

**INFLUENCE OF TRUST ON THE SUCCESS OF VIRTUAL TEAMS: A DELPHI
STUDY**

by

Alka Khungar

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Management in Organizational Leadership

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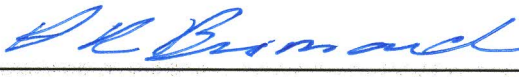
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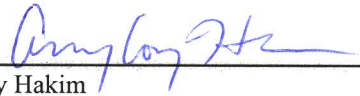
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Abstract

Over the years, the emergence of virtual teams (VT) has exponentially increased in organizations across the world. The growth has been attributed to the expansion of globalization and the advancements in technology. The non-experimental, exploratory, mixed method research study identified the building blocks of trust that influenced the success of VTs in delivering the product of the action items or projects assigned to the team. During the consensus-building deliberations, the focus of the selected participants was two-fold; (a) they identified the components of trust that establish and maintain an atmosphere of trust in VTs and (b) they ranked the measurable components of trust in order of importance. Finally, the consensus-building deliberations of the same participants may (a) identify factors that determine the effectiveness of the products produced by VTs and (b) highlight the correlation, if any, between the degree of the product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products. The result of the study presented the opportunity of developing a Virtual team depiction that can be used for business owners who encourage VTs and VT leaders to manage their teams efficiently.

Keywords: Trust, virtual teams, Delphi, virtual team model, consensus building

Dedication

I am eternally grateful to those close to me who have been patient in my pursuit of a lifelong dream. My husband, Atul Khungar, and daughter, Trisha Khungar, have been my strongest supporters and cheerleaders, providing moral support and instilling the will that I can accomplish my goal of becoming a doctor. From the time I began my education as a new mother to this very moment, they never doubted my ability to succeed and continually provided me the motivation to complete the journey that I started 5 years ago.

I share this success with my husband and soul mate, Atul. Through his strength and resolve, he has taught me that obstacles are a part of life; it is up to us to sink or swim when the tide is high. Atul's persistence and patience are the reason that I have reached this point today. He praised me and celebrated with me every milestone I achieved in this journey, and loved me despite my doctoral mood swings.

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Chapter 1: Introduction

With the advent of the World Wide Web (WWW) and online applications such as emails, teleconferences, webinars (web seminars), instant messaging, and other communicating tools, the world has become closer in distance and space virtually. One area profoundly affected by the technological evolution is communication (Hall & Andriani, 2003). The influence of an improved and enhanced communicative platform resulted in the emergence of the concept of virtuality, which revolutionized the way to conduct business. According to Hall and Andriani, virtual communication was exhibited in classrooms in schools and universities, surgery rooms in hospitals, teams in organizations, and war-zones in the military. “Virtual teaming is probably something no one really planned, it just happened and it happened because the technology was there” (Bergiel, Bergiel, & Balsmeier, 2006, p. 427).

The focus of the current study was on the growth of virtual teams (VTs) in the corporate environment, wherein modern businesses are closer in distance, space, and function across borders throughout the world because of being involved in the virtual environment. The focus of the non-experimental, exploratory, mixed method research study was to identify the building blocks of trust that influence the success of VTs in delivering the product of the action items or projects assigned to the team. During the consensus-building deliberations, the focus of the selected participants was two-fold: (a) identifying the components of trust that establish and maintain an atmosphere of trust in VTs and (b) ranking the measurable components of trust in order of importance. The trustful camaraderie of VT members made it possible to build an atmosphere of trust. Finally, the consensus-building deliberations of the same participants may (a) identify

factors that determine the effectiveness of the products produced by VTs and (b) highlight the correlation, if any, between the degree of the product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products. The result of the study presented the opportunity of developing a VT model or depiction that can be used for business owners who encourage VTs and VT leaders to manage their teams efficiently.

Provided in Chapter 1 is an overview of the current study. The chapter includes a theoretical review of VTs, an overview of the proposed methodology and research design, and an outline of the nature and scope of the study. Additionally, explained in Chapter 1 is how the current study may fill gaps in knowledge concerning virtual teams and leadership in virtual teams within the literature.

Background of the Problem

In a historic presidential election, the world witnessed the 2008 victory of the first African American president of the United States. President Obama's aggressive election campaign plan comprised the use of the WWW, a strong medium of communication. Obama was able to the message of his campaign to various demographics of voters by utilizing tools available on the Internet such as emails: instant messaging; and chat rooms including YouTube, Facebook, MySpace, and online blogs. Carr and Stelter (2008) reported, "For many viewers, the 2008 election has become a kind of hybrid in which the dividing line between online and off, broadcast and cable, pop culture and civic culture, has been all but obliterated" (para. 4).

A more recent illustration of the use of VTs was witnessed in May 2011 when President Obama and his team watched live footage of the Navy Seals as they led their

mission of killing terrorist Osama Bin Laden to success. Helmet-mounted cameras provided the technology that enabled military and intelligence chiefs to closely monitor the real time developing situation as US Navy Seals raided Osama Bin Laden's compound in Pakistan (BBC News, May 04, 2011).

The emergence of the Internet and the increase in the applications in the corporate environment has exponentially increased VT opportunities for employees, allowed business leaders to increase the reliance on virtual relationships, and fostered a creative and learning environment for VT members. In a report by The Center of Digital Future (2006), the authors revealed, “64% of Internet users agreed that the Internet has become important for political campaigns – up from 59% of users in 2006” (para. 3). Since 1988, the speedy evolution in technology led to a dynamic change in the way the world functions. The change was not a gradual change; substantial global changes occurred after design and development of numerous tools and applications. According to Morris, Marshall, and Rainer (2002), “The need to compete in a rapidly changing, hypercompetitive, and global marketplace is prompting many organizations to transform their organizational structures from large, hierarchical structures to agile, flexible, new structures” (p. 22). Service-based organizations, such as Dell, outsource the customer services functions to other countries, such as India. The organizational leaders established VTs in another country and offered efficient remote customer service solutions to customers in the United States.

WorldatWork (2007), a global, human resources association, defined telecommuting, a type of virtual teaming, as “an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a central workplace, for at

least some portion of their work schedule, using electronic media to interact with others inside and outside the organization” (para. 4). According to WorldatWork (2007), an estimated 45 million Americans telecommuted in 2006, up from 41 million in 2003 (p. 146). Researchers analyzed the results of a study conducted at Citrix Online (WorldatWork, 2007). Researchers at Citrix Online found that 23% of American workers regularly preformed their jobs from some place other than the office and that 62% of participants who could not work off-site would like to (Karanacus, 2007, para. 1). In addition, according to Zeller (2005), “After flat lining at about 7.6 million for the last four years, the number of regular employees working at home at least one day a month jumped to 9.9 million in 2005” (para. 6).

Virtual teams (VTs), or teams of people who work interdependently across space, time, and organizational boundaries using technology to facilitate communication and collaboration, resulted from the growth of teamwork in organizations and increased geographic dispersion (Lipnack & Stamps, 2000; Snow et al., 1999). Examples of VTs within organizations are product development teams, knowledge transfer teams, management teams, and project teams (Snow et al., 1999). Organizational leaders rely heavily on VTs because of the competitive global market such teams offer. Virtual teams provide the benefits of integrating work of geographically dispersed specialized employees, and help save time and travel expenses (Helliwell & Huang, 2005; Kock, 2000; Townsend, DeMarie, & Hendrickson, 1998). The use of VTs allows organizational leaders to expand potential labor markets by continually altering and improving organizational processes to capitalize on strengths (Duarte & Tennat-Snyder, 1999).

Capitalizing on strengths is especially important because the global environment is becoming increasingly competitive (Duarte & Tennat-Snyder, 1999).

Global VTs play a vital role in many organizations in integrating information, making decisions, and implementing strategies. The integration of VTs within organizations opens channels of remote communications in which team members are not based in the same geographical location. Instead, the location of team members is across the world in different time zones working on the same project. The interaction of diverse individuals who form the VT requires the members to work together in an efficient manner successfully completing the assigned projects. DeRosa, Hantulla, Kock, and D'Arcy (2004) supported the fact that VT collaboration significantly facilitated team performance. However, DeRosa et al. further stated that for VT collaboration to work successfully, VT members should develop strong interpersonal dynamics and support mechanisms.

Virtual Teams require a solid foundation of mutual trust and collaboration if the team is to function efficiently. Mayer, Davis, and Schoorman (1995) defined trust as:

The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor [sic], irrespective of the ability to monitor or control that party. (p. 4)

Statement of the Problem

The general problem addressed in the study was that VTs are more vulnerable to mistrust, communication breakdowns, conflicts, and power struggles (Rosen, 2007, p. 260). Although previous researchers indicated that trust was an important factor that influenced the success of VTs (Casico, 2000; Helliwell & Huang, 2005; Lipnack &

Stamps, 2000), little research existed concerning the components that build trust in VTs. The specific problem was that little is known concerning the building blocks of trust that positively influence the performance of VTs (Benoit & Kelsey, 2003; Boone & Holmes, 1991; Lin, Standing, & Liu, 2008; Lipnack & Stamps, 2000). Pursued in the study was the ranking of the identified building blocks of trust in order of importance. The result provided information to design a VT illustration that may provide business leaders who use VTs an understanding of the influence of trust on their teams.

Employed in the current study was the use of a mixed method analysis using a Delphi design. The use of the Delphi design encouraged the building of a consensus on the strongest indicators of trust that influence the success of VTs. The current Delphi study included the collection of both qualitative and quantitative data through the administration of three or more phases of asynchronous deliberations among participants to develop consensus. The qualitative portion of the study included conducting a consensus methodology approach to arrive at a conclusion on the building blocks of trust that influence the success of VTs. The qualitative aspects of the study provided commentaries written by participants to explain their understanding of the VTs, trust in teams, and trust in VTs.

In the quantitative aspect of the study, the measurements of the interquartile ranges of the positions taken by participants on the Likert-type scale as the phases occurred helped participants monitor the growing tightness of the consensus. Attempted in the study was to understand the degree of success of VTs in completing the assigned deliverables. The Delphi study included VT practitioners from organizations that used VTs. The target population considered in this study comprised of individuals in

management, leadership, and non-managerial levels who are VT members. The members belonged to different departments (Human Resources, Information Technology, Marketing, Finance, Public Relations, Accounts Payable, and Customer Service) and brought their experiences to help understand the influence of trust on the success of VTs.

Purpose of the Study

The two-fold purpose of the current mixed method Delphi study was to (a) identify the building blocks of trust that influence the success of VTs and (b) rank the building blocks in order of importance through a consensus of individuals with recent (one year or more) or current experience working in VTs as leaders, managers, or non-managerial members from among organizations in southern Florida. The research conducted in the current study further validated that camaraderie of trust exists in VTs, enabling team members to perform effectively. A Delphi study was deemed appropriate to gather the perspective of experts with experience in VTs.

The Delphi methodology is appropriate for a consensus study. Helmer (1966) stated, “Delphi [studies] represents a useful communication device among a group of experts and thus facilitates the formation of a group judgment” (para. 1). Collected in the current Delphi study were both quantitative and qualitative data through the administration of five phases of asynchronous deliberations among participants to develop consensus. The quantitative portion of the research study was fulfilled by conducting a consensus analysis to arrive at a conclusion on the internal aspect of VTs, namely, the building blocks of trust that influence the success of VTs.

Investigated through the qualitative aspect of the study were the commentaries written by participants to explain their understanding of VTs, trust in teams, and trust in

VTs. The commentaries and responses were useful on two fronts. The first use revealed within the internal deliberations of the participants as they worked toward ever-tighter consensuses, and then second use was of an anecdotal evidence of product successfulness based on actual experiences.

One of the underlying objectives of the current study was to identify the building blocks of trust, which formed the independent variables in the study. In the first phase of the Delphi study, the identities of the building blocks emerged through the consensual deliberations the participants experienced in VT work. In the second phase of the consensus-building deliberations, the participants were asked to focus on the rank order of importance of each of the building blocks in establishing and maintaining an atmosphere of trustful camaraderie within VTs. The trustful camaraderie of VT members made it possible to build an atmosphere of trust. The building blocks were the *internal* characteristic of the study. In the third phase of the consensus-building deliberations, the same participants were asked to (a) identify the factors determining the effectiveness of the products produced by VTs and (b) explore the correlation, if any, between the degree of the product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products. The dependent variable, trust, was identified as the quality of the deliverables of the team's objectives that VT members have in order to accomplish the end goal, which could be the development of a report or delivery of a marketing campaign. The end goal, at the completion of the study, was the identification of the essential building blocks of trust, ranked in order of importance and a VT illustration that will help VT leaders and members function as successful teams. It may be possible based on the results of the current study to build a VT model or illustration that VT practitioners

could use to understand how to be effective and successful. Organizational leaders who utilize VTs may also find significant value and use of the model to train the VT members to increase efficiencies. Although numerous organizational leaders use VTs, only a few developed educational programs to teach their employees how to use VTs successfully. The reason of the absence of developing a training program specific to VTs could be that the use of VTs increased significantly increased dramatically after the terrorist attacks of September 11, 2001 and the outbreak of SARS. The influence of the two incidents on VTs is explained in detail in Chapter 2, the literature review, because of the significant reduction in air travel that forced employees located remotely to learn to work virtually in a very short time with almost no or very limited training.

Rosen, Furst, and Blackburn (2006), in a study on the training and development initiatives used by organizational leaders to improve VT performance, found that many organizational leaders were in their infancy on VT training. Over 60% of participants reported that the organizational leaders provided no specific training for VT leaders or members, 28% of the participants indicated that training was only provided to a limited extent, and 2% of the participants reported that training was provided to a greater extent (Rosen et al., 2006, pp. 229 -247). The reason of the absence of developing a training program specific to VTs could be that the use of VTs increased significantly increased dramatically after the terrorist attacks of September 11, 2001 and the outbreak of SARS. Rosen et al. concluded that it would be valuable to examine the content of VT training programs currently offered by organizations taking the lead in this area. By identifying the building blocks of trust that influence the success of VTs, a VT illustration was

developed that can be used by organizations to train their employees on the successful use of VTs.

Significance of the Problem

Research on VTs increased over the years; however, there is little theoretical development to guide the research (Benoit & Kelsey, 2003; Boone & Holmes, 1991; Lipnack & Stamps, 2000). A few researchers identified specific competencies for the global virtual work environment including cross-cultural communication, process facilitation, creating and sustaining remote teamwork, and managing information technology (Iacono & Weisband, 1997). The current study included a focus on VTs where (a) information technology enables the virtual aspects of the VT and (b) the study of management and leadership improves the essence of team in a VT, which places the research at the intersection of management and information technology.

Significance of the Study to Leadership

The study resulted in the development of a VT illustration that VT practitioners can use to understand how to be effective and successful. Numerous organizational leaders use VTs, but only a few leaders developed educational programs to teach the employees how to use successfully VTs (Rosen et al., 2006). Consequently, organizational leaders who use VTs may also find value and use of the resulting illustration to train their VT members to increase the efficiencies by understanding the influence of one key factor, trust, and the influence of the various components of trust that influence the success of VTs.

Nature of the Study

The current Delphi study involved a series of survey instruments to identify the indicators of trust that positively influence the success of VTs which will form the independent variable in the study. In the first phase of the Delphi study, the identities of the building blocks emerged through the consensual deliberations the participants experienced in VT work. In the second phase of the consensus-building deliberations, the participants were asked to focus on (a) the rank order of importance of each of the building blocks in establishing and maintaining an atmosphere of trustful camaraderie within VTs and (b) the identities of the measurable components of that atmosphere. The trustful camaraderie of VT members makes it possible to build an atmosphere of trust. In the third phase of the study of the consensus-building deliberations, results were analyzed to (a) identify the factors determining the effectiveness of the products produced by VTs and (b) explore the correlation, if any, between the degree of that product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products. Utilizing the qualitative aspect of the study, the dependent variable was identified as the quality of the deliverables of the team's objectives that VT members have in order to accomplish the end goal, which could be the development of a report or delivery of a marketing campaign.

Overview of the research method. The purpose of the Delphi study was to develop a consensus concerning the building blocks of trust that influence the success of VTs by surveying experts with prior or current experience as VT members. Collected in the Delphi study were both quantitative and qualitative data through the administration of five phases of asynchronous communication. In the quantitative aspect of the study, the

measurements of the interquartile ranges of the positions taken by participants on a 5-point Likert-type scale following each phase of survey helped participants monitor the growing tightness of the consensus (see Appendix A). The qualitative aspects of the study were derived from the ratings made by participants on the four rounds of the surveys using the Likert-type scale. The data collected from both qualitative and quantitative methods was used in to develop a consensus for the study identifying of the strongest building blocks of trust that influence the success of VTs. The data collection process is explained in detail in Chapter 3.

Overview of the design appropriateness. Neuman (2003) defined the Likert-type survey as “a scale often used in survey research in which people express attitudes or other responses in terms of several ordinal-level categories (e.g., agree, disagree) that are ranked along a continuum” (p. 161) Neuman further explained:

Likert scales are called summated-rating or additive scales because a person’s score on the scale is computed by summing the number of responses the person gives. Likert scales usually ask people to indicate whether they agree or disagree with a statement. (p. 291)

The Delphi technique is used frequently to measure the judgment of a group of experts (Polit & Beck, 2004). Polit and Beck considered the Delphi technique as a method of generating ideas and facilitating consensus among individuals who do not meet and who may be geographically distant. The Delphi methodology is useful for achieving consensus in areas lacking empirical evidence (Powell, Piccoli, & Ives, 2004). Prior researchers conducted studies on trust and the significance of trust in VTs (Iacono & Weisband, 1997; Jarvenpaa, Shadow, & Staples, 2004; Lipnack & Stamps, 2000).

Researchers have not identified or explored the building blocks of trust in VTs that influence the success of the team.

Research Questions and Hypotheses

The objective of the current mixed method Delphi study was to identify building blocks of trust that influence the success of VTs. The building blocks identified were ranked in order of importance. The success of VTs was measured through the perspective of experts by rating the quality of the effectiveness of products delivered by the VTs, such as evaluating the influence of a marketing campaign that was developed by the VT. The measured deliverable is the influence of the campaign on the sales of the product.

Researchers indicated that elements such as technology, communication, and behavioral factors affected the trust upon the VT members (Holton, 2001; Kling & Jewett, 1994; Piccoli & Ives, 2003). Prior studies led to the development of the research questions used in the current study. The current study included the following two research questions:

1. How do VT members define trust in VTs used by modern day organizations?
2. What are the key components of trust that are important to ensure the success of VTs?

The null and corresponding alternate hypotheses for the current study are as follows:

H₁₀: There are building blocks of trust that influence the success of a virtual team.

H1_A: There are no building blocks of trust that influence the success of a virtual team.

H2₀: There is a rank order of importance for the building blocks of trust.

H2_A: There is no order of importance among the building blocks of trust.

The aim of the study was to explore if there is evidence that building blocks of trust exists in VTs. During the course of the study, six essential building blocks of trust were identified and ranked in order of importance. Provided by the results of the study was a strong probability of the hypothesis that H_1 , there are building blocks of trusts that influence the success of VTs and H_2 , there are some components that are more important than the others.

Theoretical Framework

Explored in the current study were theories and concepts providing an understanding of the measured and moderating independent variables and the potential effects of the variables on the success of VTs. Theories and concepts for the current research considered various types of virtual teams, the boundary theory, the information and communication technology theory, McKnight's trust model, Reina's trust and betrayal model, the integrative model of trust formation, and the interpersonal circumplex model (ICM). Previously, researchers studied teams (Morris, 2004; Putnam, 1986), trust in teams (Loo, 2007; Meyerson & Pierce, 2008; Weick & Kramer, 1996), and a small number of researchers have looked into VTs (Kasper-Fuehrer & Ashkanasy, 2001; McKnight, Cummings, & Chervany, 1998). However, no researcher examined or identified the strongest indicators of trust or the influence of trust on the success of VTs (Nohria & Eccles, 1992; Meyer & Allen, 2004).

Types of virtual teams. Willmore (2003) identified three types of VTs dispersed and electronic, mixed models, and insiders and outsiders. According to Willmore, dispersed and electronic VTs were typically workgroups or teams where all or most of the work and interaction was completed through technology. In dispersed and electronic teams, the members do not meet face-to-face; team members never know what the other team members look like or even sound like (Willmore, 2003). In VTs, team members use a text-based means of communication such as email or threaded discussion.

Willmore (2003) described a mixed model teams as teams in which a substantial percentage of work and interaction was face-to-face and a corresponding percentage of work was virtual. The complication with a mixed method team is that even though the team is dependent upon virtual interaction to succeed, team members may still impose face-to-face expectations and traditions on their virtual interactions (Willmore, 2003). Mixed method teams are guilty of assuming that all settings are the same and that what works in one setting will work in another setting. Willmore described a football team as an example of a mixed method team and explained how the tactics and formation of the team worked well at home as well as when the team was a visitor in games because the team used the same players and coach.

Willmore (2003) explained the *insiders and outsiders* team consisted of team members co-located geographically and could interact face-to-face, as compared to others who were dispersed and interacted virtually. A common use of an insiders and outsider's team occurs when working with outside vendors or contractors. The two firms are located in different geographical areas, however, the firms work in collaboration to

complete projects using communication tools such as phone, email, webinar, conference calls, and chat rooms to accomplish the goals of the project.

Boundary theory and information and communication technology. Lyotard (as cited in Sarup, 1993) introduced postmodernism as a name for a movement in advanced capitalist culture. According to Lyotard, “During the last forty years the leading sciences and technologies have become increasingly concerned with language: theories of linguistics, problems of communication and cybernetics, computers and their languages, problems of translation, information storage, and data banks” (as cited in Sarup, 1993, p. 133). Highlighted subtly in Lyotard’s theory was concern for how members shared information in VTs and how to accomplish sensitive knowledge sharing especially in teams that had an issue with trust among the members.

Breu and Hemingway’s (2004) studied the role of information and communication technology (ICT) in VTs and supported knowledge sharing within and across work units. Breu and Hemingway found, “The chronic lack of knowledge sharing on VTs is, in addition to difficulties of establishing interpersonal trust, due to lack of trust in the technology as an appropriate medium for sensitive knowledge sharing” (p. 191). Through the field of study in management information systems (MIS), the concept of trust or the absence of trust exists (Li, Valacich, & Hess, 2004). Li et al. explained that the focus of MIS was “on interpersonal or inter-organizational trust in the contexts of e-commerce and virtual teams” (p. 1). The concept of trust was accepted within Information Systems (IS) acceptance models, which provide further evidence that MIS researchers recognize the relevance of IS trust. Li et al. stated, “While simple trust constructs have been incorporated into existing IS models, and trust models have been

developed to address e-commerce issues, a comprehensive model of trust formation for a new information system has not been published” (p. 1). The lack of a representative model of trust presented the opportunity to build an illustration or depiction of trust that may be of significant value to the practitioners of VTs.

The fast-paced evolution of technology and resulting globalization has forced organizations to become more flexible and responsive to change (Lucas & Baroudi, 1994). Modern organizational leaders are looking increasingly to virtual forms of organizations to reduce organizational slack, facilitate cross-functional learning (Handy, 1995), focus on core competencies, and lower cost (Dutton, 1999).

When leaders of brick-and-mortar organizations introduce virtual organization, they undergo an evolution period, referred to as *virtualization*, during which traditional structures coexist, and sometimes conflict with virtual structures (Schultze & Orlikowski, 2001). Building blocks of the virtual organization are work units such as VTs and virtual communities, which make extensive use of ICT (Breu & Hemingway, 2004). Breu and Hemingway used the boundary theory to analyze changes at the work unit level. Changes at the work unit “displace existing boundaries and redefine their meanings, yet their applications to research on virtual organization and ICT-based working arrangements is still uncommon” (Breu & Hemingway, 2004, p. 192). Breu and Hemingway suggested that virtualization increased the number and complexity of team boundaries and impaired the sharing of sensitive knowledge between peers. It was further found, not only was it more difficult to perform effectively at a distance, but more activities were required of virtual team members (Breu & Hemingway, 2004).

Cramton (2001) and Switzer (2000) explained the chronic lack of knowledge sharing within and among VTs by noting the difficulty of developing inter-personal trust at a distance. Breu and Hemingway (2004) found that users distrusted electronic media for communicating content of a personal, sensitive, and confidential nature, especially when the user experienced unreliable ICT. The relevance of Breu and Hemingway's theory to the current study is during virtualization VT members may doubt the integrity of ICT. For example, the host organizational leader can easily monitor e-mail messages, senders can blind-copy communications to third parties, and recipients of e-mail communications can forward messages to unintended recipients (Breu & Hemingway, 2004). Virtual team members using emails are vulnerable to confidentiality breaches associated with the most widely used medium for VT communication.

McKnight's trust model. According to Lewis and Weigert (1985), "Trust is a highly complex and multi-dimensional phenomenon" (p. 967). As a result, it is hard to define trust in a single manner. McKnight and Chervany (1996) conducted a study through which they stated they were able to "build a consensus toward a manageable number of the most meaningful types of trust" (p. 13). McKnight and Chervany explained that their model (see Figure 1) was "designed to understand the various types of trust and synthesize and define a broad but parsimonious and cohesive, set of useful trust types" (p. 15). The resulting model is based on the expansion of understanding of the meanings of trust through use of a classification system and defining six types of trust that McKnight and Chervany found to be useful for management in modern day organizations. McKnight and Chervany explained that the classification as a typology, which provided researchers a better comprehension of the complexity through an analysis

of the nature of existing trust meanings. Identified were a set of six trust definitions, which helped address conceptual confusion by representing trust as a broad, but coherent set of constructs (McKnight & Chervany, 1996). According to McKnight and Chervany, “One benefit of this type of broad depiction of trust is that it has heuristic value by being generative of research possibilities” (p. 21). McKnight and Chervany further explained, “Another benefit is that it presents a set of specifically defined trust types that enables scholars and practitioners to agree on what they mean when they discuss this important topic’ (p. 42).

The six types of trust defined by McKnight and Chervany (1996) were trusting intentions, trusting beliefs, trusting behavior, situational decision to trust, dispositional trust, and system trust. Represented in Figure 1 are the six types of trust constructs and the relationships among the constructs.

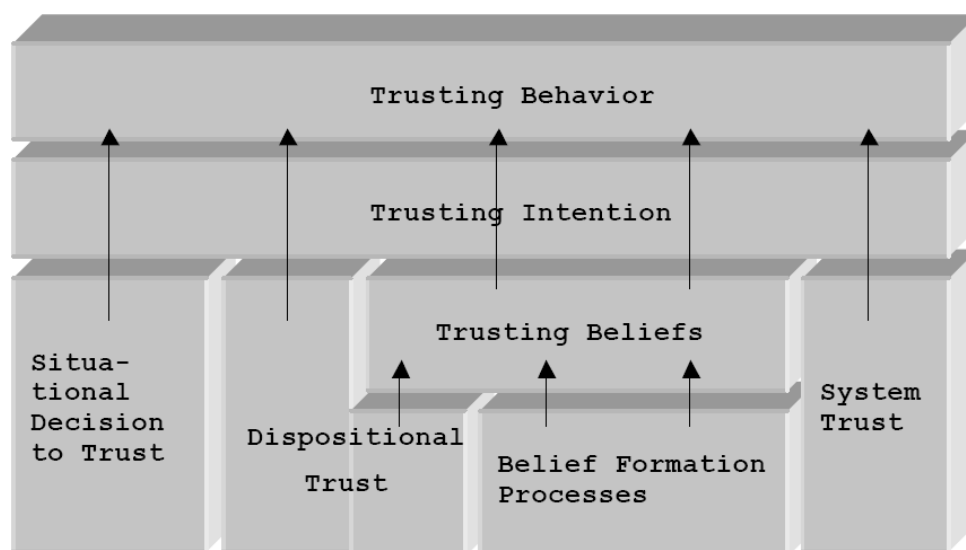


Figure 1. Relationships Among Trust Constructs.

Brown, Poole, and Rodgers (2004) stated that in the McKnight and Chervany model, “The construct to disposition trust affects trusting intention, trusting beliefs, and

ones' institution-based trust" (p. 115). In the current study, one research question is to derive a consensus on the definition of trust in VTs used by modern day organizations.

Reina Trust and Betrayal Model. According to Nemiro, Beyerlein, Bradley, and Beyerlein (2008), indicated in extensive research was that irrespective of working with VTs or face-to-face teams, trust developed behaviorally and was a vital component in virtual as well as a local relationship. An outcome of the current research may be the foundation of the Reina model of trust and betrayal model, the basis of which is on foundational principles that "Business is conducted through relationships and people who are expected to work together successfully have to trust one another" (Nemiro et al., 2008, p. 156). Supported in the Reina model is that, "Trust and relationships are at the heart of engagement and participation in virtual environments" (Nemiro et al., 2008, p. 173).

Employees at all levels, leaders, managers, supervisors, and employees work in collaboration based on a trusting relationship. Explained in the Reina model is that, "Trust is built by behavior and both building trust and breaking it are natural elements of relationships" (Ambler, 2008, p. 156). The goal of the Reina model is to enable organizations and teams to understand the dynamics of trust (Reina & Reina, 1999). Described in the model were the types of trust that helped to explain the dynamics of trusts and specific trust behaviors.

1. Transactional trust – Transactional trust is reciprocal in nature wherein one has to trust others to be trusted (Nemiro et al., 2008). Transactional trust has three components: contractual, communication, and competence trust

(Nemiro et al., 2008, p. 151). Each of the components has essential behaviors that are associated with building that type of trust.

- a. Contractual trust – Contractual trust involves mutual understanding between people where each understands and trusts that the other people will do what they say they will do (Nemiro et al., 2008, p. 152).
 - b. Communication trust – “Trust influences communication and communication influences trust” (Nemiro et al., 2008, p. 159). A team that communicates well encourages members to talk freely, state their viewpoints, and be able to comfortably raise questions, offer help, and ask for help. Nemiro et al. explained, “Sharing information, telling the truth, and speaking with good purposes are examples of behaviors that create communication trust” (p. 160).
 - c. Competence trust – Competence trust influences the ability of the team to perform job responsibilities (Nemiro et al., 2008, p. 159). “Involving others, seeking input, and helping people to learn new skills are behaviors that build competence trust” (Nemiro et al., 2008, p. 159).
2. Transformative trust – The Reina model of trust and betrayal is based on the assumption, “If people consciously and consistently practice behaviors that build transactional trust, the level of trust within the organization (or community) and among the individuals within the community transforms” (Nemiro et al., 2008, p. 171). As team members begin trusting each other, they feel comfortable in interacting with each other and in voicing their

opinions and perspectives, resulting in increased trust and effective social networks and team relationships.

Integrative model of trust formation. Traditional models of trust portray trust as evolving from a long history of interaction, but recent studies of trust in VTs revealed the existence of high initial trust, known as swift trust, among team members. Hung, Dennis, and Robert (2004) developed an integrated model of trust to examine the traditional view of trust and the concept swift trust found in VTs. Based on the dual process theories of cognition, Hung et al. posited, “Individuals form trust attitudes via three distinct routes at different stages of a relationship: the peripheral route, the central route, and the habitual route” (p. 1).

