.41	0.13
45	0.47	0.40	0.12
46	0.51	0.38	0.21
47	0.65	0.59	0.13

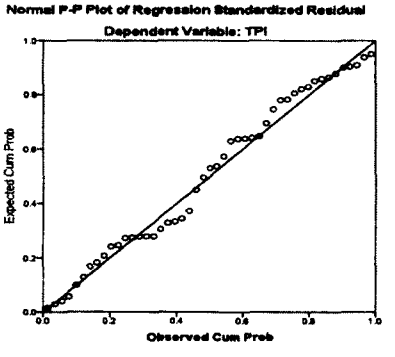
APPENDIX K: NORMAL P-P PLOTS AND ZRESID-ZPRED PLOTS FOR NORMALITY AND HOMOSCEDASTICITY CHECK

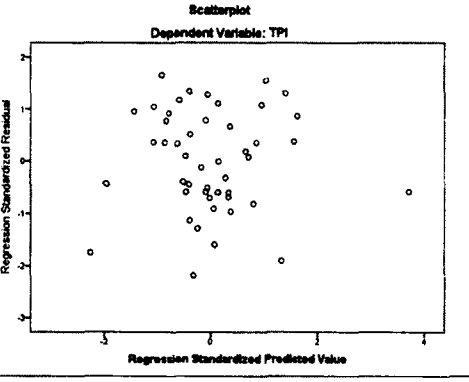
Within-Team Functional Diversity Model



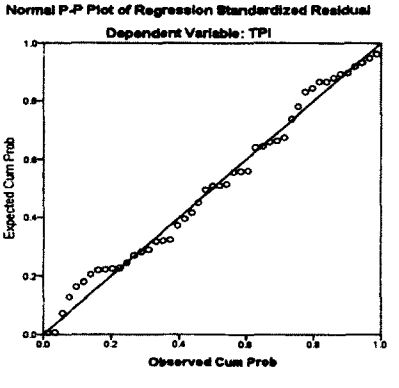


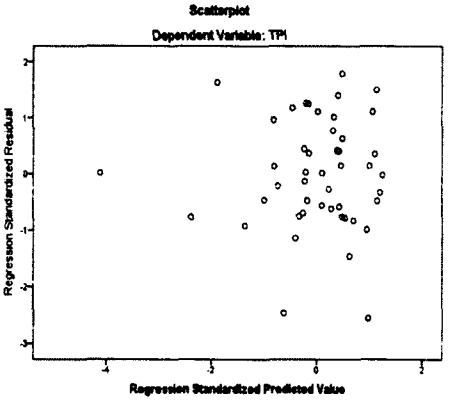
Within-Team Demographic Diversity Model



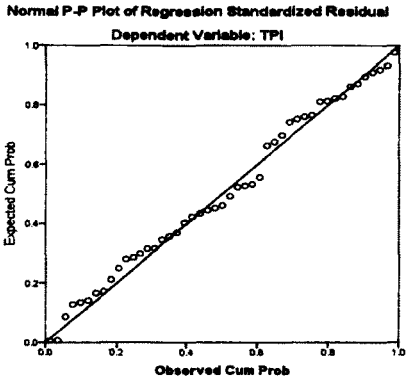


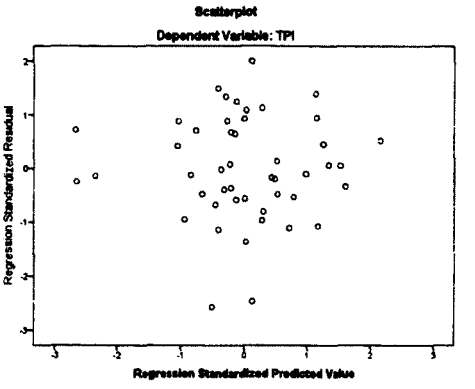
Within-Team Cultural Diversity Model



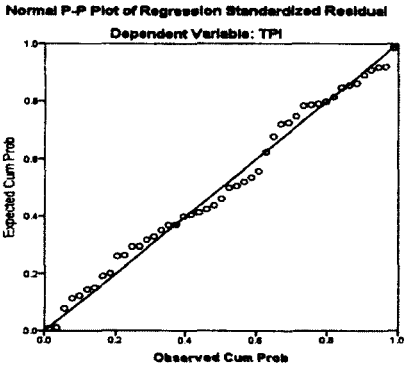


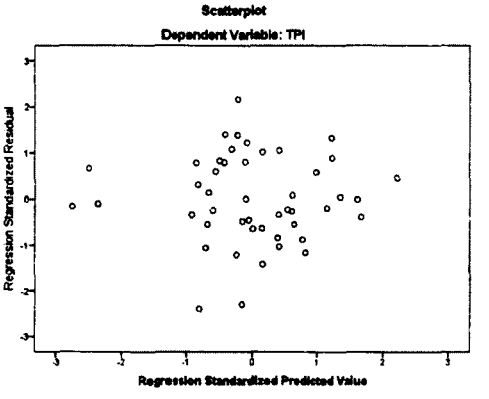
Within-Team Aggregated Categorical Diversity Model



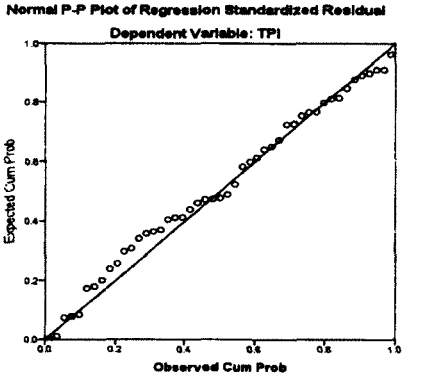


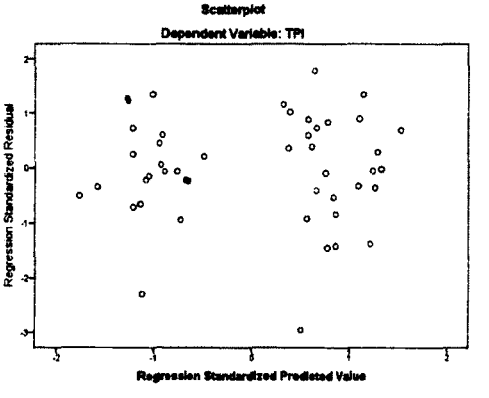
The Model for Within-Team Aggregated Categorical Diversity Controled for Directorate



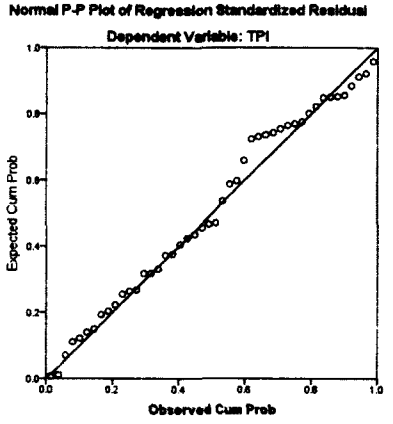


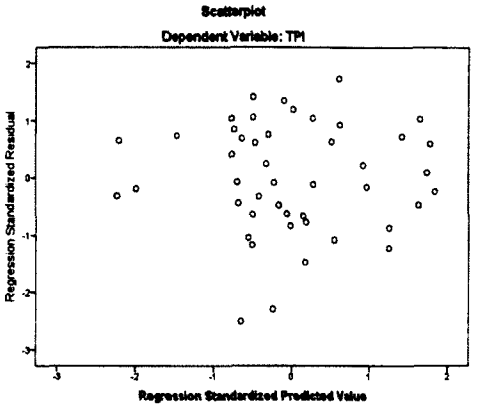