Meyerson, Weick, and Kramer (1996) defined swift trust as a form of impersonal trust developed in temporary teams with a clear purpose. Meyerson et al. further stated that swift trust developed rapidly when the action was more forceful. Numerous researchers on VT teaming (Coppola, Hiltz, & Rotter, 2004; Jarvenpaa, Knoll, & Leidner, 1998; Jarvenpaa & Leidner, 1999) drew on swift trust to understand the trust development in short-term team working in contexts such as an academic institution. Coppola et al. claimed that swift trust established in temporary teams carried over for a period with continuous high level of team activities (see also Nandhakumar & Baskerville, 2006).

The focus of the integrated model is on the initial stages of a relationship when individuals lack information about each other (Hung et al., 2004). At the beginning of any VT formation, team members rely on peripheral cues such as information of the third party, social categories, roles, and rules to form trust (Hung et al., 2004, p. 1). Hung et

al. explained, “Individuals with shared history and knowledge of the other party, use the central route, which involves the assessment of the other party’s ability, integrity, and benevolence” (p. 1). The shared history enables the individuals to develop a “habitual pattern of trust, with possible emotional bonds, wherein team members are no longer motivated to deliberately assess trust, and instead simply enact prior trust attitudes via the habitual route” (Hung et al., 2004, p. 1). According to Hung et al., the communication environment predominately used by VTs slowed “down the progression among the three routes, and increases perceived risk” (p. 2).

Interpersonal Circumplex model (ICM). The Interpersonal Circumplex Model (ICM) “links personality types to the interpersonal behaviors they are likely to foster” (Brown et al., 2004, p. 116). A team member who does not in general trust others has a hard time gaining another person’s trust (Brown et al., 2004). Though the individual may be the most skilled worker in the team, an inability to trust and reciprocate trust can lead to failure of the team. Brown et al. stated, “Trust is ubiquitous in human affairs” (p. 116). Brown et al. based the study on the fact that people had mutual trust for one another and it was the trust in interpersonal relationships that was important.

In VTs, team members do not see their co-workers and read the body languages. The team members’ abilities to trust each other and receive assurance that each member will complete the task on time are essential for the team to perform successfully. For example, in long distance online learning courses, online learning team members work in conjunction to complete papers and projects on time. One of the important traits ensuring the successful completion and submission of the paper is the trust the students have of one another. As a learning team member, members commit to the team members who

will complete the assigned task items on time and will fulfill the role as a member of the learning team. To make a formalized process, online universities officials encourage virtual learning team members to complete a team charter document in which team members list commitment, skills, and weaknesses along with the guidelines of the team.

Posited in the ICM model is that the participant's personalities that influence proximate disposition to trust shape the trust in virtual collaboration (Brown et al., 2004). The ICM model is also the most appropriate personality theory for IS because the ICM draws direct connections between personality and interpersonal behavior. Brown et al. explained, "The ICM offers a unified framework for understanding the impact of personality on IS behavior" (p. 133). The use of the ICM model allows researchers to use the same theory to explain the impact of individual "dispositions on trust, innovation, computer apprehensiveness, and resistance to IS change, rather than having to posit a separate disposition for each behavior, as is currently done in IS research" (Brown et al., 2004, p. 134).

There are many benefits of the ICM model, including use in staffing decisions to identify employees more likely to be effective virtual collaborators and accept the technology (Brown et al., 2004). Suggested in the model is that, "Certain combinations of people are more likely to be effective in collaborating and gives IT managers guidelines for matching people who must collaborate" (Brown et al., 2004, p. 133).

Definition of Terms

There are several terms used in the current study that are either new or subject to interpretation. To facilitate a common understanding of the terms used in the context of

the study, it is important to establish working definitions. Specific terminology and definitions are as follows:

Delphi methodology. The Delphi technique, used to measure the judgment of a group of experts, is a method of generating ideas and facilitating consensus among individuals who do not meet and who may be geographically distant (Schell, 2006). It is useful for achieving consensus in areas lacking empirical evidence (Schell, 2006).

Distributed workforce. “Distributed workers are people who have no permanent office at their companies, working instead in home offices, cafes, airplanes, and airport lounges” (Blanchard & Johnson, 2006, p. 1).

Emotional intelligence. Emotional intelligence is “the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (George, 2000, p. 1033).

Enabling technology. Enabling technologies are the telecommunication and information technology devices and methods used by members of virtual teams to connect to the available online systems such as personal computers, office automation software and databases, Internet service providers, conference calls, webinars, video conferencing capabilities (Nation, 2006). According to Nation, “enabling technologies facilitate two-way communications, allowing interactivity between virtual team members” (p. 26).

E-leadership. Avolio and Kahai (2003) defined e-leadership as leadership practiced in e-commerce applications that would include virtual teams.

Face-to-face teams. Face-to-face, known as traditional teams, are teams that work together located physically in the same office (McKay, Davis, & Fanning, 1995).

Information systems. Information systems (IS) are systems made available to people working for an organization to get access to data, reports, processes, and information (Brown et al., 2004).

Likert-type scale. A Likert-type survey is an instrument to acquire feedback from participants of the study and offers the participants the option to respond to open-ended questions or comments (Sori & Sprenkle, 2004). The survey results and open-ended discussions make available a varied perspective of the entire survey population to all participants allowing them to think using different perspectives and understanding each other's responses, bringing the consensus closer with every survey the participants complete (Sori & Sprenkle, 2004).

Mutual trust. "Mutual trust is the trust shared between two members of a virtual team. This trust is most likely to occur when people are positively oriented to each other's welfare" (Cummings & Bromiley, 1996, p. 273).

Postmodernism. "Postmodernism is the name for a movement in advanced capitalist culture, particularly in arts" (Sarup, 1993, p. 131).

Psychological contract. "Psychological contracts are beliefs, based upon promises expressed or implied, regarding an exchange agreement between an individual and in organizations, the employing firm and its agents" (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 393)

Self directed teams. Self-directed teams, also known as self-managed teams, are groups of interdependent individuals who self-regulate the behavior of the members on

relatively whole tasks (Cohen & Ledford, 1994). Self directed teams “retain control over the organization of work and are able to determine work assignments, work methods, and scheduling of activities” (Cohen & Ledford, 1994, p. 21).

Success in virtual teams. Hawthorne (2009) defined a success of virtual teams as:

A team where each team member values the resources being built; respects the talent and contributions of other team members; trusts that all deadlines will be met; and, as a creative problem solver, and enjoys contributing to the success of the team. (para. 3)

Successful outcome of VTs. A successful outcome of VTs is “The external product delivered by the VT by maintaining an atmosphere of trust internally among the team members” (Hawthorne, 2009, para. 3).

Swift trust. Meyerson et al. (1996) defined swift trust as a form of impersonal trust developed in temporary teams with a clear purpose. They further explained, “Swift trust develops rapidly when the action is more forceful” (Meyerson et al., 1996, p. 712).

Trust. Mayer et al. (1995, as cited in Hoag et al., 2003) defined trust as “The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party” (para. 2).

Virtual. Virtual is a “term used to describe any team with graphically distributed team members who are unable to interact F2F [sic] on a frequent basis (daily, monthly, quarterly, etc)” (Jones et al., 2005, p. xxi).

Virtualization. Virtualization is a stage where traditional structures coexist and sometimes conflict with virtual structures (Schultze & Orlikowski, 2001). This usually

occurs when traditionally structured organizations are in the transition process from traditional format to virtual format and practice both traditional and virtual business systems.

Virtual collaboration. Virtual collaboration is ability of virtual team members to work with and learn from each other (Holton, 2001). “Collaboration is born in the ability of a group to dialogue with sufficient depth and opportunity to establish trust and open communication” (Holton, 2001, p. 38).

Virtual distance. “Virtual distance is a multi-dimensional perceptual concept developed to help researchers and business professionals analyze some of the key elements which promote a sense of distance between players in a virtual work environment” (Werko, 2006, p. 9).

Virtual team. A virtual team is an evolutionary form of a network organization, which uses advanced information and communication technologies to interact. Members seek to collaborate productively while geographically dispersed (Miles & Snow, 1986).

Assumptions

Several assumptions were necessary for the current study. The first assumption was that the current Delphi study would result in a consensus of the indicators of trust. Since indicators of trust became apparent in the first phase of the study, the second phase of the study was implemented, namely, ranking the identified components of trust in order of importance. An extensive review of the literature revealed that the increasingly number of VTs across the globe required VT members to uphold a high level of trust among the leader and all team members (Helliwell & Huang, 2005; Kock, 2000). Though trust is an attribute seen among traditional teams dealing face-to-face,

MCIWorldCom in 2001 reported that 84% of the survey participants had never met the entire VT face-to-face (“Looks Aren’t Everything,” para. 1). Virtual team members worked together based on the trust that each team member would complete their assigned task items on time to bring his or her project to completion.

The second assumption was that the study participants would provide truthful and honest responses to the survey instrument questions. The integrity of the survey results played a vital role in developing the consensus required for the purposes of the study. According to Wissema (1982), “The Delphi method has been developed in order to make discussion between experts possible without permitting a certain social interactive behavior as happens during a normal group discussion and hampers opinion forming”(p. 127). The aim of the current study was to capture the components of trust that influence the success of VTs. Trust that the participants responded to the survey truthfully, is a key component of achieving truthful results. This assumption helped by the very nature of the Delphi process; continued choices based on asynchronous discussion tends to break down deception.

The third and final assumption of the study was that the anecdotal evidence provided by the participants accurately reflected the perspectives of the VTs across the United States. The growth of VTs increased exponentially since the 1990s (Kock, 2004). Through the current study, the aim was to capture accurate documentation of the findings of the study provided by the participants. The assumption was that the participants provided the views of the general population of VT members. According to Willmore (2003), the number of people working from home or on the move could reach over 27 million by 2010 (p. 3). Virtual teams are a prominent mode of operation today because

more people are telecommuting; for instance, 45 million Americans telecommuted in 2006 (WorldatWork, 2008, para. 2) and 23% of Americans regularly do their job away from the office (Karnacus, 2007). Some companies have more virtual employees than others; for instance, Sun Microsystems (2008) reported in 2005 that 70% of the employees were mobile and the expenses for the home-assigned employees' initial and annual work expenses were about 70% less than fixed-office employee expenses were. For the purposes of the current study, due to the large widespread existence of VT members across the world, it becomes difficult to survey all potential participants. As a result, the assumption was that by conducting the study with participants who were VT members, the results might be extrapolated and generalized to the general population.

Scope, Limitations, and Delimitations

The study has limitations that must be recognized before applying the findings to other situations. The current study was limited to VT practitioners from corporate organizations based in south Florida. Virtual teams are in all types of business segments, including the military, health care (telemedicine), and education (online classrooms and distance learning). Virtual teams exist in organizations across the United States. Consequently, organizational leaders nationwide may apply the generalized results of the current study to VTs.

The current study was limited to investigating only the trust trait of VTs, which influences the success of VTs. The limiting factor ensured that participants focused only on the trust trait. The limitation also ensured that the data collected might advance the field of study related to VTs and trust. Data gathered in the study originated only from employees in VTs from organizations based in south Florida. Because there may be

cultural or national differences in perceptions of VT members, the limiting factor of using only South Florida based organizations ensured that results were relevant to organizations functioning in South Florida in the United States. The delimitation ensured that corporations outside of South Florida were not included in this study. The results of the study and resulting conclusion took into account the limitations of the study.

Summary

With increasing use and growth of technology, organizational leaders are attracted to using VTs in which leaders can use experts to work on projects without having to travel extensively (Casico, 2005). Although there are many factors that affect the success of VTs, trust is the component that researchers study the most (Gibson & Cohen, 2003). No researcher identified or ranked the strongest indicators of trust that influence the success of VTs (Casico, 2000; Helliwell & Huang, 2005; Lipnack & Stamps, 2000). The intent of the current consensus study was to identify the strongest indicators of trust and the influence on the success of VTs.

Researchers highlighted behavioral and personality traits that affected the ability to trust another person (George, 2000; Meyerson et al., 1996; Rousseau et al., 1998). George introduced emotional intelligence, Meyerson et al. explained swift trust and Rousseau et al. discussed psychological contract. Understanding how certain indicators of trust influence the efficient working of a VTs is one key to developing theories and practices that select, organize, and manage VTs effectively.

Provided in Chapter 1 was an overview of the current research study to identify and rank the building blocks of trust in VTs. Presented in the chapter was a brief background of the problem, the purpose of the current study, the nature of the study,

definitions of terms, and limitations of the study. Presented in Chapter 2 are the results of an intensive literature review on trust, VTs, building blocks of trust, leadership in VT, and successful outcomes of VTs.

Chapter 2: Review of the Literature

The aim of Chapter 2 of the study is to understand the influence of trust on the success of VTs. Research on the topic of the study was in a converging manner starting with trust in general and narrowing the scope to trust in successful VTs. The exploratory mixed method consensus study was conducted to encourage the building of a consensus to identify the components of trust that influence the successful functioning of VTs, and rank the identified building blocks of trust. The study included participants who belong to VTs and were or are currently VT practitioners with organizations located in south Florida. Jones et al. (2005) explained, “In situations where each team member’s work is independent and required for success, the VT depiction can be used to make the team more efficient, more effective, or both” (p. xviii). Virtual teams are gaining momentum and popularity with organizational leaders. The results of the study may be beneficial for organizational leaders who foster a virtual environment. Leaders and managers may find value in understanding the components of trust strongly influence the success of VTs. At the end of the study, sufficient information and evidence emerged, which made it possible to build a VT illustration that leaders of organizations with VTs may find of significant value.

Virtual organizations emerged to meet the rapidly changing demands of today's business environment such as globalization and market competitiveness (Casico, 2000). According to Willmore (2003), “Virtual organization or geographically dispersed teams are not a fad or passing fancy. We live in a world in which virtual interaction, especially virtually teaming, is becoming the norm and not the exception” (p. 5). Unlike traditional, face-to-face teams, VT members may not always have the opportunity to meet each other

physically. In some cases, the members may work on the entire project without coming face-to-face. Lipnack and Stamps (1997), Jarvenpaa et al. (1998), Jarvenpaa and Leidner (1999), and Casico (2000) all studied different aspects of VTs and looked at factors that make the VTs successful. One main factor uncovered and identified by almost all researchers was *trust*. Holton (2001) explained, “How one creates trust within a team of individuals working across distance, time zones, cultures, and professional disciplines is a challenge that an increasing number of organizational leaders will face” (p. 40). Understanding how certain indicators of trust influence the efficient working of a VT is one of the keys to developing theories and practices that can help select, organize, and manage VTs effectively.

Chapter 2 of the study is dedicated to conducting a comprehensive literature review on trust, VTs, building blocks of trust, success within VTs, successful outcomes (i.e. their products), and leadership in VTs. The end goal of the study was to identify the strongest building blocks of trust which, when applied efficiently to any VT, which may significantly influence the success of the team. At the end of the study, appropriate suggestions were established which led to the development of a VT illustration that may be used to educate businesses and leaders who encourage the use of VTs.

Title Searches, Articles, Research Documents, and Journals

A comprehensive search of the literature was conducted to develop and prepare for the research. Like any other study, required in the current study was to develop a background of research conducted by previous researchers. The interesting fact about VTs is that researchers studied VTs from numerous aspects: technology (Breu & Hemmingway, 2004), organizational management (Handy, 1995), education (online, long

distance) (Coutu, 1998), and even from the social aspects that include honesty, integrity, trust, and more (Bergiel et al., 2006). Peer-reviewed journals and articles, theses and dissertation studies, newspaper articles, books, speeches, video conferences, seminars, and personal interviews were examined to study, search, and prepare the review of the existing literature.

According to Jones et al. (2005), “Much of the early literature on managing a successful VT or on how to successfully implement a telecommuting program made the assumption that most team members were co-located, the remote user was the exception” (p. 22). As a result, the goal of the VT is to ensure that the few individuals can are able to work within the team on “a best-effort basis rather than one encouraging all team members to act virtually” (Jones et al., 2005, p. 32). Jones et al. cited as an example the situation might exist in programs where the position of telecommuting was as an employee benefit, as opposed to a business benefit.

The research in the study was conducted by first categorizing the topics that needed to be reviewed. The focus of the study was to encourage a consensus of the components of trust that influence the success of VTs, ranked by order of importance. The five categories reviewed in the study were *VTs*, *trust* (in general), *trust in VTs*, *successful outcomes of VTs*, and *leadership in VTs*. Using key words for each of the categories, peer-reviewed journals and articles from the University of Phoenix (UOP) online library database that comprises ProQuest, EBSCOHost, ThomasGale, and many others were reviewed. Research was conducted on publications available in the online library such as Sage Publications, *American Management Journal*, Emerald, *Journal of Leadership Studies*, and *Globalization*.

Key words provided avenues to conduct searches in search engines of Google Scholar, International Consortium for the Advancement of Academic Publication (ICAAP), and Noesis. Research was conducted on material for the literature review in books available from libraries by either using the keywords or authors cited in articles, documents (white papers and case studies), and speeches found from online and traditional libraries. Generic Internet searches were performed and yielded additional leads, which were retrieved through ProQuest, EBSCOHost, Emerald, and Sage databases.

Historical Overview

Hoag, Jayakar, and Erickson (2003) estimated that in 2002 more than 2 million college students were enrolled in some form of online learning, triple the number from 4 years before (p. 1). Hoag et al. estimated that by 2005 more than 90% of U.S. colleges and universities would offer online learning options (p. 1). According to Willmore (2003), the numbers of people working from home or on the move would reach over 27 million by 2010 (p. 7). Virtual teams are prominent in organizations because more people are telecommuting. For instance, 45 million Americans telecommuted in 2006 (WorldatWork, 2008, para. 2) and 23% of Americans regularly do their job away from the office (Kanaracus, 2007). Some companies have more virtual employees than traditional employees. Sun Microsystems (2008) reported in 2005 that 70% of all the employees were mobile and the expenses of the home-assigned employees' initial and annual work expenses were about 70% less than fixed-office employees expenses were. Watson Wyatt Worldwide (2002) survey results included that, "Organizations where frontline employees trusted senior leadership posted a 42% higher return on shareholder

investment over firms where distrust was the norm” (p. 1). In a recent University of British Columbia report, economists found that trust in management was one of the most valued components of job satisfaction (Helliwell & Huang, 2005).

The number of VTs is increasing and growing at a fast rate (Olson & Olson, 2000, p. 1). Researchers at the Institute for Corporate Productivity found, “67% of companies surveyed anticipate an increased need for VTs in the near future” (Olson & Olson, 2000, p. 1). In companies with more than 10,000 employees, more than 80% anticipate the increased need according to the researchers at Institute for Corporate Productivity. According to Key, from the Institute for Corporate Productivity, an IT-based organization’s leadership pillar director, “With highly distributed workforces and the rising cost of travel, it’s not surprising that organizations would anticipate a greater reliance on virtual teams” (WorldatWork, 2008, para. 1). Key explained, “What it foreshadows, however, is the greater need for the development of virtual leadership skills. I expect more and more corporations will put more effort into developing this skill set internally” (WorldatWork, 2008, para. 2). Survey participants stated that difficulty managing VTs, coordinating schedules, and inadequate company technologies were major obstacles to implementing VTs. Revealed in the survey also was that listening skills were critical to the success of VTs (WorldatWork, 2008). “Trust, the ability to establish actionable items, group facilitation skills, consensus-seeking skills, cultural awareness, and a sense of humor, all ranked high on the list of characteristics for successful VTs” (WorldatWork, 2008, para. 3).

Zeller (2005) stated, “Businesses are using all kinds of new tools plus the now typical e-mail, v-mail, teleconferences, instant messaging, and web-surveys” (para. 2).

Schools are also adopting vigorously numerous tools to enable the virtual collaboration on campus and off campus. Although research on VTs increased substantially, there is little theoretical development to guide the current research. Any two or more people working together in a team rely on their interpersonal trust to work as a team. According to Brown et al. (2004), “Understanding how trust is built and maintained in virtual relationships is important to the design of VTs and marketplaces and to the development of processes that enable them to function effectively” (p. 116).

The phenomenon of virtuality is also evident in the restaurant business. In April 2008, Pizza Hut Incorporation announced a new online ordering technology dubbed virtual waiter. Authors in the Business Wire (2008) reported, “The virtual waiter technology gathers data from millions of online orders and suggests menu items that best match customers’ orders” (para. 2). The new virtual technology has increased Pizza Hut’s visibility on the Internet and sales significantly. The authors stated, “The company has seen an average of four million visitors a month at www.pizzahut.com. The visitors have placed more than 50 million site visits in the past year” (Business Wire, 2008, para. 4).

In order for a sophisticated system to work efficiently, trust among the employees and within the processes plays a vital role (Business Wire, 2008). The team at the restaurant trusts the virtual waiter to take the order and note it accurately, allocate it to the right location, and indicate correctly if the order is a delivery or pick-up (Business Wire, 2008). Measurement of the employees’ efficiencies and successes is by the manner that the team completes the order for the customer (Business Wire, 2008). The one constant trait that works for the team is their ability to trust one another in doing their jobs

correctly (Business Wire, 2008). Mayer et al. (1995) defined trust as a “willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party” (p. 12). The purpose of this mixed method research study was to encourage the consensual identification of the building blocks of trust that influence the success of VTs in delivering the product of the action items or projects assigned to the team members. During the consensus-building deliberations, the selected participants focused on (a) the rank order of importance of each of the building blocks in establishing and maintaining an atmosphere of trustful camaraderie within VTs and (b) the identities of the measurable components of that atmosphere. The camaraderie of VT members made it possible to build an atmosphere of trust among the participants. Finally, the consensus-building deliberations of the participants (a) identify the factors determining the effectiveness of the products produced by VTs and (b) explore the correlation, if any, between the degree of that product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products.

Emergence of VTs. Virtual teams originated as early as 900 B.C., with the first postal service for governmental use in China. The use of smoke signals, drumbeats, carrier pigeons, and semaphore flag signaling were used as communication tools. These were the tools that enabled long-distance teamwork, and to some extent, the first VTs (Jones et al., 2005, p. xviii). Virtual teams (by use of technology) came into existence over 20 years ago because of the intersection of two important emerging trends: globalization and information technology (Mayer, 1998). During the mounting worldwide economic pressures of the 1980s, technology was increasingly available to

support VTs across continents. Members of the educational sectors and industry found VTs and the concept acceptable and useful (Mayer, 1998). Synchronous and asynchronous chats, audio and video conferencing, voicemail, corporate email-based Intranets, and the World Wide Web enabled the communication of VTs. One of the initial benefits of VTs to organizational leaders was the significant reduction in travel expenses. The acceptance increased further as company officials noticed the increased speed and flexibility of conducting business, not just locally or domestically, but also across international borders. A VT is a “group of geographically and / or organizationally dispersed co - workers who are assembled using a combination of telecommunication and information technologies to accomplish an organizational task” (Townsend et al., 1998, p. 18). Many leaders of organizations such as Motorola, Siemens Inc., and TYCO International invested in VTs and experienced the benefits almost immediately. In the late 1990s, IT business leaders saw a boom of IT developers arriving at Silicon Valley and the dot com industry emerged in the market. Siemens employed IT developers from Florida, California, and Germany working as geographically dispersed team members to work on a common project (Cooper & Schindler, 2003). The previously known geographically dispersed teams are now known as VTs (Magner, 2005). Senior engineer at Siemens, Payne, stated, “Given the mobility of our projects, we needed to be able to allocate and reallocate developers without having to move them around the world” (Magner, 2005, p. 17).

The concept of VTs began in the education field with correspondence and long distance courses (Coutu, 1998). Gradually, organizational leaders began to see the benefit of VTs and incorporated VTs into their business models. Virtual teams are one of

the best resources of utilizing employee skills and knowledge (Mayer, 1998). Magner, in a study on VTs in 2005, explained the history of VTs and reported, “In 1993, 68% of Fortune 1000 companies reported that they used self-managing work teams and 91% reported that they used employee participation groups, as opposed to, 1987, only 28% and 70% respectively” (p. 11). Magner attributed the reason for the growth to the collaborative strengths of VTs wherein rich and diverse knowledge and feedback from practitioners worked as a team to develop solutions and processes for organizations without the need to meet physically in person. Hoag et al. (2003) found that more than 2 million college students were estimated to be enrolled in some form of online learning, triple the number from 4 years ago, 1999 (p. 1). Hoag et al. estimated that by 2005 more than 90% of U.S. colleges and universities would be offering online learning options. The number of VTs is increasing and growing at a fast rate. Gartner (2000) stated that by 2009, 60% of IT collaboration projects would be about connecting with external entities (p. 4).

The Industrial Age of the 20th century was a bureaucratic- hierarchical pattern of business, followed until a decade later, in which all employees had to be physically located to work together. In the 21st century, the rising opportunities of technology and changing business requirements led to a change in the trend. Lipnack and Stamps (1997) introduced the concept of networked organizations as VTs become prominent. Lipnack and Stamps (1997) pointed out how networks replaced the pyramid of organizations wherein; organizations were flatter and working together did not necessarily mean working under one roof. Eastman Chemical Company’s CEO, Deavenport (as cited in Lipnack & Stamps, 1997), developed an organization chart of the network organization

(see Figure 2). The figure follows a hub and spoke design wherein the circles represent a specific purpose (not the job title or department), the white space indicates where all the connections are, and communication goes directly among the people who need the information and the people who have it. Deavenport practiced a shared leadership design, just as in VTs, in which leaders of the team rotated at for every new project (Lipnack & Stamps, 1997).

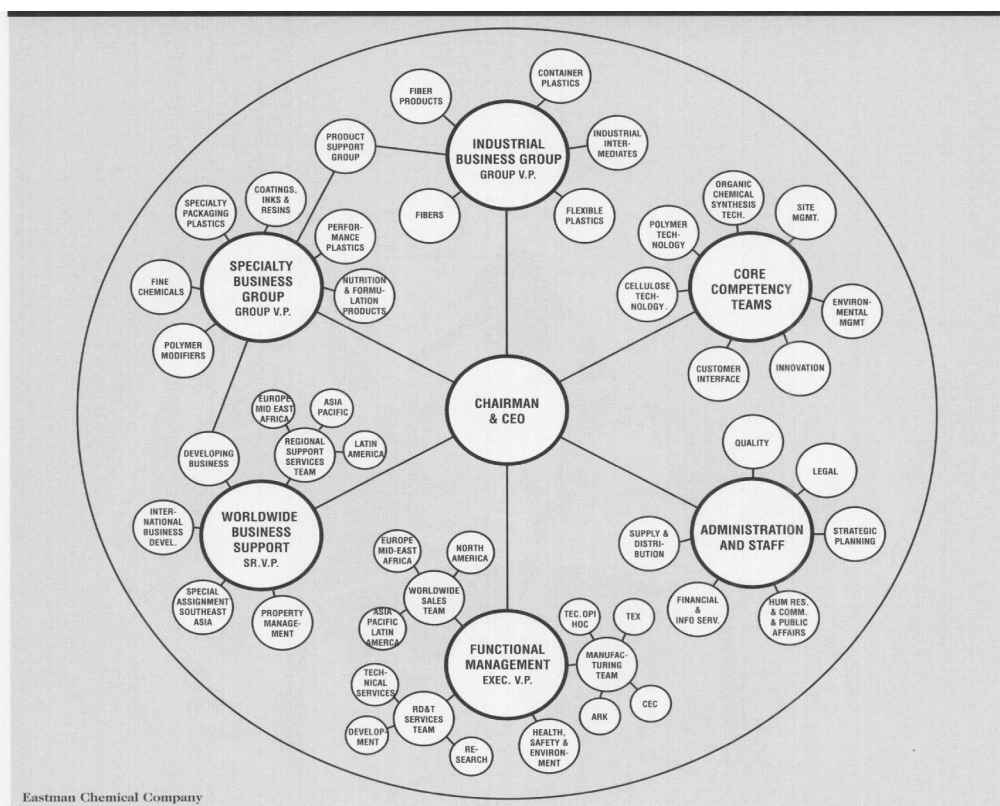


Figure 2. Collaborative Organizational Chart of Eastman Chemical Company.

From J. Lipnack and J. Stamps, 1997, *Virtual teams*, p. 17. Copyright 2007 by John Wiley and Sons, Inc. Reprinted with permission (see Appendix B).

One of the first examples of utilizing VTs (networks) was by Buckman Labs, a specialty chemical company based in Memphis (Lipnack & Stamps, 1997). The initial business model practiced at Buckman was that if a customer had a problem, a

representative from the company went to the customer's site to resolve the issue (Lipnack & Stamps, 1997). By being the global corporation that it was, Buckman found the costs to be extremely high. Buckman decided put the entire team online and was able significantly reduces costs, provide timely service to customers, and provide continuous online support to resolve customer issues quickly. Buckman Lab became a round-the clock global organization (Lipnack & Stamps, 1997, p. 17).

Characteristics of VTs. Gould (1997/2004) found that VT members had a high sense of motivation and eagerness to accomplish the assigned tasks. Through the research that comprised numerous in-depth interviews and the analysis of one case study, Gould developed a list of characteristics of VTs:

1. Virtual teams get the job done.
2. People in VTs can be trusted. Gould's research indicated that VT members felt that because their managers could not see them, they found it hard to gain their trust. This could be a reason why VT members have high motivation and energy to get the task done.
3. Few VTs are 100% virtual. This is an important aspect to consider. A classic example is customers calling a service provider and complaining to the provider for sending the customer the wrong merchandise. Customers show much more compassion if they are face-to-face with the sales person at the store.
4. Virtual teams take on the same basic structure as *real* teams. Even in traditional face-to-face teams, the first time the team works together, it takes a while for the members to get comfortable with each other and relate to each

other's strengths and weaknesses. The same holds true for VTs where they too go through the process of learning to work with their team members as they work over time. "The early stages are characterized by a certain amount of randomness, chaos, and ad hoc decision-making. As the team matures, processes are put into place and the team becomes more efficient" (Gould, 1997/2004, para. 1-4).

Why VTs?.

Eppinger and Chitkara (2006) studied globalization and the use of VTs at MIT. Eppinger and Chitkara revealed the reasons that organizational leaders used VTs; namely, lower cost, improved process, global growth, and technology access. Revealed in the research was that "Many companies strive to reduce . . . operating costs by redistributing activities to take advantage of labor arbitrage or to access more affordable capabilities" (Eppinger & Chitkara, 2006, p. 24). In India, China, the Czech Republic, and Vietnam there is a huge pool of low-cost engineering talent, which encourages American organizations to outsource activities (Eppinger & Chitkara, 2006). Analyzing some organizational "Activities in selected international locations can give companies access to critical information about markets in the regions" (Eppinger & Chitkara, 2006, p. 24). Eppinger and Chitkara posited that by using local engineers and other staff members "companies make direct connections with potential new markets" (p. 24). Company leaders use VTs to develop integrated processes that include engineers in regions where critical new technology was developed and where technical experts reside. Although cost remains the primary reason that many company officials consider using VTs, "It is

technology, process innovation, or revenue growth that drives the virtuality strategy” (Eppinger & Chitkara, 2006, p. 23).

According to Willmore (2003), “Virtual organizations or geographically dispersed teams are not a fad or passing fancy. We live in a world in which virtual interaction, especially virtually teaming, is becoming the norm and not the exception” (p. 5).

Willmore listed forces that propelled organizational leaders to more virtual work and technology-supported interaction as follows:

1. Speed: “All organizations have shorter deadlines and pressure to operate faster. Time pressure and the need for speed is forcing professional to utilize technology to communicate” (Willmore, 2003, p. 6). Sophisticated cell phones such as the i-Phone® and Blackberry® enable employees to respond to emails and text messages as soon as they receive them.
2. Complexity: As the complexity of the work increases, the need to obtain input from subject matter experts also increases. Willmore (2003) explained that since team members might not rely on the experts continuously, the team members did not add the experts as permanent team members. As a result, the experts are contacted only when the expertise is required and the experts are linked to one another by technology, such as Intranets, phones, emails, and overnight mails instead of locating all the people involved in a project in nearby cubicles.
3. Fluid structure: As organizations go through mergers and acquisitions, the leaders form new institutions, organizational structures, temporary alliances, and quick partnerships. The leaders connect employees through

a series of technological tools such as emails, phones, Intranets, as mentioned in the previous section. “In highly competitive markets, virtual work is a way to quickly ramp up production for firms that need to add new capacity” (Willmore, 2003, p. 7).

4. Global competition and flatter organizations: One may question the value of VTs in smaller organizations. Willmore (2003) explained that as organizational leaders expanded geographically and the structure became flatter, with managers supervising more staff and personnel being located at client sites, managers found that most of the staff members were not people who worked right next to the leader, but instead traveled frequently or located at other sites.
5. 24-7-365: As organizational leaders develop websites and call centers, the leaders realized the potential of customer service and selling the products across the world. Willmore (2003) cited the example of a call center located in Dublin where the busiest time is at night when the call center receives calls from other parts of the world (like the United States or Australia). “Regardless of the workload, in a global business, customers may be most frequent when the typical work day ends” (Willmore, 2003, p. 7). Willmore termed such environments called for *shift work*, typically seen in hospitals, telecommunication companies, and the police force. In shift work, coordination and information sharing is crucial which leads to a heavy reliance on virtual interaction.

6. **Diverse workforce:** In order to attract and retain human capital, organizations are willing to offer their talented workforce the ability to work as virtual team members, such as workers with disability, workers on maternity leave, or workers who have had to locate away from their offices due to an illness or a spouse moving (Willmore, 2003).
7. **Technology:** The advancements in technology are expanding continuously enabling teams to work virtually more efficiently (Handy, 1995).
8. **Changes in the economy:** Increased gas prices and high maintenance of real estate resulted in organizational leaders reducing work-related travel (Hawthorne, 2009), which in turn led to an increase in the use of VTs.

Employees resisting change often question the need for change. As VTs gain more momentum, the people impacted by VTs wonder why the organizational leaders choose to implement VTs within the work structure (George, 2000). The same holds true for managers and leaders when they face managing virtual employees or employees that wish to work remotely. “The concept of virtual organizations started in the mid 1980s by transferring the principles of virtual memories and computers to an organizational concept” (Magner, 2005, p. 2). From an entrepreneurial perspective, organizational leaders use VTs because the leaders find value in saving on high travel and lodging costs. Virtual teams save time by not having the employees wait in airports and spend endless hours on flights and checking in and out of hotels.

Jones et al. (2005) conducted a cost analysis for a meeting of four people for 4 hours. The face-to-face expenses assume three of the four must travel an average of 1,000 miles. A comparison of costs appears in Table 1.

Table 1

Cost Comparisons

Expenses	Face-to-face *	Virtual *
Airfare	3 x \$500	
Lodging	3 x \$100	
Food	3 x \$25	
Parking/mileage	3 x \$32	
Car rental/gas	3 x \$80	
Lost productivity	3 x \$500	
Phone bridge		\$48
Web cast		\$120
Total	\$1255 **	\$168 ***

Note: * three participants traveling, ** costs per person traveling, *** total cost for the meeting.

Jones et al. (2005) posited, “It is expected that as organizations become more and more comfortable with the concept of virtual meetings, the need for travel for internal meetings should continue to fall, even if the economy is robust and security isn’t an issue” (p. 36). According to WorldatWork (2007), an estimated 45 million people in the United States telecommuted in 2006, up from 41 million in 2003 (para. 5). The researchers defined telecommuting as “an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization” (WorldatWork. 2007, para. 3). In a survey released by Citrix Online, researchers found that 23% of U.S. workers regularly did their jobs from some place other than the office, and that 62% of participants who cannot work off-

site would like to (Karanacus, 2007). According to Karanacus (as cited by WorldatWork, 2007), “By 2005, 9.9 million people were regularly working at least one day a month” (para. 3) in the United States. Zeller (2005) found, “After flat lining at about 7.6 million for the last four years, the number of regular employees working at home at least one day a month jumped to 9.9 million in 2005” (para. 9).

Another factor is that by using enabling technology organizations can get the best of the best experts work on projects irrespective of their physical locations (Bergiel et al., 2006). Over the past decade (1999 - 2008), the use of virtual organizations provided businesses the ability to be agile and more robust in dealing with the competition (Hawthorne, 2009). From an economic standpoint, the rise of VTs increases as the world’s population constantly grows and causes a dramatic change in the way people prefer to conduct business virtually (Bergiel et al., 2006, p. 426). Another economic factor to consider is the ability of workers to have more than one job. Unlike the Industrial age of the 19th century, workers are not limited to one skill set forcing the worker to do only one type of job. In a modern setting, workers can do their full time jobs and still run their own business on the side.

Consider the example of a consultant who can offer services to more than one company at any given time. By using enabled technological tools such as video conferencing, net meeting, emails, phone conferences, and other available online applications, one consultant can perform multiple projects across the globe. An additional economic factor that comes to mind causing an increase in the use of VTs is the fact that many women have now joined the workforce. The consultant still has to continue the duties of being the caretaker for the children and loved ones. Government

officials across countries with the exception of only a few ones, offer laws and regulations to protect the female workforce so they can continue to do their jobs and take time off or work from home to look after their family.

Another successful use of VTs occurring as early as 1996 was the use of the distributed-employee model by the State of Georgia when hosting the 1996 Olympics in Atlanta. During the 2 weeks of the Olympic Games, requests were that people in the area stay off the roads as much as possible. Hewlett Packard headquarters was in Atlanta and was in the infancy stage as far as a telecommuting model. However, Hewlett Packard leaders asked the employees, knowledge workers, calls center personnel, and others to work from home during the Olympic Games. Surprisingly, even by the use of the slow speed 33K-modem access, support calls were answered, financial analysis occurred, servers stayed up, and customers received calls from sales representatives. The successful and positive experience made people wonder the need for the big Hewlett Packard headquarters in Atlanta (Jones et al., 2005, p. 37).

Advancements in the medical field are allowing people to live longer. The longer lifespan is giving rise to numerous reasons to work virtually. As more and more people join the workforce, space constraints can cause organizations to opt for telecommuting (used interchangeably with virtually, remotely, and geographically dispersed). As individuals age and require more care, the family members may need to work remotely to care for the elderly at home. The older workforce is appreciated for their experience and knowledge. As employees age, it may not be easy to travel from one office to another. The use of VTs is appropriate as VTs allow the selected practitioners to be part of the projects and not have to leave the workstations. Benefits of VTs are also evident with

handicapped employees who may not be able to drive to work, but can function as efficient employees. Working in VTs provides the handicapped employee the ability to continue to work despite physical limitation. Organizations benefit from this because the leaders do not have to address travel costs and health issues of the older or handicapped workforce if they had to travel physically from one location to another.

The world saw an increase in the use of VTs after the terrorist attacks in the United States on September 11, 2001, when employees became apprehensive about traveling and businesses could no longer afford the travel expenses (Bergiel et al., 2006). Though one incident cannot be held responsible for the growth of VTs, the incident did lead to an economic breakdown that facilitated outsourcing and the resulting use of VTs. Numerous corporations in the United States have VTs in India and China. When Dell customers call technical support for assistance, the customer the connection to a virtual assistant may be a provider based in India.

Close to the attacks of September 11, 2001 was the SARS virus epidemic that further led to a decrease in airline travel. One of the greatest risk factors for contracting the SARS virus was international travel by plane. Many company officials banned travel to known infected locations including China, Hong Kong, Taiwan, and Toronto making it impossible for many people to meet face-to-face and requiring the employees to interact virtually (Jones et al., 2005, p. 40). The SARS incident too led to the use of VTs.

Virtual organizations help organizations in unpopular areas recruit quality employees. The headquarters for one of TYCO Int.'s group companies, SimplexGrinnell, is in Westminister, Massachusetts, which is approximately 60 miles west of Boston. The severe cold weather, remote location, and high cost of real estate of the office were the

reason for the loss of some of SimplexGrinnell's skillful workforce. Organizational leaders recently employed VTs and shared services in the second headquarters in Boca Raton, Florida. Virtual teams are diverse by nature. Heterogeneous teams are more powerful and effective than homogeneous teams (Coutu, 1998). Because VT members can be from anywhere in the world, they encourage diversity, which further enhances creativity (Bergiel et al., 2006, p. 431). Maximize diversity while minimizing diversity, builds trust without social settings, making the invisible visible, establishing synchronous and asynchronous rhythms, and leading by distributing leadership are few rules (Malhotra & Majchrzak, 2006). According to Willmore (2003), "Virtual technology may be a means of enhancing the integration of diverse membership – by gaining credibility and acceptance for people who might initially be judged by their skin, age, occupation, or gender rather than their ideas and competence" (p. 54).

Werko (2006), in a study of VTS, justified the use of VTs stating:

Changes in our work environments including but not limited to hours (blending business and pleasure), locations (outside of commuting range, unique organizational capabilities, networked workforce (technology capability of knowledge/information sharing), budgets (increased reliance on leveraging), and external organizational partnerships (senior management incentives) increase the likelihood of the formation of VTs. (p. 13)

Virtual team members avoid preconceptions based on physical features.

"Research stressed that majority of communication is conveyed by nonverbal cues" (Jones et al., 2005, p. 8). Other advantages of VTs include quick ad hoc meetings are easy when they are virtual by use of emails, instant messaging, or quick phone calls

(Willmore, 2003). Jones et al. revealed other drivers of VTs as better business partner collaboration, meeting federal rush hour commuting mandates for large companies, and better regional representation on company projects.

What makes a VT successful?. The focus of the current study was to identify the building blocks of trust that influence the success of VTs and rank the building blocks in order of importance. Bergiel et al. (2006) listed five factors that influenced the success of VTs as trust, communication, leadership, goal setting, and technology. Discussed was the role of technology. If viewed together, the three components of communication, leadership, and goal setting are contained in the foundation of trust (Goodbody, 2005).

For example, in a VT team project, each team member trusts that the other members are aware of their objectives. The manager who trusts that the team members can accomplish the task assigns the objectives to the members. Team members will communicate effectively if the members trust that pertinent information will be shared among the teammates. Leaders are successful if the team members trust that the leaders are capable of their functions. Researchers identified factors that influence the success of VTs (Gibson & Cohen, 2003; Holton, 2001), but there are factors that cause to barriers to the success of VTs (Bergiel et al., 2006). Joinson (2002) stated that the different time zones could lead to lack of or delay in communication when VTs were comprised of members from different states, countries, and continents, often leading to frustration. Magner (2005) presented a different perspective to Joinson that by working in different time zones, as one member finished the tasks for the day; the next member started keeping the project moving at a faster pace.

In NASA's mission, the Cassini Program, the challenge was to complete a large complex mission with a reduced operations budget (Dodd & Gustavson, 1998). The regular programs in NASA would require the involvement of large traditional team (Dodd & Gustavson, 1998). However, because of the reduced budget, the leaders opted to work with a VT comprising scientists and engineers from various locations of the Cassini program from Germany to the West coast of the United States, covering 10 time zones (Dodd & Gustavson, 1998). The participants split their time between participating in the VT and accomplishing the core responsibilities (Dodd & Gustavson, 1998). Upon completion of the project, the VT was disbanded (Dodd & Gustavson, 1998). The time-sharing of employees was used on Cassini to build mission planning products, via the mission planning VT, and sequencing products and monitoring of the sequence execution, via the sequence VT (Dodd & Gustavson, 1998). The challenging, multitasking approach allowed the efficient use of personnel in a resource constrained environment (Dodd & Gustavson, 1998).

A second identified barrier to the success of VTs is *communication* (Boone & Holmes, 1991). Some VTs require working with people from different countries. Communication can be affected that could lead to a negative outcome of the project. Even if team members have strong language skills, they can naturally interpret written and verbal communication through the filter of their own culture (Snyder, 2003). In a majority of VT teleconferences in the United States, the meeting commences by discussing talking about a baseball game the night before or an upcoming game. In Indian companies, the usual trend is to discuss only the project on a call with team members. If the team members were to indulge in side talk, they would discuss cricket

(the sport). Imagine a VT call wherein there is a good mix of American and Indian members and if they all discussed sports. The members would have a hard time relating to each other as very few Americans know about cricket and very few Indians know anything about baseball. This could lead to disconnect within the team members, which could adversely affect their relation with one another leading to a negative effect on the project. Training is important as VT members assume that communicating by technology is the same or easier than communicating face-to-face. Wilson (2003) stated, “The potential for misunderstanding and miscommunication is extraordinary” (p. 36). Organizations like TYCO Int. offer training programs for their managers and leaders to learn to work with a culturally diverse workforce.

A third barrier to the success of VTs occurs when VTs face is the issue of *conflict resolution* (Boone & Holmes, 1991). In VTs, it becomes hard to manage conflict resolution issues because the team leader sometimes cannot address the issue and it can be too late to resolve the issue if it has gotten serious. In a later section on leadership in VTs, one of the aspects discussed is how leaders of VTs should communicate regularly on a one-to-one basis with every team member. One-to-one communication would be an effective way to identify any conflict issues that may be harboring within the team.

According to Paul and McDaniel (2004):

Conflict is inevitable, eliminating is impossible but can be managed. A strong and flexible corporate culture that emphasizes openness to fresh ideas and acceptance of differences can have a strong role in reducing conflict and helping the virtual team in reaching a greater level of success. (p. 430)

Organizational *culture* is another area that influences the development of trust in the success of VTs (Casico, 2000). Jones et al. (2005) pointed out that as follows:

Companies that have a very hierarchical command and control organizations often will have greater difficulty implementing a VT model than those with a more matrix, team – oriented environment. Hierarchal companies often create a very competitive atmosphere that discourages both team spirit and the free exchange of information. (p. 58)

The United States and Singapore are world leaders in virtual work arrangements whereas the rest of the world is quickly adopting virtual work arrangements as well (Willmore, 2003, p. 154). Blanchard and Johnson (2006), in a study in the United Kingdom, quoted Grantham, “Anytime 15% of any population is doing new behavior, you know it’s going to take off” (p. 2). The Gartner research group predicted that by the end of 2008, 41 million employees around the world will spend at least 1 day a week teleworking and nearly 100 million will work from home at least one day a month (Blanchard & Johnson, 2006, p. 2). In the economic recession of 2008, organizational leaders try to find ways reduce costs and are more accepting to use VTs to decrease travel costs. According to researchers on virtual work in the United States, “Over 46% of all American workers are virtual to some extent. In companies of over five hundred employees, the numbers are even higher; 61% have some kind of virtual work arrangement” (p. 3).

The reliance on mutual trust becomes even more important when working remotely from one another. Leaders of VTs have to rely and trust their team members to be capable of completing their projects in a timely manner, but more so, completing them

successfully. The converse is also true: team members also have to have trust among each other and on their leaders to work successfully together. If VT members receive significant information on the elements of trust that they can use to work successfully as a team, they would find great value in such a research, which will in turn help them enhance their ability to work together as one successful VT. Gordon pointed out, “While technology makes virtual teams possible, only people can make them productive” (Blanchard & Johnson, 2006, p. 2).

According to Jones et al. (2005), “Trust is the single most important driver for the success of VTs” (p. 27). Researchers are beginning to identify specific competencies for the global virtual work environment in areas such as cross-cultural communication, process facilitation, creating and sustaining remote teamwork, and managing information technology (Katz, 2005). As with any other team, the role of trust is important in ensuring that each team member is doing the job right and on time. A surgeon trusts that the anesthesiologist in the operating room is responsible to monitor the patient’s vitals as the surgeon operates in the patient. Any error from either the doctor or the anesthesiologist could prove fatal for the patient. The trust allows the doctor and anesthesiologist to operate and complete the surgery successfully. The same hold true for pilots piloting a plane, where the captain and the co-pilot are aware of the functions and responsibilities and trust each other to make the trip safely. Because the focus of the current study will be on VTs where (a) information technology enables the virtual aspects of the virtual team and (b) the study of management and leadership improves the essence of team in virtual team, the work belongs well in the intersection of management and information technology.

Should VTs meet only in town halls?. McKay et al. (1995) defined face-to-face communications as “communications where those involved have the advantage of live auditory and visual senses while communicating” (p. 44). A VT is independent of the location of the employer, contractor, or manager. Virtual team members rely heavily upon technology to conduct business and provide the communication vehicles. The technology exists in the form of networks, computers, e-mail, faxes, telephones, and other devices (Smith & Baruch, 2001). Until as recently as the early 2000s, employees continued to value the conversations during coffee breaks and near the water coolers. However, as the advancements in technology replace the need for physical offices, organizational leaders refuse to spend money on employees traveling from one office to another office (Meyer & Allen, 2004). The leaders prefer to use funds on enhancing the technology that can bring additional value to the online teams (Gould, 2004). The results are that organization leaders host occasional and infrequent town hall meetings where all employees attend a formal meeting with the leaders in a physical location to learn about the performance of the company.

Corporate organizational leaders do not feel the need for team members to be co-located (Fowler, Lawrence, & Morse, 2004). Leaders and managers function successfully with their teams to get projects done. Some leaders believe that working remotely reduces distraction of non-work related issues that occur with face-to-face teams. Dzurik (2001) stated, “Virtual workers report a tendency to work many more hours per week compared to their traditional office jobs and cite a determining factor as the work being right there, waiting for them in their home office” (p. 80). Dzurik found that VT members complained of feeling isolated from each other and felt the lack of

socialization, as the members were farther away from each other physically. This scenario presents a double-edged sword, as some organizational leaders find that socialization among team members causes the members to become distracted from the job and productivity suffers.

If one views the past growth and future growth prospects of VTs, it will be noticed that as technology brings individuals virtually closer, the need for meeting VTs will only be limited to town hall meetings. Town hall meetings are face-to-face meetings held where all employees gather in a common location to learn about the company's goals, missions, and performance. Organizational leaders at General Electric, TYCO Int., Siemens, and Honeywell online portals such as electronic newsletters, to share news about the companies with their employees and also allow employees to enroll in computer-based training programs, submit electronic ideas, view online job searches, and other such employee benefit information (Hawthorne, 2009). Any information needed by an employee is available on the internal *websites*, called *Intranet* sites, eliminating the need for an employee to speak with anyone. In the newer, service efficient systems, service-providing organizational leaders provide training to their dispatchers to schedule service appointments for customers on the Intranet so technicians and installers know where to go for their next appointment by simply reviewing the Intranet portal of appointments. Upon completion of the appointment, the technician or installers update the online scheduling tool and go to the next appointment. Dispatchers update the billing information and accounts receivable department members ensure the customer receives the correct bill. The entire service related transaction takes place without the use of paper or without having to speak with anyone.

Trust in Virtual Teams

Many researchers identified trust to be a key, yet challenging, ingredient for the effectiveness of VTs (Ambler, 2008; Casico, 2000; Coutu, 1998). Members of VTs do not have the opportunity to meet physically with each other. The interaction with one another provides the basis for trust (Duarte & Tennat-Syner, 1999). Being able to put a face to a name, seeing one's body language, looking at one's eyes, and other such components help build trust among one another (Holton, 2001; Joinson, 2002). The challenge in VTs occurs when all the members hear is a voice. Sometimes, one's age brings respect and trust for an older employee considering they have more experience and knowledge within the group. Dzurik (2001) reiterated Perrella's theory that teamwork builds upon itself and is heavily reliant on trust, honesty, and emotional intelligence. Establishing trust quickly is the key to effective Internet communication especially when it comes to online teaching, according to researchers at New Jersey Institute of Technology (2005). According to Coutu (1998), VT members established trust sooner and without the stages of conventional teams. Coutu explained that as follows:

Virtual teams, where members may be spread throughout the globe and communicate through electronic mail, establish trust in a different manner than conventional teams, where members meet face-to-face on a regular basis. Virtual teams establish or do not establish trust at the beginning of the relationships so the first interactions are key. (p. 21)

The process of developing trust occurs over time. As more VT members work in common projects, trust may develop with a successful completion of the projects. Aubert (as cited in Werko, 2006) suggested, "Trust is higher among collocated members than

non-located members” (p. 14). Werko indicated that the lack of contact influenced trust, especially if the members never met. In the current study on the influence of trust on the success of VTs, it is imperative to understand what trust means to VT members.

Researchers at Sun Microsystems (2008), one of the pioneers of utilizing VTs, revealed, “Successful teams are built on trust” (p. 4). Willmore (2003) defined trust in a team as “a belief that people will do what they say they will do and a belief that the team and its members are competent performers” (p. 107). The concept and meaning of trust can differ from one employee to another and from a leader or manager to a subordinate. A VT member may believe that a timely response of an email to the manager means exhibiting trust toward the manager. A manager may think that the timely completion of an assigned action item constitutes trust. In an online learning environment, a team may view trust as each member contributing to the task items and completing the task assigned within the given timeframe. Failure by any one member could result in the entire team acquiring a low grade. The same philosophy holds true for a VT based in an organization and even in telemedicine in which doctors treat patients virtually. A doctor can use sophisticated tools to perform a virtual surgery on a patient who can be in a different country. The doctor places trusts in the ability to use the tools and applications and the fact that the members of the medical team will fulfill the assigned action items efficiently.

Trust is a very sensitive factor when it comes to any relationship. Platt (1999) wrote, “Trust takes time to build, but no time at all to destroy,” (p. 3) and further asserted that factors such as competence and integrity underlined trust on VTs. As VT members grow in numbers, the team members find that trust plays a vital role in completing the

projects. The consensus study affirmed that trust indeed was an integral component that influenced the success of VTs.

Theoretical framework of trust in virtual teams. In analyzing the influence of trust on the success of VTs, it becomes imperative to understand the views of trust throughout history trust. Some researchers viewed trust from a behavioral perspective based on ones personality traits (Nemiro et al., 2008; Pierce, 2008), while others looked at trust with a scientific approach (Platt, 1999). According to Jarvenpaa et al. (1998), “Trust is critical in new organizational arrangements where the traditional social controls do not exist, and lies at the heart of success” (p. 4). Hall and Andriani (2003), top innovators, found that trust among people was the most significant factor in differentiating successful innovators. Jarvenpaa et al. determined that “Timely and consistent communication was likely to engender trust within VTs” (p. 4). Lynn and Reilly (2002) found that members of VTs “reported lower levels of trust and that these lower levels of trust correlated with lower levels of innovation and collaborative behavior” (p. 18).

Handy (1995) wrote that trust denoted the collaborative dynamic of a learning organization. The trust dynamic is especially true when an organization is in the virtualization stage. The virtualization stage is the stage in which the organization is between going virtual and yet retaining the traditional workplace setting. Handy explained the basis of trust was not on the people; the basis of trust is on the processes and the link of the processes to each other. Social psychologists recently began examining and investigating the influence of trust on teams in general. Mayer et al. (1995) defined trust as “the willingness of a party to be vulnerable to the actions of

another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party” (p. 3). According to Jones et al. (2005), trust was “the teamwork, trust, and leverage of a broadly distributed team that helps make this community innovative and successful” (p. 57).

As newer and advanced technological applications become available, managers will need to empower team members, giving the team members more autonomy and independence in their work. The autonomy and independence may increase the need for reciprocal trust wherein managers and the team members will need to trust one another completely. Dzurik (2001) asserted, “Experienced managers understand the universal tenet: create an atmosphere of trust, demonstrate caring, and show valid concern, and employees are more likely to be content with their organization” (p. 167). In the section that follows, emphasis will be on the theoretical models that provide the groundwork for the current study.

A European theorist from the 1970s, Jean-Francois Lyotard introduced postmodernism as a name for a movement in advanced capitalist culture (Sarup, 1993, p. 131). According to Lyotard (as cited in Sarup, 1993), “During the last forty years the leading sciences and technologies have become increasingly concerned with language: theories of linguistics, problems of communication and cybernetics, computers and their languages, problems of translation, information storage and data banks” (p. 133). Breu and Hemingway (2004) indicated, “The chronic lack of knowledge sharing on VTs is, in addition to difficulties of establishing interpersonal trust, due to lack of trust in the technology as an appropriate medium for sensitive knowledge sharing” (p. 191).

Willmore (2003) posited that if there were hundreds of possible definitions of trust, there were just as many models explaining levels of trust in VTs. One such approach explains the development of trust in three stages: (a) reciprocity or punishment, (b) knowledge-based trust, and (c) values and perceived affinity. Willmore described the stages as:

1. Reciprocity or punishment – In this stage, VT members trust that they will do what they are assigned to do. If they don't, they will not be trusted again and no one will work with them again. For example, if a VT member does not do what he or she is assigned to do, his or her supervisor will give him or her negative evaluation.
2. Knowledge-based trust – In the second stage, VT members have worked together for years or on numerous projects and trust one another because they have built that trust over time.
3. Values and perceived affinity – The third and final level of trust in this model is also referred to as the mutual identity or identification-based trust stage. Virtual team members in this stage trust each other because they believe they share key common values, beliefs, concerns, or principles. They identify with each other and are aligned with their common goals and objectives. (p. 110)

Through the study of management information systems (MIS), researchers studied the concept of trust or the absence of trust. Li et al. (2004) explained that the focus of MIS was “on interpersonal or inter-organizational trust in the contexts of e-commerce and virtual teams” (p. 1). The concept of trust was accepted within Information Systems (IS) acceptance models which provide further evidence that MIS researchers recognize

the relevance of IS trust. Li et al. stated, “While simple trust constructs have been incorporated into existing IS models, and trust models have been developed to address e-commerce issues, a comprehensive model of trust formation for a new information system has not been published” (p. 1). The lack of a model of trust presented the opportunity to build a illustration of trust in the current study that may be of significant value to the practitioners of VTs.

Boundary theory and information and communication technology. In the current study of determining the building blocks of trust that influence the success of a VT, one cannot help but wonder how information in VTs is shared and how sensitive knowledge sharing is handled, especially in teams that have an issue with trust among the members. Lyotard’s theory subtly brings up the concern for future organizations, which has become a reality in this era. Breu and Hemmingway's (2004) investigated the role of Information and Communication Technology (ICT) in VTs in supporting knowledge sharing within and across work units. The fast-paced evolution of technology and resulting globalization forced organizational leaders to become more flexible and responsive to change. Modern organizational leaders are looking increasingly to virtual forms of organization to reduce organizational slack, facilitate cross-functional learning (Handy, 1995), focus on core competencies, and lower cost (Dutton, 1999). Building blocks of the virtual organization are work units such as VTs and virtual communities, which make extensive use of ICT (Breu & Hemmingway, 2004, p. 192). Breu and Hemmingway used the boundary theory to analyze changes at the work unit level. The changes “displace existing boundaries and redefine their meanings, yet their applications to research on virtual organization and ICT-based working arrangements is still

uncommon” (Breu & Hemmingway, 2004, p. 192). Based on the findings, Breu and Hemmingway suggested that virtualization increased the number and complexity of team boundaries and impaired the sharing of sensitive knowledge between peers. Furthermore, Breu and Hemmingway added that it was more difficult to perform boundary activities effectively at a distance and that more of the activities are required of VT members.

Cramton (2001) and Handy (1995) explained the chronic lack of knowledge sharing within and among VTs by the difficulty of developing inter-personal trust at a distance. The significance of Breu and Hemmingway’s study to the current study is evident as Breu and Hemmingway explained that during virtualization, VT members doubted the integrity of ICT. The doubt may occur and be noticed during email exchanges, which are the most widely used medium for VT communication. Virtual team members using emails are vulnerable to confidentiality breaches. The organization’s leaders can easily monitor e-mail messages without the awareness of sender or recipient. Senders can blind-copy communications to third parties, while recipients of e-mail communications can forward messages to unintended recipients (Breu & Hemmingway, 2004, p. 201).

McKnight’s trust model. In 2002, McKnight, Choudhury, and Kacmar developed an interdisciplinary model of initial trust formation in new organizational leadership based on the emergence of e-commerce. The study was an extension of a previous study conducted by McKnight and Chervany in 1996, in which they attempted to build a consensus toward a manageable number of the most meaningful types of trust. According to Lewis and Weigert (1985), “Trust is a highly complex and multi-dimensional phenomenon” (p. 968). As a result, it is hard to define trust in a single

manner. McKnight and Chervany's model is designed to understand "the various types of trust and synthesize and define a broad but parsimonious and cohesive, set of useful trust types" (p. 473). The basis of the resulting model is on the expansion of understanding of the meanings of trust through use of a classification system and defining and six types of trust that they found to be useful for management in modern day organizations. McKnight and Chervany explained, "This classification (type [a]) typology provides researchers a better comprehension of the complexity through an analysis of the nature of existing trust meanings" (p. 475). McKnight and Chervany identified a set of six trust definitions (type [b] typology) that helped "address conceptual confusion by representing trust as a broad, but coherent set of constructs" (p. 476). According to McKnight and Chervany, "One benefit of this type of broad depiction of trust is that it has heuristic value by being generative of research possibilities" (p. 478). McKnight and Chervany further explained, another benefit was that presented in the model was a set of specifically defined trust types that "enables scholars and practitioners to agree on what they mean when they discuss this important topic" (p. 482).

In the current Delphi study, one of the goals was to derive a consensus on the definition of trust VTs used by organizational leaders. The six types of trust defined in McKnight et al.'s model were trusting intentions, trusting beliefs, trusting behavior, situational decision to trust, dispositional trust, and system trust (McKnight & Chervany, 1996). Displayed in Figure 1 (see p. 19) are the representation of the six types of trust constructs and the relationships between the types of trust. In the model, "the construct to disposition trust affects trusting intention, trusting beliefs, and ones' institution-based trust" (Brown et al., 2004, p. 115).

McKnight and Chervany's model is explained by the size of the boxes.

According to the model design, "Trusting beliefs is the most important determinant of trusting intention, and therefore trusting behavior" (McKnight & Chervany, 1996, p. 482). If managers doubt their managers, they will not trust their managers and will refrain from building a strong positive relationship with one another. The second factor explored by McKnight and Chervany's model is that, "Employees either trust or distrust their superiors" (p. 483). McKnight and Chervany advised, "Managers should be cognizant to their employees' levels of trust" (p. 483). Managers should also be able to interpret their employees' "behavior and messages to determine if they are trusted or not" (p. 483). Managers of new VTs should choose trust as an important component to develop a new work relationship with each employee (McKnight & Chervany, 1996). Developing trust would mean taking small initial risks, but at the same time, it will give employees the opportunity to view how trusted they are by their manager and how empowered they feel in their new environment. This is the stage of situational decision to trust (McKnight & Chervany, 1996).