The Model for Within-Team Aggregated Categorical Diversity Controled for SOP Availability





The Model for Within-Team Aggregated Categorical Diversity Controled for Team Size





APPENDIX L: FREQUENCY TABLES FOR WITHIN-TEAM DIVERSITY BY VARIABLES

Frequency Table for TDI_EDLEVEL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	7	14.9	14.9	14.9
	.25	1	2.1	2.1	17.0
	.40	3	6.4	6.4	23.4
	.46	1	2.1	2.1	25.5
	.50	2	4.3	4.3	29.8
	.52	1	2.1	2.1	31.9
	.53	1	2.1	2.1	34.0
	.54	1	2.1	2.1	36.2
	.60	6	12.8	12.8	48.9
	.67	9	19.1	19.1	68.1
	.71	3	6.4	6.4	74.5
	.73	1	2.1	2.1	76.6
	.80	1	2.1	2.1	78.7
	.81	1	2.1	2.1	80.9
	.83	4	8.5	8.5	89.4
	1.00	5	10.6	10.6	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_LANGUAGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.3	4.3	4.3
	.05	1	2.1	2.1	6.4
	.08	1	2.1	2.1	8.5
	.08	1	2.1	2.1	10.6
	.14	1	2.1	2.1	12.8
	.20	1	2.1	2.1	14.9
	.22	1	2.1	2.1	17.0
	.22	1	2.1	2.1	19.1
	.22	1	2.1	2.1	21.3
	.26	1	2.1	2.1	23.4