A key point to understand is that VTs exist outside of organizations. Virtual teams may have members from multiple organizations that work together as a team. An example would be companies that work with vendors to design the products. Many leaders of manufacturing organizations moved the manufacturing plants to China where labor is cheap and the laborers work efficiently without having to travel extensively.

Consider the example of an online consumer who desires to plan a vacation. Based on the trust the consumer has on the level of service of a particular vacation service website, the consumer could choose to book the tickets online. The consumer

books the tickets and hotel. The consumer visits a different website to check the weather at the destination and trusts the information is accurate. According to McKnight's model, the consumer believes the information gathered and used for the vacation is valid and truthful. The level of trust involved for the websites where the consumer booked the tickets and hotel, the fact that the credit card information and funds would be processed accurately from the consumer's credit card company, and that the weather will indeed be what the website indicated signifies that the consumer is confident of the ability to use the Internet. The consumer trusts the information from all the websites used to book the vacation. The trust could be built from a previous experience or from a third person's interaction with the service providers that was shared with the consumer who trusted the source of information.

Reina trust and betrayal model. According to Nemiro et al. (2008), irrespective of working with VT or face-to-face teams, trust developed behaviorally and trust was a vital component in virtual as well as local relationships. Nemiro et al.'s study is the basis of the Reina model of trust and betrayal model, which is based on foundational principles. The foundational principle is "business is conducted through relationships and people who are expected to work together successfully have to trusts one another" (Nemiro et al., 2008, p. 156).

In organizations, employees at all levels from leaders, managers, supervisors, and employees work in collaboration based a trusting relationship. The Reina model explains, "Trust is built by behavior and both building trust and breaking it are natural elements of relationships" (Nemiro et al., 2008, p. 156). The eventual goal of the model is to enable organizational leaders and team members to understand the dynamics of trust.

Described in the model are the elements of trust explaining the dynamics of trusts and specific trust behaviors, namely, transactional trust and transformative trust. The Reina model supports “Trust and relationships are at the heart of engagement and participation in virtual environments” (Nemiro et al., 2008, p. 173). Corporate leaders use the model when VT members learn how to develop trust among each other and how to heal when the trust is betrayed. The Reina model identifies the following types of trust, each that have a varied impact on the team members and the team’s performance:

1. Transactional trust: According to the Reina model, this trust is a reciprocal nature wherein one has to trust others to be trusted (Nemiro et al., 2008, p. 157). Transactional trust has three components, contractual, communication, and competence trust. Each of the components has essential behaviors that are associated with building that type of trust.
2. Contractual trust: This type of trust involves mutual understanding between people where each understands and trusts that they will do what they say they will do (Nemiro et al., 2008).
3. Communication trust: “Trust influences communication and communication influences trust” (Nemiro et al., 2008, p. 159). Team members that communicate well encourage members to talk freely, state their viewpoints, and be able to comfortably raise questions, offer help, and ask for help. “Sharing information, telling the truth, and speaking with good purposes are examples of behaviors that create communication trust” (Nemiro et al., 2008, p. 157).

4. Competence trust: Competent trust is a type of trust that influences the ability of the team to perform job responsibilities. “Involving others, seeking input, and helping people to learn new skills are behaviors that build competence trust” (Nemiro et al., 2008, p. 159).
5. Transformative Trust: The Reiner model of trust and betrayal is based on the assumption that “If people consciously and consistently practice behaviors that build transactional trust, the level of trust within the organization (or community) and among the individuals within the community transforms” (Nemiro et al., 2008, p. 171). As team members begin trusting each other, they feel comfortable in interacting with each other and in voicing their opinions and perspectives. This results in increased trust and effective social networks and team relationships.

An integrative model of trust formation. Revealed in the study of various models of trust was that creation of the traditional models of trust was because of a long history of interaction among team members (Hung et al., 2004). However, recent researchers on trust in VTs found the existence of high initial trust among team members (McKnight et al., 1998). Hung et al. developed an integrated model of trust that encompassed both the traditional view of trust and the swift trust found in VTs. Hung et al. posited, “Individuals form trust attitudes via three distinct routes at different stages of a relationship: the peripheral route, the central route, and the habitual route, irrespective” (p. 1). Meyerson et al. (1996) defined swift trust as a form of impersonal trust developed in temporary teams with a clear purpose. Meyerson et al. further stated that swift trust developed rapidly when the action was more forceful; meaning that team members did

not have the leisure of time to develop trust and form a bond with the team members. To the contrary, the team members had to begin working as a team quickly and build trust with one another as they focus on successfully delivering the expected outcomes of their assigned projects (Meyerson et al., 1996). Many studies on VT working (Coppola et al., 2004; Jarvenpaa et al., 1998; Jarvenpaa & Leidner, 1999) draw on swift trust to understand the trust development in short-term team working in contexts such as an academic institution. Coppola et al. claimed that swift trust established in temporary teams carries over for a period with continuous high level of team activities (see also Nandhakumar & Baskerville, 2006, p. 372).

The focus of the integrated model is on the initial stages of a relationship when individuals lack information about each other (Meyerson et al., 1996). At the beginning of any VT, team members rely on peripheral cues such as information of the third party, social categories, roles, and rules to form trust (Meyerson et al. 1996). Hung et al. (2004) explained, “Individuals with shared history and knowledge of the other party use the central route, which involves the assessment of the other party’s ability, integrity, and benevolence” (p. 1). The shared history enables the individuals to develop a “habitual pattern of trust, along with possible emotional bonds, wherein team members are no longer motivated to deliberately assess trust, and instead simply enact prior trust attitudes via the habitual route” (Hung et al., 2004, p. 1). The communication environment that is predominantly used by members of VTs “slows down the progression among the three routes, and increases perceived risk” (Hung et al., 2004, p. 2).

Interpersonal Circumplex Model (ICM). Another perspective of the study of trust in VTs is the Interpersonal Circumplex Model (ICM). The ICM is a model of

“personality that links personality types to the interpersonal behaviors they are likely to foster” (Brown et al., 2004, p. 116). A team member who does not trust others has a hard time gaining another person’s trust. Though the team member may be the most skilled worker in the team, the member’s inability to trust and reciprocate trust can lead to the failure of the team (Lewicki, McAllister, & Bies, 1985). Brown et al. stated, “Trust is ubiquitous in human affairs” (p. 116). Brown et al. based their study on the fact that people had mutual trust on one another and it was that trust in their interpersonal relationships which was of importance.

In VTs, team members are not able to visualize their co-workers and read their body language. The ability to trust each other and assurance that each member will complete the task on time is what makes the team perform successfully. As mentioned in an example previously, online learning team members work in conjunction to complete papers and projects on time. One of the important traits ensuring the successful completion and submission of the paper is the trust the students have on one another. As a learning team member, each member commits to the team to complete the assigned task items on time and fulfill the role as a member of the learning team. To make a formalized process, the University of Phoenix faculty encourages virtual learning team members to complete a team charter document where each team member lists their commitment, skills, and weaknesses along with the guidelines of the team.

Posited in the ICM model is that the participants’ personality that influences proximate disposition to trust shapes the trust in virtual collaboration (Brown et al., 2004, p. 133). The model is the most appropriate personality theory for IS because in the model are drawn direct connections between personality and interpersonal behavior. Brown et

al. explained, “The ICM offers a unified framework for understanding the impact of personality on IS behavior” (p. 133). The ICM allows researchers to use the same theory to explain the impact of individual “dispositions on trust, innovation, computer apprehensiveness, and resistance to IS change, rather than having to posit a separate disposition for each behavior, as is currently done in IS research” (Brown et al., 2004, p. 134). There are many benefits of the ICM model. Leaders use the ICM model in staffing decisions to identify employees who are more likely to be effective virtual collaborators and accept the technology. Suggested in the model is that “certain combinations of people are more likely to be effective in collaborating and gives IT managers guidelines for matching people who must collaborate” (Brown et al., 2004, p. 134).

Additional factors of trust. Introduced in the described theoretical frameworks was the evident components of trust in VTs such as behavior trust, personality based trust, trust from technological systems, and so on. Researchers found other factors that aided in forming a stronger theoretical background on trust in VTs. The goal of the current study was to identify the building blocks of trust that influence the success of VTs. Every piece of information obtained from this research helped for the building blocks in the consensus study. Introduced in the next section are the components of trust that influence VTs, which no researchers studied in detail.

Virtual distance. According to Werko (2006), “Virtual distance is a multi-dimensional perceptual concept developed to help researchers and business professionals analyze some of the key elements which promote a sense of distance between players in a virtual work environment” (p. 9). The term virtual distance applies to the perception of distance that VT members may feel from one another. Werko explained it was natural to

assume that if one felt distance from a co-worker, the level of trust would be low too. Employees on the same VT may differ in culture, language, nationality, time zones, values, and other factors that could lead to a bigger virtual distance among them. Researchers posited that VT members would experience different levels of trust based on the perception of virtual distance they have among each other (Werko, 2006).

To explain the concept of virtual distance, Bradner and Mark (2002) developed the Virtual Distance Model. The purpose of the Virtual Distance Model is to assist both researchers and practitioners to understand the complex set of issues that could cause degradation to performance and productivity on VTs (Bradner & Mark, 2002). Bradner and Mark found that the perceived distance between two or more individuals had negative effects on communication and persuasion and promoted a tendency to deceive. Virtual work is comprised of team members who are, by definition, distant from one another, both physically and psychologically. Socio-emotional factors can play a role in perceived distance and these factors may contribute to decreased success (Barczak & McDonough, 2003). Werko (2006) studied virtual distance as an antecedent to the factors of trust and assembled a large list of various types of antecedents to trust. Presented in Appendix C are the 11 constructs identified as antecedents to the factors of trust.

Sobel-Lojeski, Reilly, and Dominick (2006) established that virtual distance had a significant influence on trust between members of a project. Sobel-Lojeski et al. suggested that a link existed between the team member's perception of distance and trust. They described that there was an inverse relation between an individual's perception of

distance and the levels of trust. Werko (2006) concluded that the factors of trust positively influenced trust in VTs.

Emotional intelligence. Mayer and Salovey (1997) defined emotional intelligence as “the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (p. 5). The term *emotional* in emotional intelligence refers to moods as well as emotions.

Emotional intelligence essentially describes the ability to join effectively emotions and reasoning, using emotions to facilitate reasoning, and reasoning intelligently about emotions (Mayer & Salovey, 1997). Emotional intelligence taps into the extent to which people’s cognitive capabilities are informed by emotions and the extent to which emotions are cognitively managed. Emotional intelligence is distinct from predispositions to experience certain kinds of emotions captured by the personality traits of positive and negative affectivity (George, 1998). Researchers investigated the impact of emotional intelligence on the trust among VT members and understood the impact emotional intelligence has on the success of VTs (Mayer & Salovey, 1997).

Durability of VTs. The durability of online operations of such VTs has become even more vital with increasing reliance on offshore outsourcing (Krishna, Sashy, & Walsham, 2004). Goodbody (2005) indicated that durable VT working was difficult to achieve in practice. Empirical researchers into VT-working practices reported that leaders of global organizations often confronted the situation where VT members needed to meet frequently face-to-face to avoid misinterpreting each other (Kraut et al., 2002; Maznevski & Chudoba, 2000). Such differences and misunderstandings increase for

offshore work contexts where creative staff members must cross cultural and ethnic boundaries (Krishna et al., 2004).

During the time that VT-working technology was promoted for virtual team working, the team members often sought to socialize with each other as a way to support the *official activities* and to participate in activities happening at the *backstage* (Goffman, 1990) in which participants exchanged and shared feelings and emotions. The team members saw such face-to-face involvement as helping to develop attitudes towards the other as a trustworthy party. The durability of the team seems to depend on this personal trust relation and not on impersonal, abstract trust. Handy (1995) claimed that information technology alone was not adequate to make virtuality work but required trust. One often assumes, however, that trust relationships among members of VTs will correspond to the physically collocated teams (Jarvenpaa et al., 1998). As team members become virtual or physically isolated and are forced to communicate using technology, the members may often have fewer opportunities to meet and share experiences or reciprocal disclosure, which traditionally has been seen as sources of personal trust relationships (Lewicki et al., 1998).

Goffman (1990) studied the company Xeon and found that many employees felt that the virtual working technologies such as video conferencing might help to establish personal relationships. Goffman also found that virtual working technologies could not contribute to the reproduction and reinforcement of commitment and personal relationships and to mediate long-term social interactions. Management at Xeon deployed the best and most complete VT technologies it could acquire (Goffman, 1990). Senior managers and well-motivated participants were supportive champions in the use

of VTs (Goffman, 1990). The organization was innovative in formulating a sharp knowledge management group which aimed to leverage the VT technologies to the greatest extent possible (Goffman, 1990).

Goffman (1990) indicated that the technologies alone might contribute to reproduction and reinforcement of commitment and personal trust relationship. This role of technology indicates that VTs should manage expectation of the use of such technologies in their interactions. The case study illustrates the unsuccessful attempts to generate around the coffee machine exchanges and network building with virtual coffee sessions. Human relationships, rather than technologies are therefore important for nurturing personal and impersonal trust relationships, which is vital for durable VTs.

Unlike face-to-face team members, VT members do not have the opportunity to gauge each other's reactions, expressions, or body language. Virtual team members use nonverbal cues, such as hand gestures, facial expressions, and body movements to determine each team member's emotions and reactions. Thereby, it is important for VT members to have a virtual handshake to confirm an agreement. Jones et al. (2005) suggested that if VT members already had a trust relationship with each other, it was easy to come to an agreement or to expose the areas of disagreement. If VT members do not already have a trust relationship, it becomes very important for VT members to build trust with each other especially if they have to work together on more than one occasion. In some cases, VT members ask someone they already trust on the team to obtain the virtual handshake. Some tasks need completing face-to-face and do not qualify for a virtual interaction. Illustrated in Table 2 is Jones, Oyung, and Pace's comparison between tasks completed face-to-face or virtually.

Table 2

Task Comparisons

Method	Task
Always face-to-face	Firing an employee Dealing with sensitive personal issue Hiring an employee Giving bad news
Useful face-to-face but not necessary	Giving difficult performance feedback Interviewing for a new job Discussing a controversial/difficult situation Meeting with a brand new team
Almost never face-to-face	Giving good news Making a presentation Meeting with someone new Meeting with a team member or someone known Project launches

Note: Developed from “Working virtually: Challenges of virtual teams,” by R. Jones, R.

Oyung, and L. Pace, 2005, CyberTech Publishing, Hershey, PA., p. 10.

Trust may develop more slowly among VT members as compared to face-to-face team members. Team members possessing sufficient levels of trust can build strong relationships that make it possible to have disagreements over content or information and yet continue to work together successfully. When trust is absent, individuals are more prone to be tense and uncertain because the position taken may determine whether the group members accept the individuals (Creighton & Adam, 1998). As a result, collaboration suffers (Creighton & Adam, 1998).

Leadership in Virtual Teams

Discussed in the previous sections were VTs, trust, trust in VTs, and numerous factors that influence the success of VTs. However, a key topic left to review is that of the leadership of VTs. To make any team successful, the leader must lead effectively.

The same holds true for VTs. As VT members usually do not meet each other face-to-

face; it becomes a daunting task for such leaders to manage a team they cannot see.

Many researchers conducted research to understand the role that leaders of VTs play and to determine if there was a different leadership style needed for managing VTs (Iacono & Weisband, 1997; Morris et al., 2003; Platt, 1999; Radcliffe & Schiederjans, 2003).

According to Lipnack and Stamps (1997), VTs and networks demand more leadership, not less. Lipnack and Stamps (1997) further stated that virtual team leaders must have the tools, techniques, and strategies that work in VT environments. Virtual team leaders must address increased autonomy of their teams as the leaders work remotely from the team members they manage. Virtual team members need to trust one another to work effectively and it is the role of the leader of the VT to ensure that sufficient amount of trust prevails among the team members. The best way to lead is by example (Baldoni, 2009). Leaders of VTs practice harboring trust within team members so the members too trust each other. The only real power and control a VT leader has is what the VT members exercise over themselves (Kostner, 1994). Virtual team leaders must ensure respect, fairness, and equality of opportunity for VT members at all times (Baldoni, 2009).

According to Willmore (2003), “Strong leadership is a powerful factor in virtual trust building” (p. 115). Strong leadership means that the manager or team leader needs to demonstrate more authority and direction than they would in a traditional face-to-face setting. Virtual team leaders need to be stronger and initially more directive because the team finds the direction assuring and builds the confidence and trust among VT members (Baldoni, 2009). Leaders of VTs have to learn to shift the focus from managing the employees’ behaviors to managing the outcome or performances. Willmore suggested

that instead of seeking to observe how people act, managers in a virtual workplace would need to concentrate on measuring the results of what people do.

Heilbrun (1994) pointed out that rigorous study of the leadership phenomenon began with the work of sociologist Max Weber in the early part of 20th century. Heilbrun divided the study of leadership into three stages. In the early stages of Weber's research, he attempted to identify traits of leaders. In the next stage, he focused on the behavior of leaders, and in the third and current stage, Weber centered on the interactions between leaders and those they lead (Heilbrun, 1994). Davison, Hambrick, Snell, and Snow (1998) identified different leadership styles needed at different stages in the VT lifecycle. According to Davison et al., the styles were the advocate (prior to team formation), the catalyst (as the team evolves), and the integrator (as the team matures). Irrespective of the leadership style, leaders of VTs have to ensure that the team members have the right technology and capability to use the tools the members have access to effectively (Heilbrun, 1994).

Virtual team leaders must devise new ways to perform traditional duties such as monitoring employees, providing quick and timely feedback, and resolving conflicts and other problems that might arise (Zigurs, 2003). It will be especially important to develop new methods of team building and other techniques to enhance interpersonal relationships among team members, as well as between the team leader and the team members. Bell and Kozlowski (2002) proposed a typology of four major characteristics of VTs that might influence leadership and management. First, *temporal distribution* refers to the distribution of team members across time (Bell & Kozlowski, 2002). Thus, if VTs employ communication media which are synchronous, leaders might be able to

manage temporally distinct VTs more efficiently. The notion is compatible with the media naturalness theory in that synchronous media that closely resemble face-to-face communication should be the most effective.

Second, *boundary spanning* addresses the extent to which VTs span functional, organizational, and cultural boundaries (Bell & Kozlowski, 2002). As teams become more distributed, it may become more difficult for team leaders to create a cohesive team structure. *Life cycle* refers to the duration of VT life cycle, as VT leaders may face more obstacles when working with teams that have short life cycles or membership which is more dynamic (Bell & Kozlowski, 2002). In general, teams which are more globally dispersed and which are only together for transient periods may be the most difficult to manage. Finally, *member roles* are important because VT members may take on multiple roles and functions, which might lead to increased role conflict and ambiguity and, as a result, more leadership challenges (Bell & Kozlowski, 2002).

Virtual team leaders who have no face-to-face interaction with team members are likely to encounter initial difficulties because face-to-face communication should be most natural for both team members and team leaders, from a media naturalness perspective. According to the learned schema principle, if a team leader has been working virtually for several years, the leader may be most comfortable interacting with team members via communication technologies. The virtual communication environment helps shape and selects the leader's behavior over time. The principle would also hold true for VT members, which means that it may be most important to assess members' level of comfort and experience with different types of technologies to design VT environments cost conducive to VT collaboration.

According to Smith (as cited by Greenberg, Greenberg, & Antonucci, 2007), CEO of Atlantic Bell:

Leaders must learn how to change the nature of power and how it's employed. . . .
If they don't, technology will. . . . Virtual leadership is about keeping everyone
focused as old structures, including old hierarchies, crumble. (p. 325)

In an extensive study on leading global VTs, Brake (2006), the president of TMA –Americas, identified the following 10 practical guidelines for the VT leader to follow:

1. Be proactive. Brake (2006) posited that VT leaders should think about the challenges they foresee the teams could face and prepare ways to eliminate or reduce the challenges (p. 118).
2. Apply cultural intelligence. According to Brake (2006), “Cultural differences are assets that a global VT can leverage for creativity and market responsiveness” (p. 119). Moreover, the cultural differences are also potential liabilities, which if not understood, can result in the disruption of the functionality of a talented team.
3. Build swift trust. Brake (2006) explained, “Trust is usually built early on VTs, or not at all” (p. 2). Some observers studied the concept of the *virtual paradox* (Brake, 2006, p. 2). Brake described the virtual paradox as when VTs were highly dependent on trust, but not operating under conditions supportive of trust building. Werko (2006) found, “Trust is often built on perceived similarities, but distance makes this process difficult. Chances for misunderstanding are also increased” (p. 12). Werko added that goodwill and engagement could solve most problems whereas isolation and alienation can

create problems. Werko advised VT leaders to “connect first, and then collaborate” (p. 13). According to Willmore (2003), Benjamin Franklin stated, “We must all hang together or assuredly we shall hang separately” (p. 103). In building trust, leaders should communicate openly and frequently, make your actions as transparent as possible, be accessible and responsive, and keep everyone informed (Brake, 2006; Werko, 2006).

4. Be a problem solver. Strong VT leaders need to be sensitive to change in tone, behavior, response time and other factors that could be an indication of an issue (Willmore, 2003). Werko (2006) stated that VT leaders have a greater challenge in resolving issues with VTs as they could only learn of the issues after they have become significant. Brake (2006) suggested VT leaders pay close attention to their team members, approach problems in a rational manner, enlist team members in identifying solutions, keep the team members regularly informed of the status of the problem, and most importantly maintain their composure.
5. Stay person centric. Brake (2006) stated, “Distance can make faceless abstractions of us all” (p. 119). Virtual team leaders should keep in mind that though the team is virtual; the members of the team are real people who need a leader’s affection and attention. Unlike face-to-face teams, in VTs, members are not able to see their leaders but like all other teams, they do require their leader’s guidance and feedback to be assured and reassured of their performance and contribution as an individual.

6. Stay focused. Every VT leader should keep the members of the VT focused and aligned. According to Brake (2006), “Virtual teams are highly susceptible to focus drift and fragmentation. Examine the team’s purpose and strategies on a regular basis to create/reinforce shared understanding and direction” (p. 3).
7. Clarify who and what. Virtual teams have a type of instability and uncertainty when compared to face-to-face (Brake, 2006, p. 4). This makes it vital for team leaders to establish from the start on the duties and action items of each member on the team to ensure its success.
8. Establish predictability. Virtual team leaders should be able to communicate with their teams effectively by setting regular periodic meetings, feedback forums and ensure that the team can meet their deadlines (Greenberg et al., 2007). This helps establish a sense of predictability in the team and members know what is expected of them at any given time.
9. Communicate context. In an example of virtual communication, Brake (2006) stated the shortest letters ever published were those exchanged by Victor Hugo and his publisher.

Victor Hugo wrote “?” and his publisher replied “!”. They shared the same contextual understanding and so knew what each other was saying. Hugo was asking how the sales of *Les Miserables* were going, and his publisher was responding that they were going very well indeed (Brake, 2006, p. 5).

Brake (2006) explained that VT leaders should be careful when working across cultural borders and ensure that there was “a shared understanding of purpose,

goals, priorities, and methods” (p. 3). This applies to technology as well; such as emails should be interpreted for the right content and intent.

10. Drive for precision. Brake (2006) wrote, “Distances allow for many opportunities for speculation and local interpretation” (p. 121). Virtual team leaders should foster an environment where team members are precise with their requests and leaders should ensure that their instructions too are understandable by the whole team (Brake, 2006).

Lipnack and Stamps (1997), in a study of VT leadership, concluded “VTs that are highly self-motivated and self-managed are *leader-ful* not *leader-less*” (para. 5). The norm for leaders in VTs is to practice a shared leadership. Depending on the task assigned to the team, the leader’s role rotates as each expert takes the lead to bring the project another step closer to successful completion. The concept of shared leadership is in the example of virtual classrooms where learning team members group together and split the role of the leader by either every new paper being worked on or with every new topic. Experts on the team step up to lead the team to success by offering their expertise and using their skills and knowledge to bring the team’s projects to completion. According to Langevin (2004), “Members of virtual teams must be capable of working autonomously while knowing how to be interdependent” (p. 11).

Willmore (2003) suggested that leaders need numerous measures in order to build an effective VT. According to Willmore, there are various ways to build a VT which has a strong communication background. The leader can establish a team biography page on the team’s website or Intranet, provide updates on the environment of each team member’s location, establish an online café team member to socialize, and look for

opportunities to create norms of initiative, self-reliance, and shape perceptions of professional competence. Although there is no one best way to lead a VT, Nemiro (2008) indicated five leadership structures that VTs use:

1. Permanent team leader – High degree of role differentiation among members, members with different areas is expertise/knowledge;
2. Rotating team leader – Members perform similar tasks, projects divided up based on client preference and type of projects members enjoy, all members are equally able to lead, high level of trust;
3. Managing partners who govern the overall operation of the team, combined with rotating project leaders who supervise specific projects or tasks;
4. Facilitators or coordinators used by self-managed teams that need additional support in a specific area. Open and constant communication and information exchange; and
5. Leaderless or self-led teams – members with similar backgrounds and expertise levels, members chose to be a part of a team that benefits them in some way and all are equally invested in the team’s outcomes. (p. 53)

Variables

The purpose of the non-experimental exploratory study was to identify the building blocks of trust that influence the successful outcomes of VTs, and rank the identified blocks in order of importance. Holton (2001) explained, “How one creates trust within a team of individuals working across distance, time zones, cultures, and professional disciplines is a challenge that an increasing number of organizational leaders will face” (p. 38). One of the underlying objectives of the current study was to identify

the building blocks of trust, which formed the independent variables in this study. In the first phase of the Delphi study, the identities of the building blocks emerged through the consensual deliberations the participants experienced in VT work. In the second phase of the consensus-building deliberations, the participants were asked to focus on (a) the rank order of importance of each of the building blocks in establishing and maintaining an atmosphere of trustful camaraderie within VTs and (b) the identities of the measurable components of that atmosphere. The trustful camaraderie of VT members made it possible to build an atmosphere of trust. The building blocks formed the *internal* characteristic of the study. In the third phase of the consensus-building deliberations, the same participants were asked to (a) identify the factors determining the effectiveness of the products produced by VTs and (b) explore the correlation, if any, between the degree of that product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products. The dependent variable was identified as the quality of the deliverables of the team's objectives that VT members have in order to accomplish the end goal, which could be the development of a report or delivery of a marketing campaign. The end goal, either a report or marketing campaign, formed the *external* result of the VTs efforts. For ease of understanding the three variables, the variables appear in Figure 3.

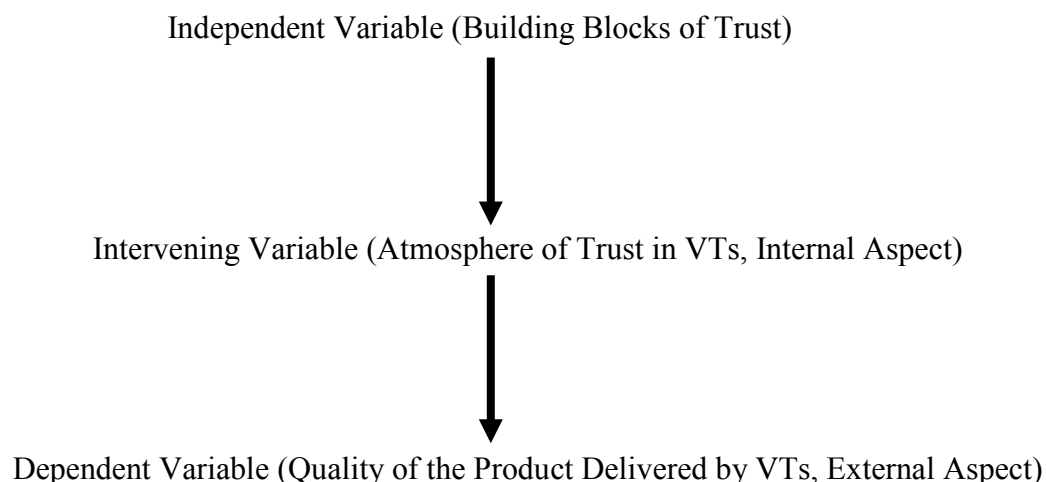


Figure 3. Variables.

Independent variables. Bergiel et al. (2006) indicated that the building blocks of trust included communications, honesty, self-disclosure, loyalty, awareness, humor, respect, to name a few (p. 429). Using the Delphi study, the identities of the building blocks and other building blocks emerged through the consensual deliberations of the participants experienced in VT work. The current study resulted in the identification of six essential building blocks of trust.

Building blocks of trust. Bergiel et al. (2006) focused on understanding the factors that make VTs successful. Bergiel et al. identified five essential elements: trust, communication, leadership, goal setting, and technology. Trust was the foundation of all successful relationships (Bergiel et al., 2006). Past researchers; Harvey, Novicevic, and Garrison, (2004); Shin (2004); DeRosa, Hantula, Kock, and D'Arcy (2004); and Coppola et al. (2004) explored the concept of trust in VTs and developed a table listing and defining the elements that make a VT effective (see Table 3).

Table 3

Building Blocks of Trust

Building Block of Trust	Description
Clear Communication	Expressing thoughts clearly, orally, and written
Honesty	Telling the truth
Vulnerability	Willingness to share strengths and weaknesses
Self-disclosure	Sharing personal information, thoughts, and beliefs
Respect	Respecting team members whether they are difficult or alike
Humor	Keeping a healthy perspective even when stressed
Awareness	Being attuned to others' needs, perception, and reactions
Involving others	Drawing out others, asking for ideas, input, and feedback
Understanding	Valuing differences and unique characteristics
Loyalty	Commitment to team goals and team members
Good communication	Exchange of information, ability to read and speak good body language are key to building trust through communications.
Security	According to Maslow's Hierarchy of Needs, people have a need to feel safe and secure in their environment, which can help build trust.
Self-sacrifice	This is one of the most important components of trust.

Note: Developed from "The reality of virtual teams," by J. B. Bergiel, E. B. Bergiel, and W. P. Balsmeier, 2006, *Competition Forum*, 4(2), p. 429. Reprinted with permission (see Appendix D).

Impact of technology. Researchers identified one of the key components of trust as the impact of technology in VTs (Morris et al., 2003). With the rapid advancement of technology, new and enhanced communication tools are available allowing people from varied geographical locations interact with each other. The trust that users have in the boundary-less communication forms the base for the component. Emails, chat rooms, and blogs are common means of communication, resulting in limited and reduced direct social interactions. Virtual team members use text-messaging, blogging, online white boards, and webinars to discuss ideas and brainstorm on projects as the members work together virtually as a team. The members conduct meetings virtually using net-meetings and conference calls as opposed to members of face-to-face teams, wherein team

members sit together in a conference room. The highly advanced technology is accepted and adapted widely because of the trust users have in the technology the use and the confidence that the technology will work as expected.

According to Remidez, Stam, and Laffey (2007), because members of VTs had to interact entirely via communication support systems, part of the solution to promoting trust might lie in the design of the communication support systems the teams use. Remidez et al. supported the statement based on Handy's (1995) and Te'eni's (2001) findings that organizational leaders might find it difficult to promote trust among people who hardly ever met. As a result, members of the VTs may develop "task-based trust among team members which is based on repeated, successful interactions among the same individuals so that they learn to rely on each others' abilities and efforts" (Fowler et al., 2004, p. 654). Further investigation into the consensus study may reveal additional information and confirmation of the role of different levels of trust on the successful deliverables of VTs.

The impact of technology has a significant effect on the development and use of VTs. To focus on the technology is to misunderstand VTs. Willmore (2003) explained, "The truly unique aspect of VTs is not that they utilize technology, it is that we have changed the dynamics and nature of what we consider to be a team" (p. 14). Employees who use a desktop or laptop are not VT members just because they are using the same technology that VT members use. Willmore quoted Lisa Kimball of GroupJazz stating, "Although the technology which supports these new teams gets most of the attention when we talk about VTs, it's really the changes in the nature of teams - not their use of technology - which creates new challenges for team managers and members" (p. 16).

A key technology that emerged to aid in the building of both community and trust across VTs was the advent of instant messaging (Sobel-Lojeski et al., 2006). Originally, instant messaging emerged in the market place as a way for Web users to determine if their friends were online. However, Jones et al. (2005) revealed that instant messaging became a key enabler of more casual contact among geographically distributed team members. Members of organizations use different applications of instant messaging to communicate with co-workers. Instant messaging replaced emails and phone calls in related interactions. At ADT (a TYCO group company), employees use an instant messaging application, *Sametime*, to communicate internally with other employees across the country. The form of casual contact among geographically distributed team members is gaining momentum in several areas of the industry including education, healthcare, and the military. Jones et al. observed, “Instant messaging also provides a sense of presence that is often absent among remote team members - for example: Is Bob at his desk?” (p. 21).

Intervening variable. In the second phase of the consensus-building deliberations, the participants focused on (a) the rank order of importance of each of these building blocks in establishing and maintaining an atmosphere of trustful camaraderie within VTs and (b) the identities of the measurable components of that atmosphere. Identified is an intervening variable between the dependent and independent variables; namely, that there exists an atmosphere of trust in VTs. Erickson (1968) defined the individual levels of trust as “belief in the goodness of others” (p. 106). Mayer et al. (1995) added, “Follow-on development of the trust concept included the confident expectation of the trustor that the trustee will help the trustor reach a goal on an

environment of risk and uncertainty” (p. 3). In companies such as SimplexGrinnell, a TYCO International group company, the concept of VTs emerged as the organization shifted its headquarters (partially) from Massachusetts to Florida (P. Adams, personal communication, April 17, 2006). Some employees relocated to Florida, while the others stayed in Massachusetts (P. Adams, personal communication, April 17, 2006). In order to continue working in collaboration with each other, team members began forming VTs. Because team members comprising VTs in SimplexGrinnell already knew each other and the strengths and weaknesses of each member, it is possible that the members developed a relationship with one another leading to greater levels of trust within the teams. As VTs gain popularity, organizational leaders use the teams to work with members from within and outside the organization. Building trust requires time. However, majority of VTs come together for projects wherein team members have less time to build relationships and develop trust. As a result, the emergence of swift trust occurs, a topic previously explained in the literature review section.

According to Adler (2007), “Teams are typically dependent on other teams but there is little time to determine if another team has a poor past performance” (p. 107). Meyerson et al. (1996) stated, “To develop trust among temporary team members, they have to ‘wade in’ as opposed to waiting until experience shows if a team is trustworthy” (p. 34). Meyerson et al. also stated that temporary teams, such as VTs, developed swift teams with high levels of trust “even though the members of the teams did not share any past affiliation or could not necessarily expect to have any future association” (Radcliffe & Schiederjans, 2003, p. 588).

Levels of trust in virtual teams. Adler (2007) defined the individual levels of trust as “belief in the goodness of others” (p. 106). Nemiro et al. (2008) identified three forms of trust: cognitive-based, institution-based, and personality-based. Cognitive trust manifests through logic and derived rationally (Sarkar, Valacich, & Sarkar, 2003). “With this form of trust, if we view other team members as having the technical competency and ability to perform, we are likely to trust them in the short term by mentally placing them in categories” (Sarkar et al., 2003, p. 3). This is often seen in teams where members who meet for the first time build perception about the team members and the ones who fulfill their assigned task items on time, gain the trust of their peers which makes it easier for them to work together in future projects.

The basis of institutional trust is an individual’s trust in the organization with which the other members are affiliated (Scott, 1987). If team members believe that the norms and rules of the organization will help control opportunistic behavior, they will gain confidence that other members will not act in their own self-interest (Sarkar et al., 2003). An example of the use of institutional trust is an online buyer buys a product from an auction site such as e-Bay. The buyer trusts that the product sold, the payment, and delivery will be ethical as the buyer trusts e-bay, as an institution, to have reliable and trusted partners.

Personality-based trust is derived from each individual’s disposition to trust (Mayer et al., 1995). Personality-based trust represents a form of trust that reflects a person’s willingness to depend on others (Mayer et al., 1995). This type of trust exists frequently in the medical field where each member of a surgeon’s team in surgery knows

the personality of the team members and can predict behaviors. The team's trust based on the personality of each member who builds trust within the team.

Dependent variables. In the third phase of the consensus-building deliberations, the same participants (a) identified the factors determining the effectiveness of the products produced by VTs and (b) explored the correlation between the degree of that product's effectiveness and the intensity of the atmosphere of trust within the VTs producing the products. In the current study, the dependent variable measured was the quality of the external deliverables of the VT's objectives. If the deliverables have been completed in a timely manner and complete the assigned tasks of each VT member, that constitutes a successful outcome of the VT. "For a VT to be effective, there are geographical, operational (how the VT communicates), and relational challenges. The most critical of the three are the relational factors" (Wickman, 2008, para. 7). As VT members work with each other, the members form a relationship wherein their ability to work together in the past enables them to work together in the future. If their interaction in the past was successful and productive, it is highly anticipated that the interaction in the future too will be successful, as they would have established a level of trust and competency among each other (Wickman, 2008).

Trust in VTs, when built slowly, can be developed from positive ongoing experiences among members of the team, from members believing in the individual expertise of one another, and from a sense of accountability (from seeing that others follow through on what they agree to do) (Nemiro, 2004). This means that a key to an effective VT is that the VT members keep their commitments to each other and therefore make only commitments they can keep (Jones et al., 2005). Nemiro identified

characteristics of effective teams, namely; clear direction, clear responsibilities, knowledgeable members, reasonable operating procedures, good interpersonal relationships, shared successes and failures, and good external relationships. The assumption is that effective team members generate better products than team members that are not effective. The basis of the assumption rests on the fact that if the team members have a high level of trust among each other, they tend to work together more effectively and produce greater results than a team having low levels of trust.

In a case study of Hewlett Packard on the use of VTs, Jones et al. (2005) revealed two key success factors of VTs, namely, have a focused team and be able to draw upon the expertise of workforce (p. 51). In another study with a focus on understanding the factors that make VTs effective, Bergiel et al. (2006) stated that trust was the foundation of all successful relationships (p. 428). The discussion in the following section covers other factors that influence the degree of effectiveness of VTs.

Cohesion in VTs. Willmore (2003) identified cohesion as a key element in successful, effective, and high-performing teams. Willmore defined cohesive teams as teams that “don’t fall apart under pressure or tough times” (p. 104). Cohesive team members trust each other to perform at all times including at times of crisis. Such teams are effective because they focus on their own assignments to the best of their abilities.

According to Willmore (2003), “Trust plays a vital role in developing a cohesive team. Cohesive teams are successful in VTs” (p. 104). Willmore further explained, “Where there is trust, there is confidence, and a degree of affinity” (p. 104). The converse is true as well. Teams with high levels of trust also display high degrees of

cohesion indicating that cohesion would be an expected component of trust that influences the success of VTs.

Informal communication in VTs. Monetro (2008) suggested that one of the most important aspects of an effective VT was the ability to communicate informally. Informal communication allows team members learn about one another. Unlike face-to-face teams where team members meet each other and talk about their personal lives and ongoing projects, VT members rely on technology-based communication applications such as instant messaging, emails, phone calls, and online-shared chat rooms to communicate with each other, which help build a strong relation among the team members.

Flexibility in VTs. Monetro (2008) conducted another study on VTs, which led to analysis of the flexible work system utilized by Sun Microsystems, a multinational vendor of computers, computer components, computer software, and information technology. Sun Microsystems started an *Open Work* program in 1998 - a work from anywhere initiative that has made employees at Sun Microsystems more flexible in their working hours and locations, increased productivity, and saved money (Monetro, 2008). More than half of the employees do not have an assigned office space in a fixed location at Sun Microsystems (Monetro, 2008). Employees work wherever and whenever it suits their needs (Monetro, 2008). According to Monetro, at Sun Microsystems some employees spend an average of 3 to 4 days a week outside the office, working from home or even a coffee shop, but are still able to stay connected and productive. Monetro concluded that the Open Work program provided employees with flexibility in where and how they work. The flexibility made a tremendous impact in the financial and

environmental aspect of Sun Microsystems resulting in successful outcomes of their deliverables . “In 2007 they saved 68 million in real estate and energy costs and cut carbon emissions by 29,000 tons” (Monetro, 2008, para. 6). Monetro further appreciated Sun Microsystems efforts in using effective virtual teamwork and telecommuting in this age of high gas prices and global warming.

Lurey and Raisinghani (2001) revealed that a positive correlation existed between several factors and the effectiveness of VTs. Lurey and Raisinghani concluded teams’ processes and team members’ relations presented the strongest relationships to team performance and team member satisfaction. Further investigation into the current study may reveal additional information and confirmation of the role of different levels of trust on the effectiveness of VTs. As organizational leaders engage in the use of VTs, the leaders realize the importance of factors that are crucial to the effectiveness of the teams. One of the factors is the trust that VT members have on each other. The use of VTs is not limited to business organizations, but VTs are evident in other segments such as education where online learning is very common, in healthcare where telemedicine is used to treat patients remotely, and in the military where troops are deployed remotely. In all of the environments, trust is a vital component that can significantly influence the effectiveness of the VTs.

An interesting observation is that the trust camaraderie among VT is not just required among the members, but it is also a vital function of the trust in the tools and applications that team members use to complete tasks efficiently. For example, using the concept of virtuality, companies such as ADT which provide security alarm systems to customers, monitor and protect the customers' homes remotely. If an alarm occurs, the

monitoring station live operator receives a signal. The operator contacts the customer and fire department to respond to the alarm if necessary. The entire operation operates on the fact the customer trusts that the security system will trigger an alarm at the right time, the monitoring station operator receives the alarm signal, and the authorities will arrive in time to handle the alarm condition.

In VT environments, team members must be willing to create dependencies and trust that the dependencies will not be exploited by their team members (Brown et al., 2004). Jarvenpaa et al. (2004) indicated that the effects of trust were situation specific. Jarvenpaa et al. supported that there existed a critical link between communication early in the life of a VT and early trust. Once VT members build a level of trust among each other, they tend to overlook a lapse or reduction in communication because they are confident that each member will complete his or her assigned task item.

The importance of trust in VTs. According to Gibson and Cohen (2003), “Trust is important in any type of team, but it is a critical enabling condition in virtual” (p. 61). Rasmussen and Wangel (2007) added, “Members of the team trust each other because they are convinced that they share a common identity of values, intentions, and goals” (p. 190). Gibson and Cohen determined that trust in VTs could:

Increase confidence and security in relationships and promote open and influential information exchange as well as reduce transaction costs, negotiation costs, and conflict. Individuals take longer to form impressions of one another when conversing electronically because it takes longer to decode social cues. (p. 61)

Ramsey (2004) studied a Watson Wyatt survey in Vancouver, Canada, involving 12,750 workers. Over the 3-year period, the total return to shareholders (the appreciation

of a company's stock price over a 3-year period plus the dividends paid out) was almost three times higher in companies with open communication and high trust levels (Ramsey, 2004). “It is interesting to note that during difficult economic times, high-commitment workforces outperformed low-commitment companies by 200 per cent” (Ramsey, 2004, para. 4). Members of VTs trust people and processes and are dependent on the two components to function successfully. One can imagine the chaos among VTs that would result if emails did not always get through to the intended recipients or if no one showed up on conference calls to discuss the project. Though working in VTs fosters working independently, it also requires periodic virtual meetings of the team members to determine and confirm that all members are aware of the intended objective of the project and that all members are aware of their role in the project.

Conclusion. According to O’Hara-Devereaux and Johansen (1994), in a virtual environment “trust is the glue of the global workspace” (p. 243). Members of the VT is tasked with specific action items that they are expected and trusted to complete within the given period. As VT members work together, they develop either a high or a low level of trust toward the virtual co-workers. The level of trust the team members attain forms the basis of the ability to work successfully. For instance, in the online education environment, when team members work together the first time, they build trust in each other. The next time the team members meet in class, the members tend to form teams with the members they have developed high levels of trust in and tend to be more successful with each team member as they are aware of each other’s strengths and weaknesses.

Study of Contextualization

According to Workman (2007), “A context analysis is usually used as a scoping exercise and analysis of the broad context or external environment in which projects operate” (p. 146). Researchers conduct context analysis to understand the environment of the topic they study, which further helps the researchers understand the philosophies and processes of the topics and how the participants use the philosophies and processes (Workman, 2007). Workman explained, “Context analysis is a process of reconstructing the component parts of a situation in an ordered and logical way by considering the influence of a variety of factors in which that situation occurs” (p. 147). Organizational leaders find value in the use context analysis in improving and designing projects and processes for their corporations. In the current Delphi study of identifying the strongest building blocks of trust, the intent will be to conduct the study by selecting 50 candidates who have recently been or currently are members of VTs. The participants will be selected from organizations based in south Florida, however; the results revealed may be generic of the behavior of VTs across the United States. The participants were selected from various organizations and were representatives from different organizational departments such as Human Resources, Information Technology, Finance, and Marketing. The participants varied, greatly or scarcely, in the skills and knowledge they possess and in experience. The participants were comprised of individuals belonging to both gender groups, coming from varied age ranges, working at different job titles, and emerging from diverse ethnic groups. The varied range of the participants may result in interesting results based on the experience and perspectives of VT members. For example, suggested research may be that employees from generation X are more

technically savvy and hence are more prone to meet with successful results as VT members when compared to the workforce of the baby boomers generation who may believe in face-to-face team interaction to achieve successful outcomes.

Virtual teams, or teams of people who work interdependently across space, time, and organizational boundaries using technology to facilitate communication and collaboration, are the result of the growth of teamwork in organizations and increased geographic dispersion (Lipnack & Stamps, 2000; Snow et al., 2001). The extensive use of VTs in South Florida first appeared in 2000, when the Florida Department of Education introduced the *Webmasters* training program. Bryan (n.d.) reported, “25% of adults in Florida function at the lowest level of literacy” (p. 1). The objective of the program was to address the primary goal of Florida's adult education program, which was “to promote literacy and reduce under-education among adults in Florida through the continuous development of competent, qualified teachers, and administrators” (Bryan, n.d., p. 2). The target populations of the project comprised of local education agencies, community-based organizations, and their administrators and staff members who were responsible for the training and development of teachers and administrators (Bryan, n.d.). The program was successful as the accountability tools were used to ascertain webmaster involvement and collaboration throughout the process (Bryan, n.d.).

The growing popularity of VTs led organizational leaders to invest in technology to manage VTs. Employees of different age groups, cultural backgrounds, and genders work together on common projects and deliver successful outcomes by functioning as VT members. A single leader does not usually lead virtual teams. According to Sobel-Lojeski et al. (2006), “Everybody on a virtual team becomes a leader” (p. 6). The

rotational roles of VT members within their teams enable the members to practice different skill sets that result in quick and enhanced growth opportunities.

Virtual team members tend to be computer savvy and comfortable with technology. For example, organizational leaders at TYCO Int., General Electric, and Siemens provide the VT members with the Blackberry / I-phone, which functions as a cell phone, email device, navigator, camera, instant messaging technology, can save and upload documents such as Microsoft Word®, Excel®, and others. The use of the *mobile office* tool enables VT members work successfully from any remote location by providing the technology that connects them to each other. The Blackberry/ I-Phone/Android also allow the team to work faster and overcome different time zones and other barriers to VT work. Virtual team members rely on technology more than on people to accomplish the tasks. The trust factors are not only important in VTs among team members, but also in the technology that VT members use.

According to Karayaz (2008), the advantages of VTs have resulted in their recognition as worthy endeavors. Karayaz explained the advantages of VTs as, (a) help reduce costs of travel expenses, (b) enable more timely deliveries of products, (c) services and decisions, (d) help forge new markets that rely on speed as a performance driver, (e) increase competitiveness in fast-growing global markets, (f) facilitate incorporation of globally based experts into routine operations, and (g) permit flexible work hours for the employees (p. 1). The advantages offer organizational leaders a major source of competitiveness for the future. Corporate organizational leaders rely on the use of VTs as the economy raises challenges for organizations to provide real estate for office spaces, and for employees to struggle with increasing gas prices to drive to work. South

Florida based large corporations such as IBM, Siemens, TYCO International, and General Electric Security and even medium and small sized corporation such as Jarden and ScriptLogic are successfully utilizing VTs.

The environment. Wickman (2008) indicated three main components that influence the cultural set up of VTs were leadership, communication, and technology. It is important for the leaders in every organization to understand their roles in the company and ensure that their strategic plans are in alignment with the organizations' goals and vision. Leaders also have to ensure that the employees are aware of the individual roles and the impact the employees have on the organization by the employees' actions and expertise. Consequently, leaders need effective communication tools and technology to empower the employees to be efficient and productive. In VTs, everybody becomes a leader. "As a leader of a VT, or even as an instructor in an online environment with virtual teams, hared leadership is critical" (Wickman, 2008, para. 9).

Sometimes major enhancements are necessary, such as implementing the Six Sigma philosophy, to streamline the organizations process with the people, while at other times leaders have to offer employees an environment that is stress-free and encourages creativity. For example, TYCO offers its employees access to a gym at the facility which they can use free of charge anytime from 7 am – 10 pm EST (L. Schell, personal communication, March 5, 2008). This helps boost the employee's motivation and keeps the employee healthy, resulting in reduced absenteeism, and enhanced efficiency (L. Schell, personal communication, March 5, 2008). Office Depot uses an application, *Salesforce*, which allows sales representatives to download product demos for customers on a real time basis (D. Burke, personal communication, May 1, 2008). The application

gives the representatives the ability to present and demonstrate their product at any time in any corner of the world.

As a VT member, one of the advantages of using VTs is that the team members change continuously, enabling the members to work with different people having different knowledge and skill sets. Employees who work in VTs tend to develop trust faster than the employees working in face-to-face teams develop trust. To build a productive atmosphere within the team and quickly start on projects, the team members rely on swift trust. The first time a VT meets virtually, usually through a conference call, the members exchange basic information such as their names, job titles, areas of expertise, tenure with the organization, and when known, their expected roles in the project that the team is assigned to. Once individual share backgrounds, the members discuss the objective of the project and assign task items to each team member, based on their knowledge, skills, experience, and value the member can bring to the project. Timelines are established and a team member is selected to lead and coordinate the project. The selected leader acts as a liaison between the team and management and keeps the team and managers posted on the progress of the project. The leader manages the team by hosting periodic meetings, managing the status of the project, identifying any challenges that the team may come across, helping overcome the challenges, and tracking the project timeline to ensure on-time delivery of the project.

The leader also manages the dynamics of the team and supervises the overall functioning of the team to ensure that the team members are comfortable working with each other and that there exists camaraderie of trust among them. The goal of the VT leader is to ensure that the team delivers a successful outcome to the project. For

example, developing a reporting application to track sales, designing an online customer survey portal, developing a new product for middle-aged consumers, to name a few.

As organizations become virtual, the organizational leaders adapt tools and processes, which enable them to function efficiently. The online tools are available anytime during the day and can be accessed from any location where there is ability to connect to the Internet. With increased use of VTs, leaders offer remote customer service where sales people do not have to travel to the customer's site to resolve their issues. Applications such as *Salesforce* make it fast and easy for sales representatives to interact with customers, provide them instant quotes, resolve their issues, and enhance customer service.

Context analysis summary. Revealed in the context analysis of VTs in south Florida was that leaders of corporations and educational institutions valued the existence of the VTs. Officials at the Florida Virtual School, the country's first entirely online statewide public school, and the University of Central Florida teamed up to offer future teachers what they call first-of-its-kind training: Virtual internships (Zaragoza, 2009). The pilot program will give six students the opportunity to partner with experienced online teachers to learn the functions involved to manage various students who could be studying via computer anywhere in the world, at their own pace at any time of day and requesting help with assignments via e-mail, instant messaging and telephone (Zaragoza, 2009). The virtual training may give university graduates an edge in the work world because the graduates will be prepared to teach in both traditional and virtual classrooms at graduation (Zaragoza, 2009). Collaborative training programs such as the virtual internship help prepare the future corporate executives of the world who are able to work

efficiently with people from all over the world without having any face-to-face interaction.

Literature Review Conclusions

Revealed in the extensive literature review was that success in VTs was a result of trust that VT members have on one another (Ambler, 2008; Boone & Holmes, 1991; Jarvenpaa et al., 1998; Joinson, 2002; Townsend et al., 1998). According to Jarvenpaa et al. (1998), “Trust is critical in new organizational arrangements where traditional social controls do not exist, and lies at the heart of success” (p. 4). Understanding how certain indicators of trust influence the efficient working of a VT is one of the keys to developing theories and practices that can help select, organize, and manage VTs effectively. In an unstable economy when leaders of all types of organizations namely, business education, military healthcare, banking, and others move toward virtualization, their leaders and managers find value in understanding the building blocks of trust that strongly influence the success of their VTs. The increasingly high number of VTs globally requires VT members to uphold a high level of trust among the leader and all team members. The purpose of the current study will be to investigate the contention that trust plays a vital role in ensuring that VTs are able to deliver successfully the products assigned in an efficient manner, meaning the project is completed on time, the resulting outcome is acceptable, and the outcome conforms to the requirements of the objective of the project.

Although research on VTs increased substantially over the years, there has been little theoretical development to guide the current research. Any two or more people working together in a team rely on their interpersonal trust to work as a team.

“Understanding how trust is built and maintained in virtual relationships is important to

the design of VTs and marketplaces and to the development of processes that enable them to function effectively” (Brown et al., 2004, p. 116). Virtual team members have to trust each other to be able to work together in harmony and to produce successful results. In the police department, the officers on duty trust that the dispatcher provides accurate information regarding an incident. This helps the officer respond to a call in the right manner and request for backup or emergency services if necessary. One degree of misinformation could cost the officer their lives.

The purpose of the current study was to identify the building blocks of trust in VTs and rank the building blocks to determine the strongest indicators of trust, which influence the success of VTs. Utilized in this study, was the Delphi methodology that encouraged the panel to arrive at a consensus to identify the strongest indicators of trust. Though past researchers determined that trust played a vital role on the success of VTs, this study revealed that there are certain building blocks of trust that have a stronger influence than other influences (Bergiel et al., 2006). The focus of the current study was to identify the strongest building blocks of trust. As organizational leaders are moving towards virtualization, team members who work together virtually see the need and value of learning to be able to work efficiently in VTs.

The strongest theory of trust in VTs. In the business world, an ineffective VT does not threaten one’s life, however, there are grave consequences concerning money and employees’ jobs if VTs did not function as the teams are supposed to. In the current study, the literature review was focused on the influence on the success of VTs. The discussion included the role of trust and the effect of trust or lack of trust on the success of VTs. One of the supporting theories of the current research is the ICM, a model of

“personality that links personality types to the interpersonal behaviors they are likely to foster” (Brown et al., 2004, p. 116). A team member who does not trust other team members has a difficult time gaining another person’s trust. Though the team member may be the most skilled worker in the team, the inability to trust and reciprocate trust can lead to the failure of the team. Brown et al. stated, “Trust is ubiquitous in human affairs” (p. 116). Brown et al. based their study on the fact that people had mutual trust for one another and it is the trust in their interpersonal relationships that is of importance.

Posited in the ICM model was that the participant’s personality influences a proximate disposition on trust in virtual collaboration (Brown et al., 2004, p. 133). The model is also one of the most appropriate personality theories for integrated systems because it draws direct connections between personality and interpersonal behavior. Suggested in the model was that “Certain combinations of people are more likely to be effective in collaborating and provides IT managers guidelines for matching people who must collaborate” (Brown et al., 2004, p. 134).

Impact of trust on the success of VTs. The aim of the current study was to understand the influence of trust on the success of VTs. For that purpose, Hawthorne (2009) defined a successful VTs as “a team where each team member values the resources being built; respects the talent and contributions of other team members, and trusts that all deadlines will be met” (para. 6). Elaboration of the definition is to describe successful VTs comprising of members who can be creative, solve problems, and enjoy contributing to the success of the team.

Researchers conducting empirical research into VT-working practices reported that leaders of global organizations often confronted the situation where VT members

must frequently meet face-to-face to avoid misinterpreting each other (Kraut et al., 1998; Maznevski & Chudoba, 2000). Such differences and misunderstandings increased for offshore work contexts where creative staff members must cross the cultural and ethnic boundaries (Krishna et al., 2004).

While virtual team-working technology was promoted for virtual team-working, the team members often sought to socialize with each other as a way to get behind the *official activities* and to participate in activities happening at the *backstage* (Goffman, 1990) where participants exchanged and shared feelings and emotions. The team members saw such face-to-face involvement as helping to develop attitudes towards the other as a trustworthy party. The durability of the team seems to depend on this personal trust relation and not on impersonal, abstract trust. Handy (1995) therefore claimed that information technology alone was not adequate to make *virtuality* work but requires trust. We often assume, however, that trust relationships among members of VTs will correspond to those of physically collocated teams (Jarvenpaa et al., 1998). As teams become *virtual* or physically isolated and forced to communicate using technology, they may often have fewer opportunities to meet physically to share experiences or reciprocal disclosure, which traditionally was a source of personal trust relationships (Lewicki et al., 1998). Goffman indicated that the technologies alone might be unable to contribute to reproduction and reinforcement of commitment and personal trust relationship. This indicates that VTs should manage expectation of the use of such technologies in their interactions. “Human relationships, rather than technologies are therefore important for nurturing personal and impersonal trust relationships which is vital for durable VTs” (Goffman, 1990, p. 34).

Leadership in VTs. In VTs, the general trend is for the team members to lead themselves and one another. Virtual teams are more self-managed than traditional face-to-face teams are. This does not mean that VTs do not require leaders. Like any other team, VTs too need a leader to lead the team. According to Lipnack and Stamps (1997), VTs and networks demand more leadership, not less. Virtual team leaders must have the tools, techniques, and strategies that work in VT environments. Virtual team leaders address increased autonomy of the teams as the team leader works remotely with the teams they manage. Virtual team members need to trust one another to be able to work effectively and it is the role of the leader of the VT to ensure that sufficient amount of trust prevails among the team members. The best way to lead is by example. Leaders of VTs too can practice harboring trust upon the team members so the members too trust each other. Virtual team leaders must ensure respect, fairness, and equality of opportunity for VT members at all times. The leader has to ensure that the team members work in harmony and focus on a common goal of delivering the expected results of the assigned project.

Lipnack and Stamps (1997) found, “VTs that are highly self-motivated and self managed are ‘leader-ful’ not ‘leader-less’. The norm for leaders in VTs is to practice a shared leadership” (para. 5). Depending on the task assigned to the team, the leadership role rotates as each expert takes the lead to bring the project another step closer to successful completion. The concept of shared leadership is visible in the example of virtual classrooms where learning team members group together and split the role of the leader by either every new paper worked on or with every new topic. Experts on the team step up to lead the team to success by offering their expertise and using their skills

and knowledge to bring the team's projects to completion. According to Langevin (2004), "Members of VTs must be capable of working autonomously while knowing how to be interdependent" (p. 11). With the growing popularity of VTs, scholars developed rules and guidelines for effective virtual collaboration that could be adopted by VT leaders to how successfully operate the VTs (Jarvenpaa & Leidner, 1999).

Summary

The research method was appropriate to the current study because the study focused on a specific aspect of the lived experience of relevant practitioners. The intent of the mixed-method study was to employ a Delphi methodology to develop a consensus on the building blocks of trust and rank the blocks with the strongest ones being the most important ones that influence the successful outcomes of VTs. The mixed methodology study was conducted using a Likert-type survey (see Appendix A) from which the results were used to encourage a consensus from the feedback received from the participants of the study. The Delphi study was conducted with employees of corporations based in South Florida, who had been or currently were members of VTs. The participants performed their jobs in various positions such as leaders and managers, supervisors, and team members who had either been virtual team members or currently were virtual team members from different departments such as Human Resources, Information Technology, Marketing, Finance, and Public Relations.

The research built upon the work of previous scholars who were furthering the understanding to correlate behavior and success. The literature review on the topic of virtual collaboration resulted in numerous articles, dissertations, books, and other scholarly products, and as many as possible will be considered to prepare formulate the

questions and prepare the research to reach into the essence of learning how to become effective in VTs. The research was extended through more qualitative research to increase the understanding or more quantitative research to validate the governing laws and behaviors; however, the intention is to understand first the essence of the moment and how it matures on the interviewee's minds.

Explained in Chapter 3 were the research methodology and development of the survey tool employed in the current study. The mixed method study was conducted by administering Delphi methodology and Likert-type survey to gather both qualitative and quantitative data. The objective of the study was to identify the strongest building blocks of trust which when applied efficiently may significantly influence the success of the VTs.

Chapter 3: Method

The purpose of the non-experimental, exploratory, mixed method research study was to encourage the consensus of identifying the building blocks of trust that influence the success of VTs, and ranking the identified building blocks of trust in order of importance. Sought in the current study was a consensus among individuals who have either worked or are currently working with VTs as VT leaders, managers, and non-managerial members. The research conducted in the current study further validated that camaraderie of trust exists in VTs, enabling team members to perform effectively. A Delphi study was appropriate to gather the perspective of experts with experience in VTs.

The Delphi study entailed the collection of both qualitative and quantitative data through the administration of five phases of asynchronous deliberations among participants to develop consensus. The qualitative part of the research study was fulfilled in Survey Round 1 by conducting a consensus methodology to arrive at a conclusion on the building blocks of trust that influence the success of VTs. The qualitative aspects of the study were the commentaries written by participants to explain the rationales behind their understanding of teams, VTs, and the role of trust in VTs on the Likert-type scale (see Appendix A). The commentaries enlightened both fellow participants and eventually readers about the thinking behind the choices made. In the quantitative aspect of the study, the measurements of the interquartile ranges of the positions taken by participants on the Likert-type scale as the phases were completed helped participants and readers monitor the growing tightness of the consensus. The purpose of the research study was to identify the building blocks of trust that influence the success of VTs. The success was observable on two fronts, first in the internal

workings of VTs, and second in the quality of VTs' products in serving the needs of the corporations sponsoring the VTs. The second aspect of success was an external measure of the performance of VTs, which was explained by gathering anecdotal evidence of the participants.