Frequency Table for TDI_LANGUAGE (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
.27	1	2.1	2.1	25.5
.27	1	2.1	2.1	27.7
.28	1	2.1	2.1	29.8
.32	1	2.1	2.1	31.9
.38	1	2.1	2.1	34.0
.39	1	2.1	2.1	36.2
.46	1	2.1	2.1	38.3
.55	1	2.1	2.1	40.4
.65	1	2.1	2.1	42.6
.68	1	2.1	2.1	44.7
.68	1	2.1	2.1	46.8
.71	1	2.1	2.1	48.9
.73	1	2.1	2.1	51.1
.76	1	2.1	2.1	53.2
.79	1	2.1	2.1	55.3
.81	1	2.1	2.1	57.4
.82	1	2.1	2.1	59.6
.83	1	2.1	2.1	61.7
.83	1	2.1	2.1	63.8
.83	1	2.1	2.1	66.0
.85	1	2.1	2.1	68.1
.85	1	2.1	2.1	70.2
.86	1	2.1	2.1	72.3
.86	1	2.1	2.1	74.5
.86	1	2.1	2.1	76.6
.87	1	2.1	2.1	78.7
.90	1	2.1	2.1	80.9
.90	1	2.1	2.1	83.0
.91	1	2.1	2.1	85.1
.91	1	2.1	2.1	87.2
.92	1	2.1	2.1	89.4
.93	1	2.1	2.1	91.5
.93	1	2.1	2.1	93.6

Frequency Table for TDI_LANGUAGE (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
.93	1	2.1	2.1	95.7
.94	1	2.1	2.1	97.9
.95	1	2.1	2.1	100.0
Total	47	100.0	100.0	

Frequency Table for TDI_MNE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.04	1	2.1	2.1	2.1
	.07	1	2.1	2.1	4.3
	.07	1	2.1	2.1	6.4
	.09	1	2.1	2.1	8.5
	.09	1	2.1	2.1	10.6
	.10	1	2.1	2.1	12.8
	.10	1	2.1	2.1	14.9
	.11	1	2.1	2.1	17.0
	.11	1	2.1	2.1	19.1
	.12	1	2.1	2.1	21.3
	.12	1	2.1	2.1	23.4
	.12	1	2.1	2.1	25.5
	.13	1	2.1	2.1	27.7
	.14	1	2.1	2.1	29.8
	.14	1	2.1	2.1	31.9
	.14	1	2.1	2.1	34.0
	.14	1	2.1	2.1	36.2
	.15	1	2.1	2.1	38.3
	.15	1	2.1	2.1	40.4
	.15	1	2.1	2.1	42.6
	.15	1	2.1	2.1	44.7
	.15	1	2.1	2.1	46.8
	.15	1	2.1	2.1	48.9
	.16	1	2.1	2.1	51.1
	.16	1	2.1	2.1	53.2

Frequency Table for TDI_MNE (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
.17	1	2.1	2.1	55.3
.18	1	2.1	2.1	57.4
.18	1	2.1	2.1	59.6
.19	1	2.1	2.1	61.7
.19	1	2.1	2.1	63.8
.20	1	2.1	2.1	66.0
.22	1	2.1	2.1	68.1
.22	1	2.1	2.1	70.2
.22	1	2.1	2.1	72.3
.23	1	2.1	2.1	74.5
.24	1	2.1	2.1	76.6
.25	1	2.1	2.1	78.7
.29	1	2.1	2.1	80.9
.33	1	2.1	2.1	83.0
.33	1	2.1	2.1	85.1
.34	1	2.1	2.1	87.2
.35	1	2.1	2.1	89.4
.41	1	2.1	2.1	91.5
.45	1	2.1	2.1	93.6
.47	1	2.1	2.1	95.7
.67	1	2.1	2.1	97.9
.69	1	2.1	2.1	100.0
Total	47	100.0	100.0	