According to Hawthorne (2009), success of VTs was an outcome or reward of an efficient team. A team achieves success by ensuring that each team member values the resources built, respects the talent and contributions of other team members, trusts that all deadlines will be met, and enjoys contributing to the success of the team (Hawthorne, 2009). The current consensus study, using a Delphi methodology, was conducted with VT practitioners working in corporate organizations based in south Florida that use VTs. The target population in the study was comprised of individuals in management, leadership, and non-managerial levels who had recently been or currently were members of VTs.

Provided in Chapter 1 was an overview of the current study to identify the building blocks of trust that influence the success of VTs and to rank the identified building blocks in order of importance that result in successful outcomes of the assigned deliverables. In Chapter 1, the discussion included the significance of the study along with the intended contribution to the field of leadership. Presented in Chapter 2 was a review of the existing literature on VTs. Revealed in Chapter 2 were results of the analysis of trust in teams, trust in VTs, successful outcomes of VTs, and leadership in VTs. Also provided in Chapter 2 was a review of the literature pertaining to leadership styles practiced in VTs. Included in Chapter 3 is an in-depth examination of the intended research methodology for the study by describing the selection of the Delphi study and

Likert-type survey instrument. Explained in Chapter 3 are the appropriateness of the selected research design, target population, and sample size, as well as the validity and reliability of the instrument.

The Delphi methodology, a consensus study, included survey questionnaires used during multiple phases to capture the efforts of VT members to identify the components of trust that influence the success of VTs (see Appendix A). Additionally, during the Delphi phases, the aims were to capture the participants' views on ranking the components of trust in order of importance. The emphasis was to understand the factors that resulted in the successful delivery of products by the VT. In corporations, examples of such products would include the successful implementation of a new technology, the design and development of a new product, and the creation of a new reporting mechanism to track sales.

Research Method and Design Appropriateness

A Delphi methodology fit the profile and purpose of the exploratory investigation. In explaining a Delphi methodology, Helmer (1966, as cited in Wissema, 1982) stated, "Delphi represents a useful communication device among a group of experts and thus facilitates the formation of a group judgment" (para. 1). Although conducting a Delphi study was time consuming, the results of a consensus study of this nature truly benefited using the Delphi technique, which is a practical tool to use in a consensus study. According to Wissema (1982), "The Delphi Method is a mono-variable exploration technique for technology forecasting" (para. 2). Wissema further stated, "The Delphi method has been developed in order to make discussion between experts possible without

permitting a certain social interactive behavior as happens during a normal group discussion and hampers opinion forming” (para. 4).

In the current study, it was essential to explore barriers to the success of VTs that Bergiel et al. (2006) identified as “multiple time zones, communication barriers, and conflict resolution issues” (para. 4). The research variables encouraged the study participants to achieve an increasingly tighter consensus or agreement, regarding the perceived importance of the competencies explored. Bergiel revealed that the building blocks of trust included communications, honesty, self-disclosure, loyalty, awareness, humor, and respect (p. 429). Willmore (2003) indicated that task clarity, focus, productivity, body language (eye contact), non-verbal behavior, response time, and response quality were contributing factors that influenced the success of VTs.

Appropriateness of method. The approach of using predominantly quantitative data supported by qualitative responses collected through optional commentary boxes for enhanced analysis provided balance and breadth to the study (Smalls, 2008, p. 85). The Delphi study involved the collection of predominantly quantitative data through a series of questionnaires based on a Likert-type scale (see Appendix A). The interpretation of the qualitative data provided further clarification and meaning to the statistical data (Creswell, 2002; Neuman, 2003).

A qualitative approach is an essentially inherent component to Delphi studies where qualitative data, in the form of participants’ optional commentaries, create a communication mechanism (Neuman, 2003). The comments served as a communication channel through which participants shared unconstrained ideas, attempted to influence the responses of colleagues, and worked through their individual perceptions, as the

participants sought to build consensus with each progressive phase (Linstone & Turoff, 1975). The Delphi technique was appropriate for the current study, as it employed both methods of inquiry and data collection to create a comprehensive assessment of the results (Wink & Frank, 2006).

The Delphi study. A Delphi methodology was used in the study. Members of VTs were asked to provide opinions, offering perspectives to identify the elements of trust that significantly affect the success of VTs. The participants' opinions and perspectives were collected through a series of questionnaires. Five phases of the questionnaire were administered. The number of survey rounds was determined by analyzing each round by calculating a *Kendall's* coefficient of concordance. The coefficient value revealed the closeness of the agreement among the survey participants. The measure of coefficient is described on detail in the latter part of Chapter 3. With each reiterative phase, participants were encouraged to achieve an increasingly tighter consensus or agreement, regarding the perceived importance of the competencies explored. An insignificantly small incremental increase in the degree of consensus between the last two phases may suggest stability in participants' responses (Maclellan, 2006), indicating that additional phases will not be necessary. A determination regarding what constitutes a significantly small incremental increase was based on the study results, following calculation of the data from all phases.

Virtual asynchronous discussions among the participants during the Delphi study will occur as the participants review the ratings posted by other participants and determine if the alternative viewpoints were convincing. With each survey round, the responses were further refined and modified to elicit tighter consensus in the next phase.

Participants were allowed to maintain and defend their initial responses in the following phases. The reiterative design facilitated a structured orderly process of data collection and exchange of ideas, as participants worked toward achieving consensus, or agreement (de Villiers, de Villiers, & Kent, 2005; Raine, 2006). The intended result of the study captured the independent variables of the study, namely, the building blocks of trust. In the latter surveys the identified building blocks of trust were ranked in order of importance by administering a Likert-type survey (see Appendix A).

The Delphi methodology. Gatewood and Gatewood (1983) described the Delphi study process as a process that “provides an interactive communication structure between researcher(s) and practitioners in a field, in order to develop themes, needs, directions, or predictions about a topic” (para. 1). Gatewood and Gatewood explained that using the method “recognizes human judgments as legitimate and useful inputs in generating forecasts” (para. 2). Fowles (1978) indicated that “single practitioners sometimes suffer biases; group meetings suffer from follow- the- leader tendencies and reluctance to abandon previously stated opinions” (p. 6; see also Gatewood & Gatewood, 1983). In order to overcome the shortcomings, researchers at the RAND Corporation (2005) developed the basis of the Delphi method, the theoretical assumptions, and methodological procedures in the 1950s and 1960s.

The use of the Delphi methodology was appropriate for this study to gather the judgment of experts that applies to forecast various aspects of the future (Fowles, 1978). Dalkey and Helmer (1966) developed the method for the collection of judgment for such studies. They explained that Delphi experts believed that because the study involved practitioners, the assumption was that “Some reasonable quality information would be

gathered” (Dalkey & Helmer, 1966, p. 12). Because the Delphi method is a reiterative system, the assumption is that “good quality knowledge will evolve” (Dalkey & Helmer, 1966, p. 12). In a Delphi research design, the researcher facilitates the study, using the Delphi study process to recognize a research technique, and arrived at a consensus that the researcher believed strengthened the validity of the results considerably (Dalkey & Helmer, 1966).

Dalkey and Helmer (1996) explained that in a truly pure Delphi method research, practitioners did not directly interact with one another. Experts believed that limited communication with practitioners resulted in reduced social processes and contaminations that can happen in group settings. Dalkey further explained, “The goal of the Delphi process is to systematically facilitate communication of information via several stages of the questions posed by the researcher, undertaking analysis, providing feedback, and asking further questions” (p. 87).

Linstone and Turoff (1975) explained the Delphi technique was used to arrive at a consensus wherein all practitioners agreed with the conclusion. The method of group communication is effective in allowing a group of practitioners, as a group to “deal with a complex problem” (Linstone & Turoff, 1975, p. 41). Delbeq and Gustafson (1975) described the Delphi methodology as a technique that used “sequential questionnaires developed through summarized information and feedback of opinions from earlier responses” (p. 27). MacCarthy and Atthirawong (2003) pointed out that the Delphi methodology was a systematic process “which attempts to obtain group consensus resulting in much more open and in-depth research since each member of the group

contributes new aspects of the problems to be researched during the post-research phase” (p. 57).

Used in Delphi studies is a methodology that represents “a very systematic means to the reliable and creative exploration of ideas and the production of suitable information for decision-making” (Philips, Anderson, & Ridl, 2003, p. 157). The use of the Delphi method provides value to organizational leaders with essential information to guide organizational effectiveness. “The methodology employs a non-invasive method of data collection, which eliminates the influence of more vocal participants while respecting the differences between departments or institutions of divergent enrollments, missions, and organizational structures” (de Leur, 2007, p. 72).

The Douglas Aircraft Company established Project RAND in 1945, wherein RAND stood for research and development, to evaluate intercontinental warfare. Project RAND subsequently separated from Douglas Aircraft and in 1948 incorporated as an independent, nonprofit corporation, the RAND Corporation. According to the articles of incorporation, the purpose of the RAND Corporation was clear: “To further and promote scientific, educational, and charitable purposes, all for the public welfare and security of the United States of America” (RAND, 2005, An Independent section, para. 4).

Torres (2005) explained in the technique, a pre-selected group of practitioners received a series of questionnaires. The design of questionnaires is such so as to “elicit and develop individual responses to the problems posed and to enable the practitioners to refine their views as the group’s work progresses in accordance with the assigned task. The main features of the technique are anonymity and feedback” (Torres, 2005, p. 691).

Delphi study procedures require the collection of data from select practitioners in response to an open-ended initial question based on a particular subject area.

For the purposes of this study, the practitioners selected comprised of organizational leaders, managers, and non-managerial VT members who recently have been or currently are members of VTs. Linstone and Turoff (1975) suggested that the data collected from the responses be analyzed for “themes, compiled, and fed back to the members of VTs through a second phase in questionnaire form for additional data collection” (p. 18). Through the Delphi method, the process is repeated until “consensus-generated statistical agreement among the data-is achieved” (Linstone & Turoff, 1975, p. 18).

In a detailed understanding of the actual Delphi process, “The questions of the Delphi study must be clear and concise, and correctly understood by the practitioners” (Inaki, Landin, & Casadesus, 2006, p. 805). Inaki et al. suggested that it was advisable to start the survey in “Phase one by administering open-ended questions so the responses can be extracted to develop the next phase upon which the continuation of the work will be based” (p. 805). In the next phase, Inaki et al. recommended, “The questions should be directed toward the assessment, the hierarchical comparison of items, or even toward specific quantitative estimations” (p. 806). According to Inaki et al., a researcher must be able to measure the results of the surveys with established criteria. Once the responses are received, the work with the results begins. Inaki et al. further explained, “The objective of the successive questionnaires is to try to diminish any dispersion of opinions and specify the average opinion agreed upon” (p. 807). Once the researcher receives the responses, the researcher should gather the data, collate the various individual

estimations, and extract from the data a measurement of the central tendency of the distribution, generally the median, which is then accepted as the group response (Inaki et al., 2006, p. 805)

In their explanation, Inaki et al. (2006) also brought to attention the fact that some of the questions permitted the interquartile range of the responses, which would need to be estimated. Analysis of each survey round was made to determine the need of the next round. Further surveys were stopped once a high degree of consensus was achieved. Inaki et al. explained, “In case another enquiry is necessary, the practitioners are normally sent information about the median and the interquartile range together with their previous, individual responses” (p. 806). If additional information of interest is required or provided by one or more of the practitioners, then that information is made available by the researcher to the group (Inaki et al., 2006). Inaki et al. stated, “Practitioners are requested to review the new information and reconsider their first estimations, if they consider it necessary. The process is repeated until the responses stabilize” (Inaki et al., 2006, pp. 807-808). Inaki et al. went on further to state, “When the median shows practically no oscillation and the interquartile space stops getting narrower. This indicates that, following an anonymous exchange of information, maximum consensus has been reached” (Inaki et al., 2006, p. 806). In the current study, the accumulating statistical information and the commentaries for each question were analyzed prior to beginning the next phase of the study.

Appropriateness of the design. The mixed-method exploratory study combined the use of both qualitative and quantitative approaches to achieve the two-fold purpose of the current study. Creswell (2005) promoted the use of mixed method research if a

researcher sought to build on the strengths of both qualitative and quantitative data. “Quantitative data, such as scores on instruments, yield specific numbers that can be statistically analyzed and can produce results to assess the frequency and magnitude of trends” (Creswell, 2005, p. 510). The use of qualitative data, such as open-ended interviews that provide actual words of people in the study, may offer many different perspectives on the topic and may provide a complex picture of the situation (Creswell, 2005, p. 510). The basic rationale for using the mixed method design was that qualitative data collection results supplied the basis to conduct the quantitative data collection (Linstone & Turoff, 1975), meaning that the results of the Delphi study would provide the elements to rank in the Likert-type scale survey.

Linstone and Turoff (1975) stated, “The Delphi methodology is an apt research method for deriving consensus among a group of individuals having expertise on a particular topic in which information sought is subjective and where participants are separated by physical distance” (p. 63). The use of the Delphi method is found in the literature demonstrating a reliable empirical method for the building of knowledgeable consensus in a number of areas including distance education (Thach & Murphy, 1995), journalism (Smith, 1998), visual literacy (Brill, Kim, & Branch, 2000), electronic commerce (Addison, 2003), health care (Whitman, 1990), and numerous other fields (Cochran, 1983; Linstone & Turoff, 1975).

Melpignano and Collins (2003) described the Delphi technique as a “prescribed methodology for cases when participants hail from different professions, because anonymity provides a layer of protection for individual voices” (p. 160). Thus, the use of the Delphi technique expected to meet the goal of the current study to collect data from

individuals with VT experience across the different titles and positions held in the organizations. For the purposes of the current study, the Delphi design was an appropriate choice to use with a consensus study because the Delphi design does not rely on the responses of a single practitioner. On the contrary, use of a Delphi design may enable a researcher to gather information from a select group of individuals by repeatedly prompting the individuals to think and rethink their feedback. The repetitive collection of feedback was accomplished by providing the participants the opportunity to review their own and other members' responses, understand the various perspectives, and submit their responses. The goal of a Delphi design is to obtain a consensus from the entire group. Some forecasting methods rely on roundtable discussion and group consensus. Such methods are influenced disproportionately by group members with high status, and therefore often represent conformity rather than objective truth. Thus, the anonymity of the Delphi technique provides the advantages of utilizing multiple practitioners while avoiding the pitfalls of bias transfer and intimidation (Linstone & Turoff, 1975).

Web-based Delphi study. In the current study, the intent was to use a web-based Delphi methodology to gather a consensus on the components of trust that influence the success of VTs. The use of a web-based study eased communication and be more time efficient than using traditional survey tools. The intention to administer all of the Delphi surveys via the Internet served as an efficient means for survey research, but also “readily supported the intent of the Delphi technique for the anonymous interaction of respondents” (Linstone & Turoff, 1975, p. 78). The use of the Internet provided the opportunity to administer the Delphi technique to a larger group of survey practitioners from around the selected geographical area of south Florida. The surveys were also held

anonymously and repeatedly, utilizing the just-in-time convenience of the electronic desktop. “Combining the Delphi technique and the efficiency of the WWW provided a potentially useful tool for the researcher to engage in front-end analysis more efficiently” (Brill, Bishop, & Walker, 2006. p. 121).

Likert-type survey. The mixed-method exploratory study was conducted to encourage survey participants to build a set of tight consensuses (a) identifying the building blocks of trust that influence the success of VTs and (b) ranking the identified building blocks of trust in order of importance. At the end of the first phase administered through a detailed questionnaire, participants were asked to rank the building blocks of trust in order of importance. The next four consecutive rounds encouraged survey participants provide ranking on the building blocks of trust. The methodology incorporated the commentaries of the participants to gather data on the components of trust that are vital to the successful completion of the products of the team.

Creswell (2005) described the Likert-type scale as “a scale with theoretically equal intervals among responses” (p. 168), such as ‘strongly agree’ to ‘strongly disagree.’ Likert developed the scale (Dawes, 2008). The Likert-type scale is the most widely used scale in survey research (Dawes, 2008). The format of a typical five-level Likert item is:

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

The use of the Likert-type survey, as a part of the Delphi study, will be an appropriate survey instrument to rank the building blocks of trust that influence the success of VTs in order of importance. The VT members and organizational leaders who manage VTs may find significant value in understanding the components of trust, which result in successful outcomes of VTs. Sori and Sprenkle (2004) noted, “The Delphi method is extremely useful in exploring new areas of inquiry” (p. 480). For instance, Rodgers and Teicholz (2001) conducted a Delphi study to assess the need for reorganization of trauma care in rural states. Although data existed on trauma care organization in urban areas, limited information existed prior to the Rogers et al. study on the benefits of trauma system organization in rural areas. Ferri, Chisholm, Van Ommeren, and Prince (2004) conducted a Delphi study to identify the resources required to manage the phenomenon of neuropsychiatric disorders in developing countries. Prior to the study conducted by Ferri et al., little information existed in the literature on the subject.

Bronsard (1976) performed another successful Delphi study. Conducted in two phases, Bronsard focused on developing a tight consensus among faculty and administrative leaders in each of the four subsystems. The subsystems belonged to the state of Connecticut’s public higher education establishment. The focus of the study was on the mix of contractual comprehensiveness and collegial flexibility considered most appropriate for a variety of matters in each subsystem (Bronsard, 1976). Bronsard compared the four consensuses, namely, all four faculties; all four administrations; and all four subsystems, for statistically significant differences (p. 4). Subsystem consensuses were generated through the Delphi survey technique, following which Bronsard

performed statistical analyses using chi-square tests, single-classification analyses of variance, and *t* tests.

Smalls (2008) successfully completed a three-round Delphi study to evaluate the importance of 47 predefined leadership competencies and ranked the relative importance of 15 competency categories for successful engagement in church-based community and economic development initiatives by active African American Baptist church officers in the Bronx and Manhattan (p. 8). For the purposes of the Smalls' study, the three types of church officers discussed the importance of several leadership competencies for community and economic development and reached a consensus, or agreement, regarding the importance of the competencies.

Research Questions

The objective of the current mixed method Delphi study was to identify building blocks of trust that influence the success of VTs. Researchers indicated that elements such as technology, communication, behavioral factors affect the trust upon the VT members (Holton, 2001; Kling & Jewett, 1994; Piccoli & Ives, 2003). Prior studies lead to the development of the research questions used in the current study.

1. How do VT members define trust in VTs used by modern day organizations?
2. What are the key components of trust that are important to ensure the success of VTs?

The null and corresponding alternate hypotheses for the current study were:

H₁₀: There are building blocks of trust that influence the success of a virtual team.

H1_A: There are no building blocks of trust that influence the success of a virtual team.

H2₀: There is a rank order of importance for the building blocks of trust.

H2_A: There is no order of importance among the building blocks of trust.

The aim of this study was to explore if there is evidence that building blocks of trust exists in VTs. During the course of the study, six essential building blocks of Trust were identified and ranked in order of importance. Provided in the results of the study was the probability of the hypothesis that H_1 , there are building blocks of trusts that influence the success of VTs and there are some components that are more important than the others (H_2).

Population

According to Creswell (2005), the definition of a population was “a group of individuals who have the same characteristics” (p. 145). The intent of the current study was to gather information from the selected participants comprised of individuals from different VTs. The population contained VT members who belong to different job titles such as executives, supervisors, organizational leaders, and non-managerial levels. The he participants were selected from different organizational departments, such as Human Resources, Information Technology, Marketing, and Communications. The selected participants represented varied age groups. The intent was to include both genders using a 50:50 ratio. The research in this study obtained 11 female and 24 male participants. The participants comprised of members of VTs. Participants had Internet access to participate in the study.

In general, researchers believe a Delphi study should contain a minimum of 10 and a maximum of 50 participants, with an ideal number between 20 and 30 (Inaki et al., 2006, p. 810). Thirty-five survey participants participated in the study. Inaki et al. further pointed out that one of the keys to success in the Delphi research design was appropriate selection of panel members, “They should be selected for their capabilities, knowledge, and independence” (p. 810). However, Inaki et al. (1975) pointed out, “In the larger groups many of the practitioners do not demonstrate sufficient knowledge or capability and, in addition, in these cases the proportion of practitioners who prematurely withdraw from the research increases” (p. 811). This causes a risk of attrition among the survey participants. Delphi studies are often subject to high rates of attrition (Price, 2005). The failure of participants to remain in a study through completion can influence outcomes and internal validity (Morse & Durkin, 2004).

Sampling Frame and Geographic Location

Sample size is particularly influential on the validity of a Delphi study (de Villiers et al., 2005). Virtual team practitioners who meet the criteria of the participants for the current study were sent an e-mail invitation to participate in the research study (see Appendix E). The intended sample size was $N = 40$, which was an appropriate size to participate in the current Delphi consensus study. Survey invitations were sent to 40 candidates received 35 confirmations were received. The sample for the study consisted of 35 VT practitioners from corporations based in south Florida; however, the results obtained from the study were generic to VTs across the United States. The participants were selected based on the utilization of VTs, company size, and diverse demographics such as gender, age, job title, and organizational department.

Purposeful sampling was used to identify participants who could best help understand the components of trust, which influence the success of VTs. Patton (1990) used the words *information rich* to describe a population selected using purposeful sampling. Creswell (2005) defined purposeful sampling as a sampling method in which, “Researchers intentionally select individuals and sites to learn or understand the central phenomenon” (p. 204). Survey participants were invited to participate until achieving the desired number of 40 participants. Ten additional participants were selected to serve on the consensus study to compensate for participants who may drop out of the study before completion. The study results included the responses gathered by the additional 10 participants along with the remaining of the 40 participants, bringing the total number of participants to 50, if all participants complete the study.

Once the survey population was selected, each phase of the surveys was administered in three steps with 2 weeks between each phase as explained:

Step 1: Mailing of survey questionnaire via email with a link to the *website* of the survey instrument where the survey was hosted (see Appendix A).

Step 2: Reminder 1 mailing of survey via email (see Appendix F).

Step 3: Reminder 2 mailing of survey via email (see Appendix F).

Informed Consent

A two-part informed consent process was developed to communicate, firstly, the full disclosure of the research being conducted in soliciting participants and secondly to summarize the acknowledgement of the full disclosure that included a positive action by the participant that they were giving their voluntary informed consent. The communication of solicitation contained the full disclosure to comply with the human

subjects requirements and was attached as a separate document (see Appendix E). In order to fulfill the requirements of the informed consent, mandatory language was used in the letters sent to the survey candidates being invited to participate in the study. The mandatory language included the following clause:

By signing this form I acknowledge that I understand the nature of the study, the potential risks to me as a participant, and the means by which my identity will be kept confidential. My signature on this form also indicates that I am 18 years or older and that I give my permission to voluntarily serve as a participant in the study described.

Participants were asked to select the acceptance conditions to participate in the study and only then gained access to the survey on the website which contained the questionnaire as explained in the data collection section above.

For qualitative studies, an additional certification of informed consent was included to obtain the permission to record (see Appendix G). The selection read “Acknowledge and Accept.” Only with a positive response could access to the survey be granted. A decline selection option was also provided on each screen that directed the participant to a thank you screen and invited them to return if they change their mind.

Full description of the process appear in Appendix H.

Each participant was provided with a two-part informed consent process letter explaining the purpose of the research, why and how the participant was chosen, potential benefits, the voluntary nature of the research, the ability to withdraw without penalty at any time, and that the foreseeable risks, if any, of participating in the research. The surveys were anonymous; thus obtaining signed consent forms was not practicable.

Return of the survey constituted informed consent and was explained in the introductory letter. Appendix H contains the informed consent form that was provided with each survey.

Confidentiality

In order to ensure confidentiality of the participants throughout the current study, a simple random sampling technique was used. Any information that could yield proprietary or confidential information, such as social security number, bank account number, and residential address, was not collected from the participants. According to Meyer and Allen (2004), “Confidentiality and anonymity are critical to obtaining accurate responses” (p. 33). Virtual team members chosen in the study were selected and assigned an alphanumeric identification numbers to protect their identification. The information collected from the participants was collated using the survey website, and the data was imported and saved to a Microsoft Excel® file that was used to infer conclusions, to generate charts and graphs, and to conduct trend analysis. The responses of the survey participants were shared with other participants; however, the identity of each individual was protected by not disclosing the identity of any participant. The information yielded by the surveys was used to deduce conclusions and reported as findings of the study.

Data from the instruments was presented in a processed form so that no one was able to identify a response from a specific individual to ensure the anonymity and confidentiality of the participants. During the study and after its completion, the data used to hold raw data and cross-references was gathered in a secure location, by using a reliable survey tool and by protecting the files and data by use of passwords. The data

will be retained for 5 years and then destroyed by deleting the files from both databases. All hard copies of the survey will be shredded.

Data Collection

The survey was developed on a reliable and reputed online survey tool - www.surveymonkey.com. Each selected survey recipient of the sample population received via email a hypertext link. The link directed participants to a website in which the participants viewed an introductory statement regarding the purpose of the research, how the recipient was chosen, affirmations of confidentiality and anonymity, and instructions for completing the survey. The informed consent letter was also included in the electronic mail and is contained in Appendix I. As specified in the informed consent letter, return of the survey constituted consent to participate in the study. The informed consent was an electronic form that participants were provided with the option to either accept or decline their participation in the survey. Once the positive action acknowledging understanding was selected, the informed consent screen reflected the section that follows:

By accepting acknowledgement of this form I acknowledge that I understand the nature of the study, the potential risks to me as a participant, and the means by which my identity will be kept confidential. My selection of acknowledgement of this form also indicates that I am 18 years or older and that I give my permission to voluntarily serve as a participant in the study described.

The selection then read “Acknowledge and Accept.” Only with a positive response could access to the survey be granted. If the participant selected the decline

selection, the participant was directed to a thank you screen and invited them to return if they change their mind. A full description of the process is included in Appendix H.

The surveys were web-based. All participants who had any questions or concerns were provided the researcher's contact information to contact. Likert-type scales, ranging from "strongly disagree" to "strongly agree," were used in the instruments yielded the numerical data needed for the statistical correlations. The Meyer and Allen instrument uses a 5-point Likert-type scales. The qualitative portion allowed each participant to provide his or her perspective on the components of trust, which influence the success of VTs.

Instrumentation

Although VTs exist almost all over the world, it is humanly impossible to gather information from all VT members. For the purposes of the current study, the scope of the study was limited to 35 VT practitioners located in south Florida. The geographic area included the West Palm Beach, Miami-Dade, and Broward counties of south Florida. The results investigated through the study were representative of the views of VT members across the United States. An interest of a future study could be to study the behavior of VT members across countries. The participants were chosen because they all used VTs and truly find documented value in using VTs within the organizations. The participants were equal opportunity employers, reflected diversity, and operated across continents. Moreover, neither the researcher nor the survey participants required to travel to conduct the study. The survey was conducted online in a virtual forum.

Validity and Reliability

Validity concerns related to attrition were addressed by attempting to recruit a Delphi panel that is larger than recommended (Clayton, 1997; de Villiers et al., 2005; Reid, 1998). To avoid withdrawals, Inaki et al. recommended that researchers ensured that the practitioners selected receive information about the objectives of the study, the estimated time required for participation, the potential of the research, and possible benefits the participants could obtain by participating in the study. Such precautions will enable willing participants to be prepared to invest time and efforts in the study giving the participants the opportunity to be certain of their decisions to participate in the study.

Validity and reliability are important concepts in measurement theory. “Validity and reliability indicate the degree to which the measurement scale adequately measures the sample and the variable(s)” (Anderson et al., 2001, p. 245). Anderson et al. explained that as follows:

A measurement scale is valid if it does what it is supposed to do and measures what it is supposed to measure and performs the functions that it is supposed to perform. It is the degree of correspondence between a measurement and the phenomenon under study. (pp. 245-246)

Reliability refers to “the consistency and stability of a score from a measurement scale” (Anderson et al., 2001, p. 247). Reliability is the consistency of the measurement, across either like respondents or across administrations of the survey (Anderson et al., 2001). Reliability yields accurate measurements of a phenomenon across several trials, different populations, and in different forms (Anderson et al., 2001).

Trochim (2000) stated that the distinctive difference between validity and reliability was actually the definition. “Reliability estimates the consistency of your measurement while validity refers to the accuracy of the measurement” (Trochim, 2000, para. 4). It is important to check to be sure that the survey created is both reliable and valid. Piloting and pre-testing the survey can help increase both the validity and reliability. The survey’s reliability is *bona fide* when various samples have been tested and re-tested from various situations and the results obtained are consistent throughout. For example, if a number of questions in survey are about the same factor to similar participants, the responses should be similar. In the current mixed-method explanatory study, pilot testing of the surveys was essential to ensure that information gathered enabled measuring true consensus.

The pilot study consisted of 10 VT members working in corporate organizations based in south Florida. Members of the pilot panel were selected using a purposeful sampling technique and shared similar characteristics to the study participants. The pilot participants were invited via an email (see Appendix J), wherein the roles in the pilot test were explained. Individuals who participated in the pilot study phase were not invited to take part in the current study. The pilot participants assessed the appropriateness of the survey questions, the clarity of the questions (Hardy et al., 2004), appropriateness of the scale, clarity of the survey instructions, and the usability of the instrument. Feedback received was carefully considered and modifications to the instrument were made to enhance reliability.

Repeated refinements of the instrument were achieved by gathering demographic information through the questionnaire. The information collected confirmed that each

participant met the study's criteria. An email to the pilot panel and questions for the pilot panel to address are found in Appendix K and Appendix L, respectively. The objective of a pilot panel reviewing the research instrument was to enhance reliability and to determine, through the feedback received from the pilot panel, the revisions are required prior to administering the survey to the selected population of the Delphi study.

The purpose in the current study was to develop consensus among the divergent perspectives of VT practitioners employed with corporate organizations based in South Florida. The Delphi technique embraced these differences in participants. "Repeat testing is a hallmark of the Delphi technique. Using multiple reiterations of the same instrument is what gives results strength" (de Leur, 2007, p. 105). As participants responded to different versions of the Delphi study, the responses increased in detail. This resulted in consistency in the administration of the survey that constituted the strength of the Delphi study and minimized threats to internal validity.

Data Analysis

According to MacCarthy and Atthirawong (2003), "A basic aspect of the successful use of the Delphi methodology is rooted in the writing of the questions to be included in the different questionnaires. It must be clear, concise, and correctly understood by the experts" (p. 795). The current study was conducted as a mixed methodology wherein open-ended questions followed by a Likert-type survey were administered to the participants. Extract from the survey responses formed the items and questions upon which the continuation of the work was based for the second phase of the study. Once the responses were gathered, the analysis with results begun. MacCarthy and Atthirawong pointed out, "The objective of the successive questionnaires is to try to

diminish any dispersion of opinions and specify the average opinion agreed upon” (p. 795). MacCarthy and Atthirawong furthermore suggested that once a researcher received all the responses, the responses of the participants be collected and the central tendency of the distribution of the responses be measured. The central tendency of the distribution is generally called the *median* that eventually is accepted as the group’s response as a whole. MacCarthy and Atthirawong explained, “In the questions permitting it, the interquartile range of the responses is also estimated, as a measurement of its dispersion” (p. 796). Analysis of each survey round was made to determine the need of the next survey round. This study culminated in the administration of five survey rounds to achieve a high degree of consensus.