Frequency Table for TDI_MILBRANCH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	8	17.0	17.0	17.0
	.29	1	2.1	2.1	19.1
	.40	2	4.3	4.3	23.4
	.48	1	2.1	2.1	25.5
	.64	1	2.1	2.1	27.7
	.65	1	2.1	2.1	29.8
	.67	6	12.8	12.8	42.6
	.69	1	2.1	2.1	44.7
	.70	1	2.1	2.1	46.8
	.71	1	2.1	2.1	48.9
	.71	1	2.1	2.1	51.1
	.71	2	4.3	4.3	55.3
	.72	1	2.1	2.1	57.4
	.73	1	2.1	2.1	59.6
	.75	3	6.4	6.4	66.0
	.80	2	4.3	4.3	70.2
	.81	1	2.1	2.1	72.3
	.81	1	2.1	2.1	74.5
	.82	1	2.1	2.1	76.6
	.83	3	6.4	6.4	83.0
	.90	3	6.4	6.4	89.4
	1.00	5	10.6	10.6	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_RANK

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	9	19.1	19.1	19.1
	.29	1	2.1	2.1	21.3
	.40	2	4.3	4.3	25.5
	.43	1	2.1	2.1	27.7
	.47	1	2.1	2.1	29.8
	.50	3	6.4	6.4	36.2
	.52	1	2.1	2.1	38.3
	.55	1	2.1	2.1	40.4
	.58	1	2.1	2.1	42.6
	.60	2	4.3	4.3	46.8
	.61	2	4.3	4.3	51.1
	.64	1	2.1	2.1	53.2
	.64	1	2.1	2.1	55.3
	.64	1	2.1	2.1	57.4
	.64	1	2.1	2.1	59.6
	.67	4	8.5	8.5	68.1
	.70	3	6.4	6.4	74.5
	.75	1	2.1	2.1	76.6
	.83	1	2.1	2.1	78.7
	.86	2	4.3	4.3	83.0
	.90	2	4.3	4.3	87.2
	.93	1	2.1	2.1	89.4
	1.00	5	10.6	10.6	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_MILCIV

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	28	59.6	59.6	59.6
	.20	1	2.1	2.1	61.7
	.21	1	2.1	2.1	63.8
	.22	1	2.1	2.1	66.0
	.25	3	6.4	6.4	72.3
	.29	2	4.3	4.3	76.6
	.40	2	4.3	4.3	80.9
	.50	2	4.3	4.3	85.1
	.53	1	2.1	2.1	87.2
	.60	3	6.4	6.4	93.6
	.67	3	6.4	6.4	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_NATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.3	4.3	4.3
	.70	2	4.3	4.3	8.5
	.83	3	6.4	6.4	14.9
	.87	2	4.3	4.3	19.1
	.89	2	4.3	4.3	23.4
	.90	3	6.4	6.4	29.8
	.92	1	2.1	2.1	31.9
	.94	1	2.1	2.1	34.0
	.94	1	2.1	2.1	36.2
	.95	1	2.1	2.1	38.3
	.96	2	4.3	4.3	42.6
	.97	1	2.1	2.1	44.7
	1.00	26	55.3	55.3	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	39	83.0	83.0	83.0
	.11	1	2.1	2.1	85.1
	.22	1	2.1	2.1	87.2
	.29	1	2.1	2.1	89.4
	.40	1	2.1	2.1	91.5
	.50	3	6.4	6.4	97.9
	1.00	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.3	4.3	4.3
	.04	1	2.1	2.1	6.4
	.11	1	2.1	2.1	8.5
	.16	1	2.1	2.1	10.6
	.16	2	4.3	4.3	14.9
	.18	1	2.1	2.1	17.0
	.18	1	2.1	2.1	19.1
	.19	1	2.1	2.1	21.3
	.19	1	2.1	2.1	23.4
	.22	1	2.1	2.1	25.5
	.22	1	2.1	2.1	27.7
	.24	1	2.1	2.1	29.8
	.24	1	2.1	2.1	31.9
	.24	1	2.1	2.1	34.0
	.25	1	2.1	2.1	36.2
	.25	1	2.1	2.1	38.3
	.26	1	2.1	2.1	40.4
	.27	1	2.1	2.1	42.6
	.27	1	2.1	2.1	44.7
	.27	1	2.1	2.1	46.8
	.28	1	2.1	2.1	48.9