To determine if the survey participants have arrived at a consensus on the building blocks of trust that influence the success of VTs, used in the study was Kendall’s *W*. Schmidt (1997), explained Kendall’s *W* as “the coefficient of concordance that provides a measurement of respondent agreement” (p. 106). A perfect agreement can occur when all participants provide the exact same answer; however perfect disagreement is not possible because there has to be some degree of correlation based on the varied perspectives of the survey participants. As a result, “the calculated *W* can never be negative. Kendall’s *W* results in a value between 0 and 1, where 0 represents complete disagreement and 1 represents complete agreement among respondents in ranking the proposed areas” (de Leur, 2007, p. 107). The Kendall’s *W*, can make “a realistic determination of whether any consensus has been reached, whether the consensus is increasing, and the relative strength of consensus” (de Leur, 2007, p. 107).

Smalls (2005) stated, “Kendell’s coefficient of concordance is a suitable test for this Delphi study, since evaluating the progressive increase in the degree of agreement among participants with each subsequent phase, is a key element of this research” (p. 88). While tests using the standard Pearson correlation coefficient assume normally distributed values and compare two sequences of outcomes at a time, the W makes no assumptions regarding the nature of the probability distribution and can handle any number of distinct outcomes (Legendre & Legendre, 1998, p. 204).

Summary

Described in Chapter 3 was the research methodology for the current study. The purpose of the non-experimental, exploratory, mixed method research study was to identify the building blocks of trust that influence the success of VTs, and to then rank the identified building blocks in order of importance. Sought in the current study was a consensus from individuals who either have worked or are working with VTs as VT leaders, managers, or non-managers. Used in the study was a Delphi method to conduct a mixed method study to identify the building blocks of trust that influence the success of VTs. Employed in the study was a Likert-type survey instrument to rank the building blocks in order of importance. The aim of the study was to gather anecdotal testimonies from the sample of their work on VTs in terms of outcomes.

The outcomes were recorded by understanding the sample’s perspective of low, medium, and high degrees of efficiency of their VTs. In the chapter, the advantages of using the Delphi technique were explained. The development of the survey instrument and the proposed manner of collecting and analyzing data received through the five rounds of surveys were also explained. Described in the chapter was the rationale for

using quantitative and qualitative methods in examining the relationship between the independent and dependent variables.

Explained in Chapter 4 are the results of the five rounds of the surveys administered in this Delphi study. The mixed method study was conducted by administering Delphi methodology and Likert-type survey to gather both qualitative and quantitative data. Revealed in the results discussed in Chapter 4 are the strongest building blocks of trust, ranked in order of importance, which when applied efficiently may significantly influence the success of the VTs.

Chapter 4: Results

The purpose of the non-experimental, exploratory, mixed method research study is to encourage a consensus in identifying the building blocks of trust that influence the success of VTs, and ranking the identified building blocks of trust in order of importance. Sought in the current study was a consensus among individuals who had worked or were currently working with VTs as VT leaders, managers, and non-managerial members. The research conducted in the study further validated that camaraderie of trust exists in VTs, enabling team members to perform effectively. A Delphi study was appropriate to gather the perspective of experts with experience in VTs. Chapter 4 focused on collecting the results of the study and analyzing the data revealed as a result of the 5 surveys. The strongest building blocks of trust, ranked in order of importance, were identified and reported in this chapter.

Instrument Review and Design

Ten individuals reviewed the initial survey instrument. As part of the pilot study, the evaluator group represented organizational departments and institutions similar to those participating in the study. The 10 evaluators were tasked to gauge the accuracy and appropriateness of the initial survey instrument. The evaluator group was comprised of male and female participants, ranged from the age group of 30-51 years, functioning as VT members in the range of 1-10 years, and belonged to different ethnic groups. The geographical location of the members of the pilot study was the same as that of the participants selected as the sample population in corporations based in south Florida and represented experts from similar business divisions as the 35 participants of the study,

namely, Human Resource, Finance, Information Technology, Accounts Payable, and Marketing.

Evaluators recommended changing the wording of area descriptions, defining terms that the participants may not understand, clarifying the evaluation of the scale, rewording few questions to provide clarity, changing the order of some of the questions to avoid confusion, and provide a natural segway from the previous question. Because of the recommendations, changes were made to the survey instrument before it was administered to the participants (see Appendix A).

At the beginning of the survey instrument, the terms *Virtual Team* and *Success* in virtual teams were explained. The purpose of Question 2 was to explore the influence of successful VTs. The question was reworded from “How do you measure the success of virtual teams you have participated in as a virtual team member? Please explain the metrics you use to measure the success of virtual teams” to “What metrics do you use to measure the success of virtual teams you have participated in as a virtual team member? Examples: response time to emails, response time on voicemails, and ability of completing a project.” The purpose of Question 5 was to explore the study participants’ perspectives on trust. The question was reworded from “Define trust in virtual teams” to “How would you define trust in virtual teams?” The purpose of Question 6 was to explore the identity of the building blocks of trust. The question was reworded for clarification from “What building blocks of trust have you noticed within virtual teams you have participated in, as a virtual team member, that contribute significantly to the success of your virtual team?” to “As a virtual team member, what building blocks of trust have contributed to the success of your virtual team (examples of building blocks of

trust are: honesty, integrity, and accountability)? Enter each building block against the list below.” The purpose of Questions 7 and 8 was to explore the ranking of the building blocks. The questions were combined to form one question and reworded to “In order of importance, rank the identified building blocks of trust (identified by you in question 6) on the scale shown.”

The initial scale to evaluate the importance of the building blocks of trust was set on a rating scale of 1-5. Scale 2 was changed from “Slightly Important” to “Somewhat Important.” After making modifications based on the survey review, the instrument was ready to be prepared in Internet format.

After researching electronic media for the study, a web-based survey tool, SurveyMonkey.com was selected to develop and host an electronic Delphi instrument using the piloted and modified survey document. SurveyMonkey.com was selected as the vendor for several reasons: the ability to provide real-time development of survey instruments, development and the availability of a comprehensive communication tool to send electronic messages to participants, the capability to capture real time data from survey responses, availability to export data to Microsoft Excel® and Acrobat® PDF, availability to generate charts and graphs from the surveys, ability to electronically share survey responses, cross tab the responses, and note round closing. The vendor provided a means to view the results of the surveys throughout the data collection process. The vendor site also stored the data collected anonymously to retrieve in the desired format for further statistical evaluation.

The survey instrument was hosted on SurveyMonkey.com because it was a user-friendly website, provided ease of navigation, was capable to design both qualitative and

quantitative surveys, and offered a variety of selections to gather response types, such as limited and unlimited text, multiple choices, rating, and more. The survey instrument also provided an option to select various survey background designs. The evaluators recommended using simple fonts and backgrounds to ensure the participants was not distracted by the design of the survey and was able to focus on the responses. In addition, each question could be placed on a separate Internet page to limit the amount of scrolling.

Consent to Participate and Participant Communication

A two-part informed consent process was developed to communicate, firstly, the full disclosure of the research being conducted in soliciting participants and secondly, to summarize the acknowledgement of the full disclosure that included a positive action by the participant that they were giving their voluntary informed consent. The communication of solicitation contained the full disclosure to comply with current human subjects requirements and was attached as a separate document (see Appendix E). In order to fulfill the requirements of the informed consent, mandatory language was used in the letters sent to the survey candidates being invited to participate in the study. The mandatory language included the following clause:

By signing this form I acknowledge that I understand the nature of the study, the potential risks to me as a participant, and the means by which my identity will be kept confidential. My signature on this form also indicates that I am 18 years or older and that I give my permission to voluntarily serve as a participant in the study described.

Participants were asked to select the acceptance of the conditions to participate in the study and only then gained access to the survey on the website, which contained the questionnaire as explained in the data collection section above.

For qualitative studies, an additional certification of informed consent was included to obtain the permission to record (see Appendix G). The selection read “Acknowledge and Accept.” Only with a positive response could access to the survey be granted. A decline selection option was also provided on each screen that directed participants to a thank-you screen and invited them to return if they change their mind. Full description of the process appear in Appendix H.

Each participant was provided a two-part informed consent process letter explaining the purpose of the research, why and how the participant was chosen, potential benefits, the voluntary nature of the research, the ability to withdraw without penalty at any time, and the foreseeable risks, if any, of participating in the research. The surveys were anonymous; thus obtaining signed consent forms was not practicable. Return of the survey constituted informed consent and was explained in the introductory letter. Appendix H contains the informed consent form that was provided with each survey.

During the instrument development stage, the e-mail distribution list for potential participants and the first round of unscheduled communication to solicit participation was prepared on Microsoft Word ®. The communication transmittal process and the survey exit and return process were tested prior to opening the survey database. Several tests of the transmittal process were conducted to ensure the participants’ experiences while completing the online surveys were pleasant and productive.

An initial communication was sent to potential participants on May 04, 2010, that included a description of the research to be conducted and the consent form for participant inclusion in the study (see Appendix E). Because the research was to be conducted entirely by electronic forum, participants were not required to sign and return a hard copy of the consent form. Rather, participants were able to affirm their consent to participate via return e-mail or by telephone confirmation.

Of 55 invitations issued, 26 (23 positive and 3 negative) were received within the first 3 days. A follow-up e-mail was sent on May 13, 2010 to non-respondents, reminding of the need to return the consent form (see Appendix H). Another six responses were received over the next 3 days (four positive) and one individual was reported as no longer being a VT member. In addition, individuals who had initially declined or not responded to participate were sent a reminder email to encourage a reversal of their decision, but no additional participants were found. An electronic invitation to participate in the study was sent on May 20, 2010 to 14 potential participants who were not included in the first invitation round (see Appendix M). Three positive responses were received, seven negative responses were received, and four respondents did not respond. In addition, individuals who had initially declined or not responded to participate were sent a reminder email to encourage a reversal of their decision. Confirmations were secured from a total of 35 candidates. Of those declining participation, the most cited reasons were insufficient time, not a VT member in the past 3 months, and work demands. An email notification was sent to all 35 participants thanking them for their acceptance to participate in the study and inviting participation in Survey Round 1 (see Appendix N).

On June 01, 2010, the first round of the Delphi instrument was activated that initiated the start of the research process. An email communication was sent to the 35 participants (see Appendix N). The survey was designed on the selected instrument, SurveyMonkey.com. The email communication included a thank you to participants for their interest in the survey and instructions to click on the link that directed them to the online survey on SurveyMonkey.com. Within the body of the email, the participants were informed of the risks of the study, assurance that their identities would stay confidential, and the opportunity to withdraw if they had changed their minds. Lastly, the email included a request for the participants to select an option to either accept or reject their interest to participate in the study and send the email as a response to the survey administrator. All 35 participants accepted to participate in the surveys.

The remainder of the chapter presents an analysis of the responses to the five surveys. The results of each survey, separated into quantitative and qualitative responses, are discussed in the findings section of the chapter. The result of each survey begins with a brief introduction to the content of the area, graphical representations of the results, and a summary of the important results.

Responses to Surveys

The response rate for Survey Round 1 was 100%. Of the 35 participants who agreed to participate, all 35 completed the survey. The survey was administered initially on June 22, 2010, yielding a 60% result. The length of time to complete the survey was extended three times until a 100% response rate was achieved. According to Adler and Ziglio (1996), "An initial response rate of over 66% demonstrates a high level of participant interest (as cited in Cook, 2004, p. 85). A response rate of 85% was desired

for the study. The 100% Survey Round 1 response rate indicated a high level of interest in the topics of the research study and exceeded the desired level of participation.

Survey Round 2 was administrated on July 10, 2010. The response rate for the survey was 94%. The length of time to complete the survey was extended three times to achieve the response rate of 100%. Of the 35 participants who agreed to participate in the study, after three reminders (see Appendix F), all 35 submitted responses. There were no withdrawals from any participant during Survey Round 2.

Survey Round 3 was administered on August 25, 2010. The response rate was 90%. The length of time to complete survey was extended twice to achieve the response rate of 100%. Of the 35 participants who agreed to participate in the study, at the end of two reminders (see Appendix F), all 35 submitted responses. There were no withdrawals from any participant during Survey Round 3.

Survey Round 4 was administered on September 28, 2010. A 94% response rate was achieved. The length of time to complete the survey was extended once more to achieve a 100% response rate. Of the 35 participants who agreed to participate in the study, at the end of one reminder, all 35 submitted responses. There were no withdrawals from any participant during Survey Round 4.

Survey Round 5 was administered on October 16, 2010. A 100% response rate was achieved within the first week without the need for any extensions. Of the 35 participants who agreed to participate in the study, at the end of Survey Round 5, all 35 had submitted responses. Survey Round 5 constituted the last of the surveys administered in this Delphi study.

Persistence of participants is a concern with Delphi studies. Cook (2004) noted there was generally attrition among participants as they participate from one round to another, most notably in “studies that consisted of three or more rounds” (p. 85). However, in Lane’s (2003) research of the educational needs of financial aid directors, there was no attrition. The current study was no different from the studies noted by Lane, as the participant attrition rate was zero during the course of all the five survey rounds.

Survey Round 1. Participants in Survey Round 1 responded to 15 questions; the focus of three questions was the success of VTs, the focus of two questions was trust in VTs, the focus of two questions was the building blocks of trust in VTs, and the focus of eight questions was the demographic information of each participant of the study. To evaluate the building blocks of trust identified by the survey participants in Question 6, a 5-point Likert-type scale was used. The scale was used to rank the identified building blocks in Question 7. The values assigned to each of the 5-point ranking scale were – Not Important, Somewhat Important, Important, Very Important, and Essential.

The first five questions of Survey Round 1 required open-ended responses. All 35 participants provided valuable feedback to each of the five questions. In Question 6, participants were asked to list the building blocks of trust that they identified as important components of trust based on their experience and knowledge as VT members. In Question 7, participants were asked to rank the building blocks they identified in Question 6. The 5-point ranking scale was used to identify the Not Important, Somewhat Important, Important, Very Important, and Essential components of trust by each survey participant. An optional comment area was provided on Question 7 for further elaboration on the participant’s feedback.

At the conclusion of Survey Round 1, a comment report was prepared from the commentary responses to assist in interpreting the survey responses. At the same time, data collected during the survey process were retrieved for statistical analysis. The results of Survey Round 1 formed the foundation for future analysis. Based on a summary of the commentary results, the 35 participants of the study were at a close consensus on the content of definitions of VTs, definition of trust, and metrics that influence the success of VTs.

The building blocks of trust identified by the 35 participants were varied and many. In total, the participants identified 87 components of trust. The ranking of the components too varied greatly which deemed the need for a second round. The summary results of the identified building blocks of trust (see Appendix O) were provided to participants as part of the survey administered in Survey Round 2.

Survey Round 2. The 87 building blocks of trust that were identified by the 35 participants in Survey Round 1 formed the basis of study of Survey Round 2. The goal of the study was to gather a consensus of the most important building blocks of trust that influence the success of VTs. The focus of Survey Round 2 was to encourage a closer consensus on only the top most important building blocks of trust. The 87 components were rated to identify the most important components. The invitation to participate in Survey Round 2 (see Appendix P) included a description of the results of Survey Round 1, and the intent of Survey Round 2. The survey comprised of two labels: (a) Name of the participant and (b) Ranking scale from 1-5 to rate the 87 building blocks of trust identified in Survey Round 1. Participants were asked to rank the 87 components in order of importance where 1 was the most important component and 5 was the least.

Demographic profiles of each of the 35 survey participants were captured during Survey Round 1. The need to recapture the information for consecutive surveys was deemed repetitive and unnecessary. The resulting identifier of the participants for Survey Round 2 was simply by their first and last name. None of the participants' personal information was disclosed at any time during the survey or study.

By creating a ranking report of the participants' responses, 16 major components of trust that influence the success of VTs were identified. The categorization was achieved by calculating the average mean score of each ranked component. Identified were the building blocks that scored an average mean score of 4.0 or higher and the 16 components of trust from the list of the 87 components submitted by the survey participants. Similar building blocks were combined to prepare a tight list of components that were distinct in character. For example, responses such as feedback and follow-up were combined into a single building block – communication. At the same time, data collected during the survey process were retrieved for statistical analysis. A summary of the results was prepared for distribution to participants in the next round to encourage an even closer consensus. The summary results (see Appendix Q) were provided to participants in an e-mail, along with the instructions for Survey Round 3.

Survey Round 3. Revealed in the results of the statistical analysis using the Kendall's W in Survey Round 2 was the possibility for a closer consensus. The 16 building blocks of trust that formed the categories of the most important components of trust from Survey Round 2 were used to prepare the content for Survey Round 3. Participants were reminded that the goal of the survey was to gather a close consensus of the most important building blocks of trust that influence the success of VTs. The focus

of Survey Round 3 was to identify which of the 16 components of trust ranked more important than the others were ranked.

The invitation to participate in Survey Round 3 (see Appendix R) included a description of the results of Survey Round 2 and the intent of Survey Round 3. The survey comprised of two labels: (a) Name of the participant and (b) Ranking scale from 1-16 to rate the 16 building blocks of trust identified in Survey Round 2. Participants were asked to rank the 16 components in order of importance where 1 was the most important component and 16 was the least. Data collected during the survey process were retrieved for statistical analysis. A summary of the results was prepared for distribution to participants in the next round to gather an even closer consensus. The summary results (see Appendix S) were provided to participants in an e-mail, along with the instructions for Survey Round 4.

Survey Round 4. The results of the statistical analysis using the Kendall's W in Survey Round 3 revealed the possibility for a closer consensus. The 16 building blocks of trust that were ranked in order of importance by the 35 participants of Survey Round 3 formed the basis of the content for Survey Round 4. The ranking values of the 16 building blocks were analyzed further to reveal six essential components of trust. The six building blocks scored an average mean value of 4.0 or higher. Participants were reminded that the goal of the study was to gather a close consensus of the most important building blocks of trust that influence the success of VTs. The focus of Survey Round 4 was to identify from the six components of trust which ones ranked more important than the others.

The invitation to participate in Survey Round 4 (see Appendix T) included a description of the results of Survey Round 3, and the intent of Survey Round 4. The survey comprised of two sections: (a) Name of the participant and (b) 6-point Likert-type rating scale to rate the six building blocks of trust identified in Survey Round 3. Participants were asked to rank the six components in order of importance: 1, 2, 3, 4, 5, and 6; where 1 was the most important contributing factor of trust and 6 was the least important. Demographic profiles of all 35 survey participants were captured in Survey Round 1. The need to recapture the information was deemed repetitive and unnecessary. The resulting identifier of the participants for Survey Round 4 was simply by first and last name. None of the participants' personal information was disclosed at any time during the study.

Survey Round 5. The results of the statistical analysis using the Kendall's W in Survey Round 4 indicated the possibility for a yet closer consensus. The study participants were sent another email survey to rate the six components with a tighter consensus (see Appendix U). The six components rated in Survey Round 4 formed the fundamental building blocks of trust in VTs. To achieve a tighter consensus, Survey Round 5 was designed so the participants could select the more and less important components from a pair. Using the 1st and 2nd components as a pair (those rated as 1 and 2 in Survey Round 4), participants were asked to rate the components as 1 (more important) and 2 (less important). Similarly, the 3rd and 4th components were rated as a pair as 1 (more important) and 2 (less important), and the 5th and 6th components were rated as a pair as 1 (more important) and 2 (less important). At the end of Survey Round 5, revealed in the statistical analysis by Kendall's W value was a tight enough consensus

to deem the study complete. Participants received a thank you email notifying them that the study was complete (see Appendix V).

Delphi Panelist Comments

Comment boxes were available at the end of every survey to enable participants provide additional comments and thoughts to the study. During Survey Round 1, participants provided comments to six required questions. During Survey Rounds 2, 3, 4, and 5, participants did not provide additional comments to any of the surveys. As a result, comment summaries were presented at the end of every survey question in Survey Round 1 to enable the readers understand the outcome of the responses.

Consensus Building

One of the main objectives of the study was to develop a tight consensus among the most important components of trust that influenced the success of VTs. Responses from all five surveys were evaluated for consensus to determine if additional rounds of analysis were necessary. The tool used to discern consensus was the coefficient of concordance (Kendall's W).

To determine if a stronger consensus might be achieved by administering additional survey rounds, the overall Kendall's W was calculated in Survey Rounds 3, 4, and 5. The Kendall's W calculated from Survey Rounds 3 and 4 was a value close to 0. The Kendall's W calculated from Survey Round 5 was a value of 0.92 (close to 1) signaling that the ability to reach a greater consensus was diminishing. The Kendall's W describes the strength of consensus, ranging from a 0 to 1, where 0 is perfect disagreement and 1 is perfect agreement.

Table 4 includes the results of the consensus testing used to close data collection efforts. The first column contains the round number starting from Survey Round 3. The second column contains the calculated Kendall's W for the area. The third column contains the difference, also known as the delta, between the Kendall's W from one round to the next round. The fourth column contains the percentage change for the round, calculated by dividing the difference in the Kendall's W and the calculated Kendall's W of the most recently completed round. The fifth column contains the difference in the calculated Kendall's W of Survey Round 1 and the calculated Kendall's W of Survey Round 3. The sixth column contains the overall percentage change, calculated by dividing the overall difference in the Kendall's W from Survey Round 3 to Survey Round 5 and the most recently completed round.

Table 4

Percentage Change in Consensus as Measured by the Kendall's W

Survey Round	Kendall's W	Round difference	Percentage change	Overall difference	Percentage change
3	0.294	-	-	-	-
4	0.315	0.021	6.67%	-	-
5	0.92	0.605	65.76%	0.626	68.04%

The Delphi Process

The information reported in this section is based on the actual Delphi responses of the participants; the interquartile ranges and comments are identical in form to those reported to participants in summary and commentary reports. Interquartile ranges provided to participants were in terms of the boundaries to provide a more meaningful representation of the degree of consensus. No changes were made to comments regarding spelling, punctuation, or grammatical errors. Following each comment, the

participant's numerical choice for the round under discussion was provided in brackets. All comments are reported in the order retrieved from the SurveyMonkey.com database.

During the five rounds of Delphi experience, participants responded to questionnaires, evaluated summary results, and reviewed the commentary report from Survey Round 1. In Survey Round 1, participants were exposed first to the questionnaire. Initial responses were based on personal experience or understanding of their roles as VTs members. The VT members comprised of individuals working in leadership, managerial, and subordinate levels.

Survey Round 1 findings. The first topic in the questionnaire (describing success of VTs) requested survey participants to define success of VTs. The question also asked them to explain how the success of VTs related to successful delivery of VT projects. Feedback from the pilot study participants indicated that providing definitions of the terms VT and success in VTs at the start of the survey would benefit the participants to help them understand the meaning of the terms they were to define.

Participants were asked to describe the metrics they used to measure the success of VTs. Feedback from the pilot study participants indicated that providing examples of the metrics would help the participants understand the meaning of the term: metrics of successful teams. Participants were asked to list the factors that influenced the success of VTs.

The second topic of Survey Round 1 sought the participant's perspectives on trust in VTs. Participants were asked to state if they perceived trust as an important component in the success of VTs. They were asked to support their responses with an explanation. Participants were also asked to define trust in VTs and to identify the

building blocks of trust that influenced the success of VTs. As part of the quantitative questionnaire in Survey Round 1, participants were asked to rank the components of trust they listed in their responses by using a 5-point Likert-type survey. In the last section of the survey, participant demographic information was captured.

In Survey Round 1 of the Delphi survey, the survey participants identified 87 building blocks of trust that influenced the success of VTs. Gathered through Survey Round 1 was detailed demographic information of each participant: name, age, gender, company name, job title, number of years as VT members, and ethnicity. Presented in Appendix W are the comments accompanying responses for each question in Survey Round 1, enclosed in double quotation. No corrections were made to the grammatical, prose, or spelling errors in the responses as the comments are presented verbatim. None of the comments below reveals the identity of any of the survey participants. In addition, a summary report of the comments was prepared and is represented as the question's responses.

Survey Round 1, Question 1. Define success of virtual teams. How does this relate in terms to successful delivery of virtual team projects? Response: Revealed in the responses from the 35 survey participants was that success of VTs comprised various factors such as timely feedback, increased productivity, trust, common goal, coordination, and team members' values, skills, and knowledge. There was not a significant amount of variance on the responses to the question as all participants stated similar responses.

Survey Round 1, Question 2. What metrics do you use to measure the success of virtual teams you have participated in as a virtual team member? Examples: response

time to emails, response time on voicemails, and ability of completing a project.

Response: Participants echoed each other's viewpoints when identifying the metrics used to measure the success of VTs. Revealed in the responses was that the team's capability of timely implementation of the project deliverables timeline and success as the important metrics.

Survey Round 1, Question 3. What factors impact the success of virtual teams?

Response: Survey participants predominantly identified the role of VT members and their efficiencies to identify the impact of success of VTs. The collaboration of members with each other and their abilities to trust one another play a vital role in determining the success of the team.

Survey Round 1, Question 4. Is trust an important component of success in virtual teams? Please explain your response. Response: All 35 participants agreed that trust was an important component that influenced the success of VTs. Revealed in the responses was that trust was an important component for any type of team because without trust, no relationship can work efficiently. Components such as commitment, accountability, communication, and collaboration were highlighted as indicators of trust that influence the success of VTs.

Survey Round 1, Question 5. How would you define trust in virtual teams?

Response: Based on the responses from the survey participants, a definition of trust in VTs was developed. According to the participants, VTs are teams of employees having unique skills, located in distant locations, whose members collaborate with one another, using technology, and depend on one another to accomplish important organizational tasks. Trust in VTs was defined as a team with members who communicate effectively

with each other, are accountable for their actions, depend on one another to complete each member's assigned task, work with a high degree of integrity, collaborate with one another as a team, and exhibit high level of commitment.

Survey Round 1, Question 6. As a virtual team member, what building blocks of trust have contributed to the success of your virtual team (examples of building blocks of trust are honesty, integrity, and accountability)? Enter each building block against the list below. Response: In this section, survey participants listed the building blocks of trust that they valued as important components. Each of the 35 participants entered the building blocks of trust that were recorded by survey administrator. Appendix X contains the chart the participants completed. Captured in this chart are all the components of trust identified by the 35 survey participants. In total, 87 components were listed in the chart.

Survey Round 1, Question 7. In order of importance, rank the identified building blocks of trust (identified by you in question 6) on the scale shown: Not Important, Somewhat Important, Important, and Essential.

	Not	Somewhat		Very	
Answer Options	Important	Important	Important	Important	Essential
Building Block A					
Building Block B					
Building Block C					
Building Block D					
Building Block E					
Building Block F					
Building Block G					
Building Block H					
Building Block I					
Building Block J					

Out of the 35 survey participants, 30 responded to the open-ended comment section of question 7. Commonalities from the feedback reinforced the participants' views that the building blocks identified by each of the participants were significant to the success of VTs. Participants listed integrity, timely feedback, communication, dependability, accountability, and other components as the building blocks of trust that influence the success of VTs.

Survey Round 2 findings. In Survey Round 2, the commentary areas did not provide a significant variance. Hence, the focus of Survey Round 2 was on the quantitative aspect of the study. Participants were reminded the objective was to reach as tight a consensus as was possible for each area. In Survey Round 2, the building blocks of trust identified by each participant were listed and shared with all participants so that participants could reconsider the ratings based on the new components received from the group.

Round 2, Part 1. Please list your first and last name.

Survey Round 2, Part 2. "Listed below are the building blocks of trust identified by each one of you in round one. Please rate these blocks in the range of 1-5; 1 being the least important building block of trust and 5 being the most important." Appendix X includes the listing of the Building Blocks of Trust provided to the participants.

In Survey Round 2, the 87 building blocks of trust identified in Survey Round 1 were narrowed down to 16. A two-pronged approach was applied by first selecting the building blocks listed above that scored an average mean value of 4.0 and above. In the second step, further distilling of the building blocks occurred by combining the similar

ones into a single category. For example, honesty and integrity were combined into a single trait - integrity. No comments accompanied Survey Round 2 responses.

Survey Round 3 findings. In Survey Round 3, participants were asked to reconsider the original choice taking into consideration the median response and the interquartile results. The responses from Survey Round 2 identified the “Most Important” building blocks of trust in VTs. The blocks were gathered to build Survey Round 3. The responses from Survey Round 2 were used to categorize the major components of trust identified in Survey Round 1. The categorization decreased the number of components identified in Survey Round 1 from 87 to 16 main components. In Survey Round 3, the 16 building blocks of trust were listed together and shared with all participants to reconsider the ratings based on the ratings they received from the group. Participants were reminded the objective was to reach as tight a consensus as was possible for each area.

In Survey Round 3 of the Delphi survey, the median response was 8.5. According to Cann (2003), “The median indicates the middle value in a data set wherein half the variables have values greater than the median and the other half values which are less” (p. 85). The median value of Survey Round 3 signified a wide distribution of the responses indicating the possibility for administering another survey round to get the participants’ viewpoints arrives at a tighter consensus. The interquartile range of number choices by participants was 6.00 to 11.00. The interquartile range is a commonly used statistic to understand the range of the values of a data set. Cann explained that the range was the distance between the 25th and 75th percentiles. “By definition, this contains 50% of the data points in a normally-distributed dataset” (p. 86). The values of the median and

interquartile range calculated in Survey Round 3 included a wide deviation resulting in the possibility that another round of the survey could yield a stronger consensus. Another metric studied during the statistical analysis of the data of Survey Round 3 was to calculate the variance in the average mean. The value was studied to understand the deviation score, which signifies the measure of by how much each point in a frequency distribution lies above or below the mean for the entire dataset. The value of the variance of average mean for Survey Round 3 was 8.57, indicating a high deviation value that could possibly be reduced by administering another survey. The results of the next survey round expected to encourage a closer consensus among the participants' views on the ranking of the building blocks of trust. Revealed in the 16 components of trust in Survey Round 3 was a varied interquartile range and variance of the average mean. The variance in the average mean for Survey Rounds 3, 4, and 5 appear in Figure 4.

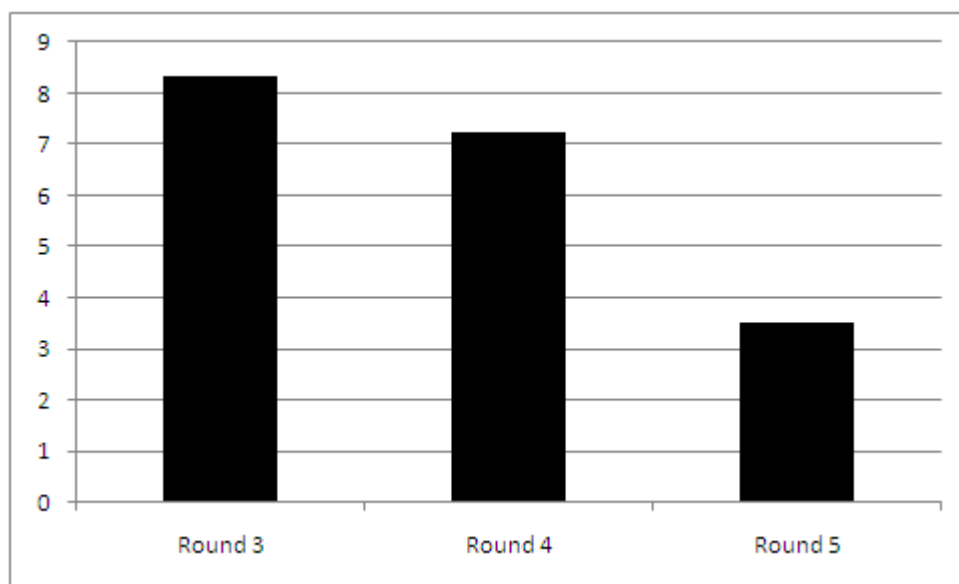


Figure 4. Variables of the Average Means of Survey Rounds 3, 4, and 5.