Frequency Table for TDI_AGE (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
.28	1	2.1	2.1	51.1
.29	1	2.1	2.1	53.2
.29	1	2.1	2.1	55.3
.30	1	2.1	2.1	57.4
.30	1	2.1	2.1	59.6
.31	1	2.1	2.1	61.7
.31	1	2.1	2.1	63.8
.32	1	2.1	2.1	66.0
.32	1	2.1	2.1	68.1
.32	1	2.1	2.1	70.2
.34	1	2.1	2.1	72.3
.34	1	2.1	2.1	74.5
.34	1	2.1	2.1	76.6
.35	1	2.1	2.1	78.7
.35	1	2.1	2.1	80.9
.38	1	2.1	2.1	83.0
.41	1	2.1	2.1	85.1
.41	1	2.1	2.1	87.2
.42	1	2.1	2.1	89.4
.43	1	2.1	2.1	91.5
.47	1	2.1	2.1	93.6
.49	1	2.1	2.1	95.7
.49	1	2.1	2.1	97.9
.70	1	2.1	2.1	100.0
Total	47	100.0	100.0	

Frequency Table for TDI_QoWL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.06	2	4.3	4.3	4.3
	.07	2	4.3	4.3	8.5
	.08	1	2.1	2.1	10.6
	.09	1	2.1	2.1	12.8
	.09	1	2.1	2.1	14.9
	.10	1	2.1	2.1	17.0
	.11	1	2.1	2.1	19.1
	.14	1	2.1	2.1	21.3
	.15	2	4.3	4.3	25.5
	.16	1	2.1	2.1	27.7
	.16	1	2.1	2.1	29.8
	.17	1	2.1	2.1	31.9
	.18	3	6.4	6.4	38.3
	.18	1	2.1	2.1	40.4
	.19	1	2.1	2.1	42.6
	.19	1	2.1	2.1	44.7
	.19	1	2.1	2.1	46.8
	.20	1	2.1	2.1	48.9
	.20	1	2.1	2.1	51.1
	.20	1	2.1	2.1	53.2
	.23	1	2.1	2.1	55.3
	.23	1	2.1	2.1	57.4
	.25	1	2.1	2.1	59.6
	.25	1	2.1	2.1	61.7
	.25	1	2.1	2.1	63.8
	.27	1	2.1	2.1	66.0
	.27	1	2.1	2.1	68.1
	.27	1	2.1	2.1	70.2
	.28	1	2.1	2.1	72.3
	.28	1	2.1	2.1	74.5
	.28	1	2.1	2.1	76.6
	.30	1	2.1	2.1	78.7
	.31	1	2.1	2.1	80.9
	.34	1	2.1	2.1	83.0

Frequency Table for TDI_QoWL (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
.35	1	2.1	2.1	85.1
.35	1	2.1	2.1	87.2
.36	1	2.1	2.1	89.4
.37	1	2.1	2.1	91.5
.43	1	2.1	2.1	93.6
.51	1	2.1	2.1	95.7
.53	1	2.1	2.1	97.9
.77	1	2.1	2.1	100.0
Total	47	100.0	100.0	

Frequency Table for TDI_AiWL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.1	2.1	2.1
	.05	1	2.1	2.1	4.3
	.10	1	2.1	2.1	6.4
	.11	1	2.1	2.1	8.5
	.13	2	4.3	4.3	12.8
	.14	1	2.1	2.1	14.9
	.15	1	2.1	2.1	17.0
	.15	1	2.1	2.1	19.1
	.15	1	2.1	2.1	21.3
	.15	1	2.1	2.1	23.4
	.15	1	2.1	2.1	25.5
	.16	2	4.3	4.3	29.8
	.17	1	2.1	2.1	31.9
	.18	1	2.1	2.1	34.0
	.18	1	2.1	2.1	36.2
	.19	1	2.1	2.1	38.3
	.19	2	4.3	4.3	42.6
	.20	1	2.1	2.1	44.7
	.20	1	2.1	2.1	46.8
	.21	1	2.1	2.1	48.9
	.21	1	2.1	2.1	51.1

Frequency Table for TDI_AiWL (Continued)

	Frequency	Percent	Valid Percent	Cumulative Percent
.22	1	2.1	2.1	53.2
.22	1	2.1	2.1	55.3
.23	1	2.1	2.1	57.4
.25	1	2.1	2.1	59.6
.26	1	2.1	2.1	61.7
.26	1	2.1	2.1	63.8
.28	1	2.1	2.1	66.0
.30	1	2.1	2.1	68.1
.31	1	2.1	2.1	70.2
.31	1	2.1	2.1	72.3
.31	1	2.1	2.1	74.5
.31	1	2.1	2.1	76.6
.31	3	6.4	6.4	83.0
.32	2	4.3	4.3	87.2
.34	1	2.1	2.1	89.4
.39	1	2.1	2.1	91.5
.40	1	2.1	2.1	93.6
.52	1	2.1	2.1	95.7
.71	1	2.1	2.1	97.9
.82	1	2.1	2.1	100.0
Total	47	100.0	100.0	

Frequency Table for TDI_FUNCTIONAL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.23	2	4.3	4.3	4.3
	.26	1	2.1	2.1	6.4
	.28	1	2.1	2.1	8.5
	.29	3	6.4	6.4	14.9
	.33	1	2.1	2.1	17.0
	.34	1	2.1	2.1	19.1
	.36	2	4.3	4.3	23.4
	.39	1	2.1	2.1	25.5
	.43	1	2.1	2.1	27.7
	.44	1	2.1	2.1	29.8
	.47	2	4.3	4.3	34.0
	.50	2	4.3	4.3	38.3
	.51	3	6.4	6.4	44.7
	.52	3	6.4	6.4	51.1
	.53	1	2.1	2.1	53.2
	.54	1	2.1	2.1	55.3
	.55	2	4.3	4.3	59.6
	.59	3	6.4	6.4	66.0
	.60	4	8.5	8.5	74.5
	.61	1	2.1	2.1	76.6
	.62	2	4.3	4.3	80.9
	.63	1	2.1	2.1	83.0
	.65	3	6.4	6.4	89.4
	.66	1	2.1	2.1	91.5
	.70	1	2.1	2.1	93.6
	.71	1	2.1	2.1	95.7
	.76	1	2.1	2.1	97.9
	.78	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_DEMOGRAPHIC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.05	1	2.1	2.1	2.1
	.33	2	4.3	4.3	6.4
	.35	1	2.1	2.1	8.5
	.36	1	2.1	2.1	10.6
	.37	3	6.4	6.4	17.0
	.38	4	8.5	8.5	25.5
	.39	4	8.5	8.5	34.0
	.40	2	4.3	4.3	38.3
	.41	5	10.6	10.6	48.9
	.42	5	10.6	10.6	59.6
	.43	4	8.5	8.5	68.1
	.44	5	10.6	10.6	78.7
	.45	1	2.1	2.1	80.9
	.47	1	2.1	2.1	83.0
	.48	1	2.1	2.1	85.1
	.50	1	2.1	2.1	87.2
	.52	1	2.1	2.1	89.4
	.56	1	2.1	2.1	91.5
	.57	1	2.1	2.1	93.6
	.59	1	2.1	2.1	95.7
	.60	1	2.1	2.1	97.9
	.68	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

Frequency Table for TDI_CULTURAL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.10	2	4.3	4.3	4.3
	.12	2	4.3	4.3	8.5
	.13	3	6.4	6.4	14.9
	.15	4	8.5	8.5	23.4
	.16	2	4.3	4.3	27.7
	.17	2	4.3	4.3	31.9
	.18	2	4.3	4.3	36.2
	.19	2	4.3	4.3	40.4
	.21	6	12.8	12.8	53.2
	.23	1	2.1	2.1	55.3
	.24	3	6.4	6.4	61.7
	.25	1	2.1	2.1	63.8
	.26	3	6.4	6.4	70.2
	.27	2	4.3	4.3	74.5
	.28	2	4.3	4.3	78.7
	.29	1	2.1	2.1	80.9
	.32	1	2.1	2.1	83.0
	.33	1	2.1	2.1	85.1
	.34	1	2.1	2.1	87.2
	.36	1	2.1	2.1	89.4
	.37	2	4.3	4.3	93.6
	.40	1	2.1	2.1	95.7
	.62	1	2.1	2.1	97.9
	.80	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

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Iskenderun Naval Base, Branch Head for Operations, 2011.

TCG Gökçeada (F-494), Executive Officer, 2010

Combined Maritime Forces HQ, Turkish Navy Liaison Officer, 2009.

Turkish Navy Headquarters, Personnel Department, Section Head Project Development, 2007-2008.

TCG Zafer (F-253), Navigation Officer, 2006.