Out of the 16 identified components of Survey Round 3, six were selected for ranking purposes in Survey Round 4. The six components were identified based on a

stronger categorization of the building blocks of trust and their respective average mean scores. Similar components such as timeliness, collaboration, and teamwork were categorized as one component enabling the research to be further distilled from the 16 components to six essential ones. In Survey Round 4, the six components were further ranked in order of importance to encourage a closer consensus.

Survey Round 4 findings. In Survey Round 4, participants were asked to reconsider the original choice taking into consideration the median response and the interquartile results. The blocks were gathered to build Survey Round 3. In Survey Round 3, the *most important* building blocks of trust identified by each participant were listed together and shared with all participants to have them reconsider their ratings based on the ratings they received from the group. The responses from Survey Round 4 brought a tighter consensus, which narrowed down the building blocks of trust identified as the *most important* in Survey Round 3 from 16 to six main components. Participants were reminded the objective was to reach as tight a consensus as was possible for each area.

In Survey Round 4, participants were asked to reconsider their original choice taking into consideration the median response, and the interquartile results for Survey Round 3. Participants were reminded the objective was to reach as tight a consensus as was possible for each area. In Survey Round 4 of the Delphi survey, the median response dropped to 3.67 and the interquartile range of number choices by participants was 3.00 to 5.00. The variance in the average mean was 7.22. The varied values in all three scores indicated the possibility of another survey to encourage a tighter consensus.

Survey Round 5 findings. To achieve a much tighter consensus, participants were asked to reconsider the original choice taking into consideration the median response and the interquartile results from Survey Round 4. The six blocks were gathered to build Survey Round 5. To achieve a tighter consensus, Survey Round 5 was designed so the participants could select the more and less important component from a pair. Using the 1st and 2nd components as a pair (these rated as 1 and 2 in survey round 4), participants were asked to rate them as 1 (more important) and 2 (less important). Similarly, the 3rd and 4th components were rated as a pair as 1 (more important) and 2 (less important), and the 5th and 6th components were rated as a pair as 1 (more important) and 2 (less important). Participants were reminded the objective was to reach as tight a consensus as was possible for each area.

In Survey Round 5, the six components were paired into sets of two and ranked to obtain tight consensus. Revealed in the resulting Kendall's W analysis of Survey Round 5 was a value of 0.923, which was a sufficiently tight consensus, thus, ending the administration of further surveys. In Survey Round 5 of the Delphi survey, the median response was 3.5 and the interquartile range of number choices by participants was 3.00 to 4.00. The variance in the average mean was 3.50. In Survey Round 5, the outcome of the three scores – median response, interquartile range, and average mean – was acceptable as all the values indicated a tight consensus toward the components of trust that influence the success of VTs. Table 5 includes the three statistical values of each of the six components of trust calculated in Survey Rounds 3, 4, and 5. The intent of the table is to provide readers a better understanding of the performance of the scores of the components of trust.

The movement toward consensus is visually represented using a graph of the variance in the average of means of Survey Rounds 3, 4, and 5 (see Figure 4). The variance decreased significantly between each consecutive round indicating a closer consensus with every survey. At the end of the five rounds of the study, the 35 participants narrowed down the 87 components of trust identified in Survey Round 1 to six essential building blocks of trust in the final round (Survey Round 5).

Table 5

Statistical Performance of each Component of Survey Rounds 3, 4, and 5

Communication	Median	IQR	Avg. Mean
Round 3	5	7	5.77
Round 4	2	2	4.22
Round 5	1	1	1.34
Integrity			
Round 3	4	5	5.01
Round 4	4	2	7.5
Round 5	4	1	3.54
Dependability			
Round 3	3	4	5.43
Round 4	3	3	6.85
Round 5	3	1	3.43
Accountability			
Round 3	3	4	5.43
Round 4	3	3	6.85
Round 5	3	1	3.43
Commitment			
Round 3	7	5	7.83
Round 4	5	1	8.84
Round 5	2	1	1.66
Collaboration/Teamwork			
Round 3	9	6	9.08
Round 4	6	1	10.31
Round 5	5	1	5.34

Results

The presentation of findings is organized around stated research questions, first reviewing the definition of trust as a component that influences the success of VTs, and second, identifying the key components of trust that influence the success of VTs. In the mixed-method, exploratory, Delphi study, observed were three main deliverables – (a) Definition of trust in successful VTs, (b) Essential components of trust that influence the success of VTs, ranked in order of importance, and (c) Virtual Team Representation.

The summary of the definitions of trust revealed common components highlighted by survey participants, namely, timely delivery of deliverables, communication, accountability, and team collaboration. The overall definitions of trust resonated the scientific definitions of trust by Mayer, Davis, and Schoorman (1995, as cited by Hoag et al., 2003). Mayer et al. defined trust as “The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party” (as cited by Hoag et al., 2003, para. 2). In the section of the qualitative analysis of the study, over 80% of the definitions of trust included similar building blocks that influence the success of VTs indicating a tight consensus. The participants defined trust in VTs as a team with members who communicate effectively with each other, are accountable for their actions, depend on one another to complete each member’s assigned task, work with a high degree of integrity, collaborate with one another as a team, and exhibit high level of commitment.

In Survey Round 1, the 35 participants collectively identified 87 components of trust that influence the success of VTs. The 87 components were categorized in Survey

Round 2 to bring down the major components into 16. Survey Round 3 formed the basis of the consensus study, the results of which were statistically analyzed using the Kendall's W . In the round, the 16 components were categorized further to identify six components of trust. The Kendall's W describes the strength of consensus, ranging from a 0 to 1, where 0 is perfect disagreement and 1 is perfect agreement. The components of trust identified in Survey Round 3 achieved a low level of consensus: 0.294. In Survey Round 4, the components of trust were further narrowed down to six major distinct components. The Kendall's W for the round was calculated. The value increased from the value of Survey Round 3. The Kendall's W for Survey Round 4 was 0.314. There was no movement toward greater consensus in the round prompting the launch of Survey Round 5. In Survey Round 5, participants were asked to rank the six components of trust by pairing them. The resulting ranking revealed a Kendall's W value of 0.920. The increase Kendall's W value was very close to 1 reflecting a tight consensus and indicating the completion of the Delphi study. The result of the Kendall's W calculations of the building blocks of trust that influenced the success of VTs appears in Table 3.

Table 6

Building Blocks of Trust in Order of Importance

Ranking	Building Block
Building Block 1	Communication
Building Block 2	Accountability
Building Block 3	Dependability
Building Block 4	Integrity
Building Block 5	Collaboration / Teamwork
Building Block 6	Commitment

Listed in Table 6, are the final essential building blocks of trust, which influence the success of VTs. Further analysis of the identified components researched the

correlations between the demographics of the survey participants against the identified components of trust. The findings of the correlation are described in the section that follows.

Correlation Analysis of Data

During Survey Round 1, captured was the demographic information on each of the 35 survey participants. The information was secure during the entire survey process and the study. Participants were assured that their information would not be divulged at any point during or after the study without consent. The demographic information was used to conduct a correlation analysis to identify any specific patterns of the participants' demographics against the six building blocks of trust that influenced the success of VTs. Limitations of the analyses and results were based on the information shared by the 35 participants of the study. The results should be viewed within the limitation that the responses of the 35 participants are not an accurate indication of the perspectives of the demographics of an entire population base.

The six components of trust were identified and ranked in order of importance through the remaining Survey Rounds 2, 3, 4, and 5. Listed are the demographic data points that were used in the correlation analysis.

Gender: Male, Female

Age Range: 21-30, 31-40, 41-50, 51-60, 61-70, and above 70

Ethnicity: Caucasian, African American, Native American, Asian Indian, Latinos/Hispanic, and Other

Number of years as VT members: 1-5, 6-10, 11-15, 16-20, and above 20 years

Each of the six identified building blocks of trust were studied based on the demographic information provided by each of the 35 survey participants and represented in Figures 5-10. The correlation analysis was conducted using the main effects plot. The plot includes the average outcome for each value of each variable, combining the effects of the other variables as if all variables were independent. According to Antony (2003), “A main effect plot is a plot of the mean response values at each level of a design parameter or process variable. This plot can be used to compare the relative strength of the effects of various factors” (p. 35).

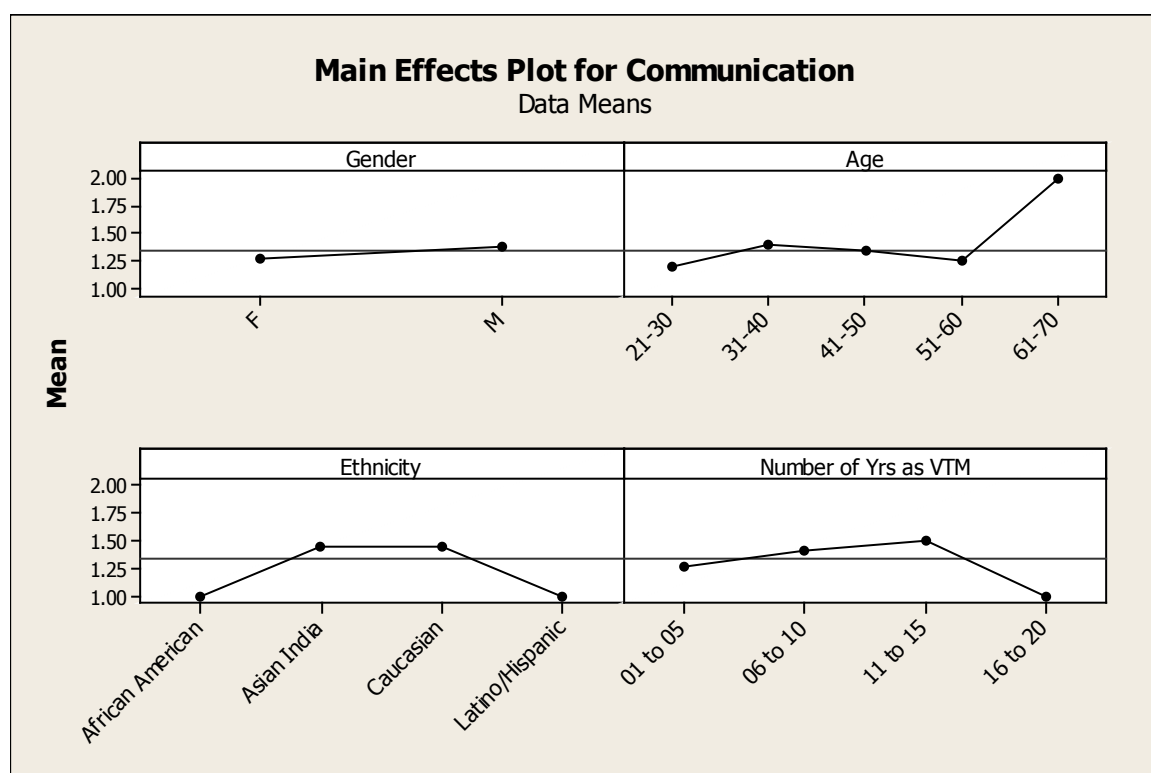


Figure 5. Correlation Study of Communication and Participants' Demographics.

The comparison of gender against building block of trust - Communication - indicated that female VT members of the 35 study participants rated communication slightly lower (average = 1.27) than the males (average = 1.38). The age groups of 21-30, 31-40, 41-50, and 51-60 rated communication at an average range of 1.30. However,

the age group of 61-70 rated communication at an average mean of 2.0 indicating that communication was a very important component of trust that influenced the success of VTs. In terms of communication based on the ethnic background of the survey participants, revealed was that the African American population rated communication at an average mean of 1.0, while Asian Indians and Caucasians rated communication at an average mean of 1.44, and Latin Americans rated communication at 1.0 showing little or insignificant variance on the rating of communication by ethnic groups. Participants with 1-5 years of experience as VT members rated communication at an average rate of 1.27, while 6-10 years provided a rating of 1.42, 11-15 years was 1.50, and 16-20 years was 1.0. The rating indicated that VT members who have had experience in VTs in the range of 11-15 years rate communication on a higher scale than the members having VT experience at 1-5 and 6-10 years. Virtual team members in the 16-20 years experience range rated communication at a lower scale than the rest of the population. The results of the average rating of communication as an essential trait of trust appear in Table 7.

Table 7

Average Rating of Building Blocks of Trust - Communication

Demographics	Category	Rating Score
Gender	Male	1.27
	Female	1.38
Age	21-30	1.20
	31-40	1.40
	41-50	1.33
	51-60	1.25
	61-70	2.00
Ethnicity	African American	1.00
	Asian Indian	1.44
	Caucasian	1.44
	Latin American	1.00
Number of years as a VT member	1 to 5	1.27
	6 to 10	1.42
	11 to 15	1.50
	16 to 20	1.00

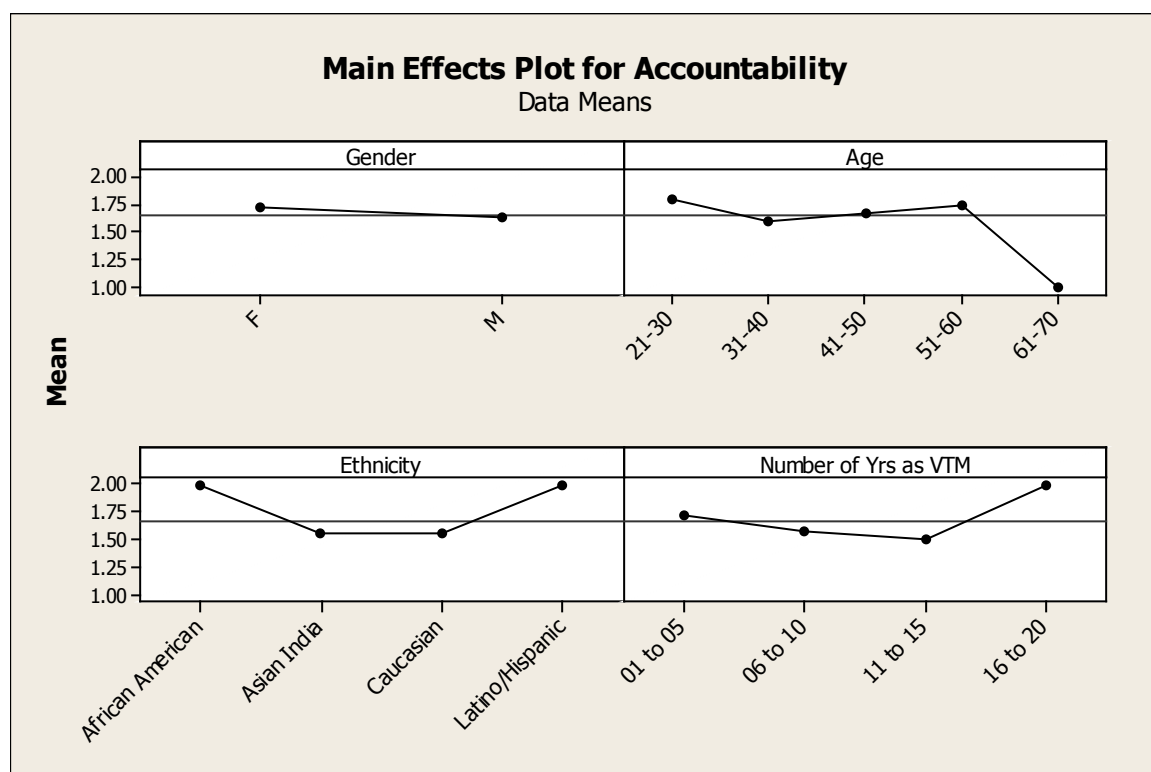


Figure 6. Correlation Study of Accountability and Participants' Demographics.

The mean effects plot for accountability revealed that female participants provided an average rating of 1.73 while the male population rated accountability at 1.63. The age groups of 21-30, 31-40, 41-50, and 51-60 rated communication at an average range of 1.73. However, the age group of 61-70 rated communication at an average mean of 1.0 indicating that accountability was not as important a component of trust that influenced the success of VTs when compared to the high rating of 2.0 for communication. In studying the rating of accountability based on the ethnic background of the survey participants, revealed was that the African American and Latino population rated accountability at an average mean of 2.0, while Asian Indians and Caucasians rated accountability at an average mean of 1.55. Participants with 1-5 years of experience as VT members rated accountability at an average rate of 1.73, while 6-10 years provided a rating of 1.59, 11-15 years was 1.50, and 16-20 years was 2.0. The rating indicated that VT members who have had experience in VTs in the range of 16-20 years rate accountability on a higher scale than the members having VT experience at 1-5, 6-10, and 11-15 years. The results of the average rating of accountability as an essential trait of trust appear in Table 8.

Table 8

Average Ratings of Building Block of Trust - Accountability

Demographics	Category	Rating Score
Gender	Male	1.73
	Female	1.63
Age	21-30	1.80
	31-40	1.67
	41-50	1.68
	51-60	1.75
	61-70	1.00
Ethnicity	African American	2.00
	Asian Indian	1.55
	Caucasian	1.55
	Latin American	2.00
Number of years as a VT member	1 to 5	1.73
	6 to 10	1.59
	11 to 15	1.50
	16 to 20	2.0

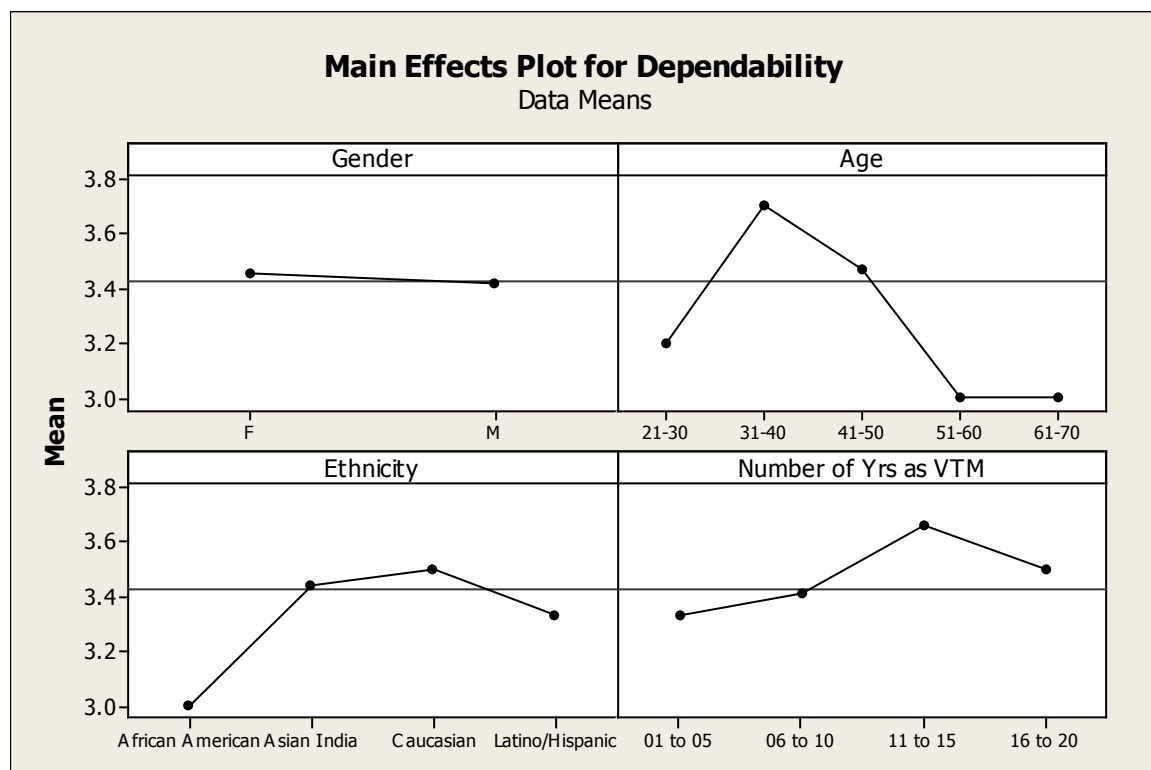


Figure 7. Correlation Study of Dependability and Participants' Demographics.

The mean effects plot for dependability revealed that male and female participants provided a close rating of 3.45 and 3.41 respectively indicating that gender did not have a significant impact on building block of trust on the success of VTs. The age groups of 51-60 and 61-70 provided a rating of 3.0. The age group of 41-50 rated dependability at an average score of 3.47, while the age group of 31-40 provided the highest score of 3.70 indicating that the 31-40 age group found dependability as a much important trait of trust than the other age groups. In studying the rating of dependability, the variance of the average mean ranged from 3.00-3.0; the African American population rated dependability at a low score of 3.00, Asian Indian at 3.44, Caucasian at 3.50, and Latin American at 3.30. The data indicated that African Americans did not believe dependability to be a highly important component of trusts when compared to the other age groups. Participants with 1-5 years of experience as VT members rated dependability at an average rate of 3.30, while 6-10 years provided a rating of 3.42, 11-15 years was 3.66, and 16-20 years was 3.50. The rating indicated that VT members who have had experience in VTs in the range of 11-15 years rated dependability on a higher scale than the members having VT experience at 1-5, years with the lowest rating. The results of the average rating of dependability as an essential trait of trust appear in Table 9.

Table 9

Average Rating of Building Block of Trust - Dependability

Demographics	Category	Rating Scale
Gender	Male	3.45
	Female	3.41
Age	21-30	3.20
	31-40	3.70
	41-50	3.47
	51-60	3.00
	61-70	3.00
Ethnicity	African American	3.00
	Asian Indian	3.44
	Caucasian	3.50
	Latin American	3.30
Number of years as a VT member	1 to 5	3.30
	6 to 10	3.42
	11 to 15	3.66
	16 to 20	3.45

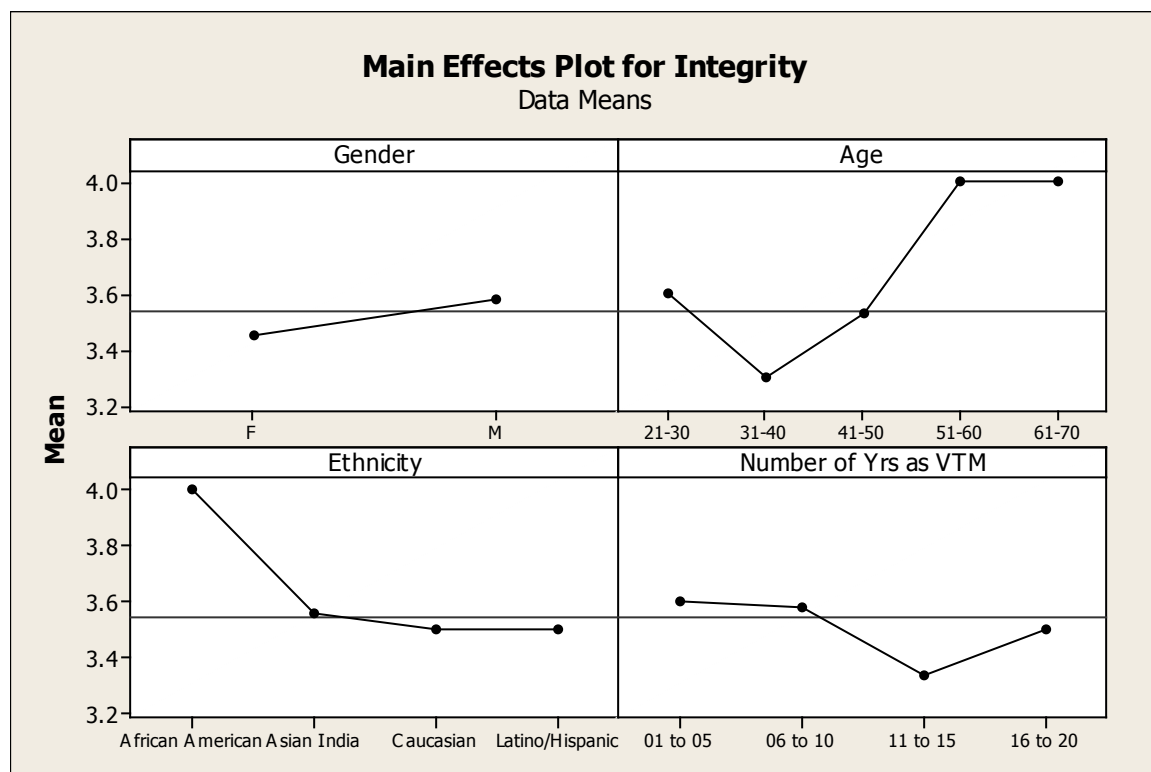


Figure 8. Correlation Study of Integrity and Participants' Demographics.

The mean effects plot for integrity revealed that female participants rated integrity a lower scale of 3.45 than the male population that rated integrity at 3.58. The age groups of 51-60 and 61-70 provided a rating to integrity of 4.0. The age groups of 21-30 and 41-50 rated integrity closely at an average score of 3.57, while the age group of 31-40 provided the lowest rating of score of 3.30 indicating that the 31-40 age group found integrity as a less important trait of trust than the other age groups. The analysis of the data on ethnicity against integrity revealed that the African American population rated integrity at a high score of 4.00, the Asian Indian group rated at 3.55, and the Caucasian and Latin American groups provided a rating of 3.50. Participants with 11-15 years of experience as VT members rated integrity at a low score of 3.30 while the mean average rating of the other three groups was 3.56 indicating that the population in the age group 11-15 did not believe integrity to be a highly important component of trust. The results of the average rating of integrity as an essential trait of trust appear in Table 10.

Table 10

Average Rating of Building Block of Trust - Integrity

Demographics	Category	Rating Score
Gender	Female	3.45
	Male	3.58
Age	21-30	3.60
	31-40	3.30
	41-50	3.53
	51-60	4.00
	61-70	4.00
Ethnicity	African American	4.00
	Asian Indian	3.55
	Caucasian	3.50
	Latin American	3.50
Number of years as VT members	1 to 5	3.60
	6 to 10	3.58
	11 to 15	3.30
	16 to 20	3.50

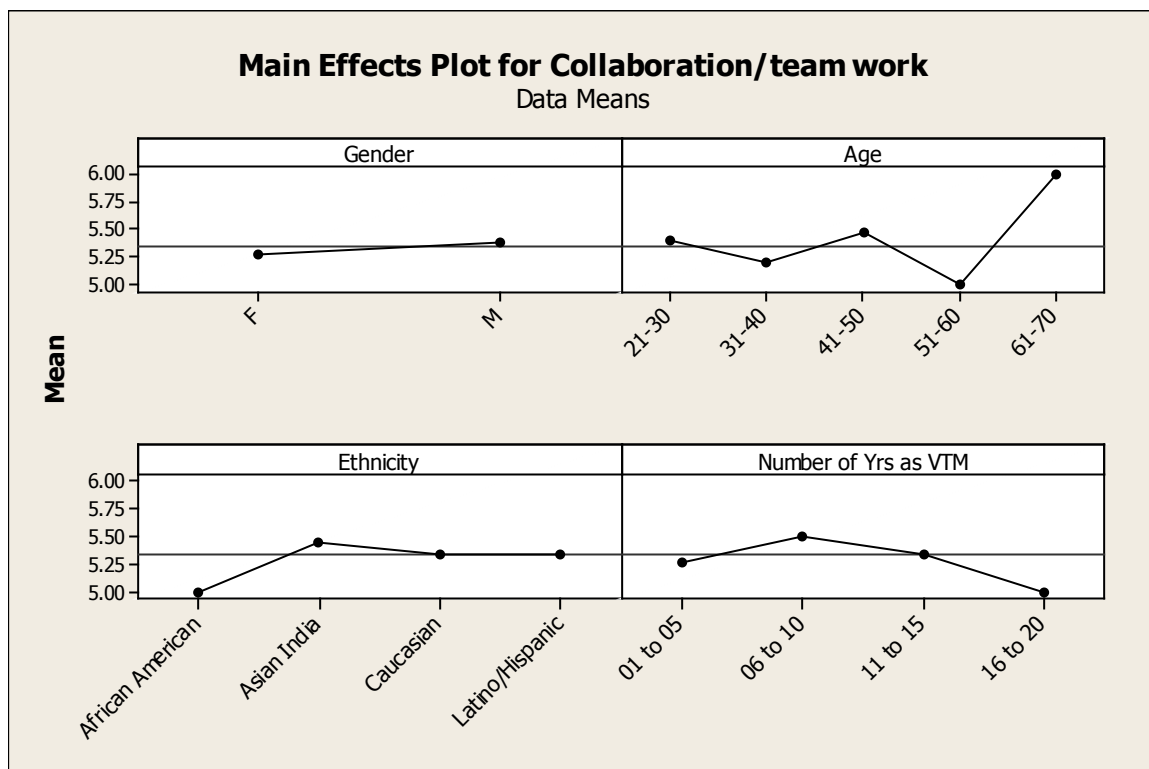


Figure 9. Correlation Study of Collaboration / Teamwork and Participants'

Demographics.

The mean effects plot for collaboration/ teamwork revealed that female participants rated Collaboration / Teamwork a lower scale of 5.27 than the male population that rated Collaboration / Teamwork at 5.38. The age group of 61-70 provided a high rating of 6.00 to Collaboration /Teamwork. The 51-60 age group population provided a low rating of 5.0. The remaining three age groups provided an average rating score of 5.36. Indicated by the data was that the older age group believed Collaboration /Teamwork to be a highly important component of trust than the other age groups. The study of the data on ethnicity against Collaboration /Teamwork revealed that the African American population rated Collaboration /Teamwork at a low score of 5.00 when compared to the average rating of the remaining ethnic groups at 5.33. Participants

with 16-20 years of experience as VT members rated Collaboration / Teamwork at a low score of 5.00 while the mean average rating of the other three groups was 5.36 indicating that the population in the age group 16-20 did not believe Collaboration / Teamwork to be a highly important component of trust. The results of the average rating of Collaboration / Teamwork as an essential trait of trust appear in Table 11.

Table 11

Average Rating of Building Block of Trust – Collaboration / Teamwork

Demographics	Category	Rating Score
Gender	Female	5.27
	Male	5.38
Age	21-30	5.40
	31-40	5.20
	41-50	5.47
	51-60	5.00
	61-70	6.00
Ethnicity	African American	5.00
	Asian Indian	5.40
	Caucasian	5.30
	Latin American	5.30
Number of years as VT members	1 to 5	5.27
	6 to 10	5.50
	11 to 15	5.30
	16 to 20	5.00

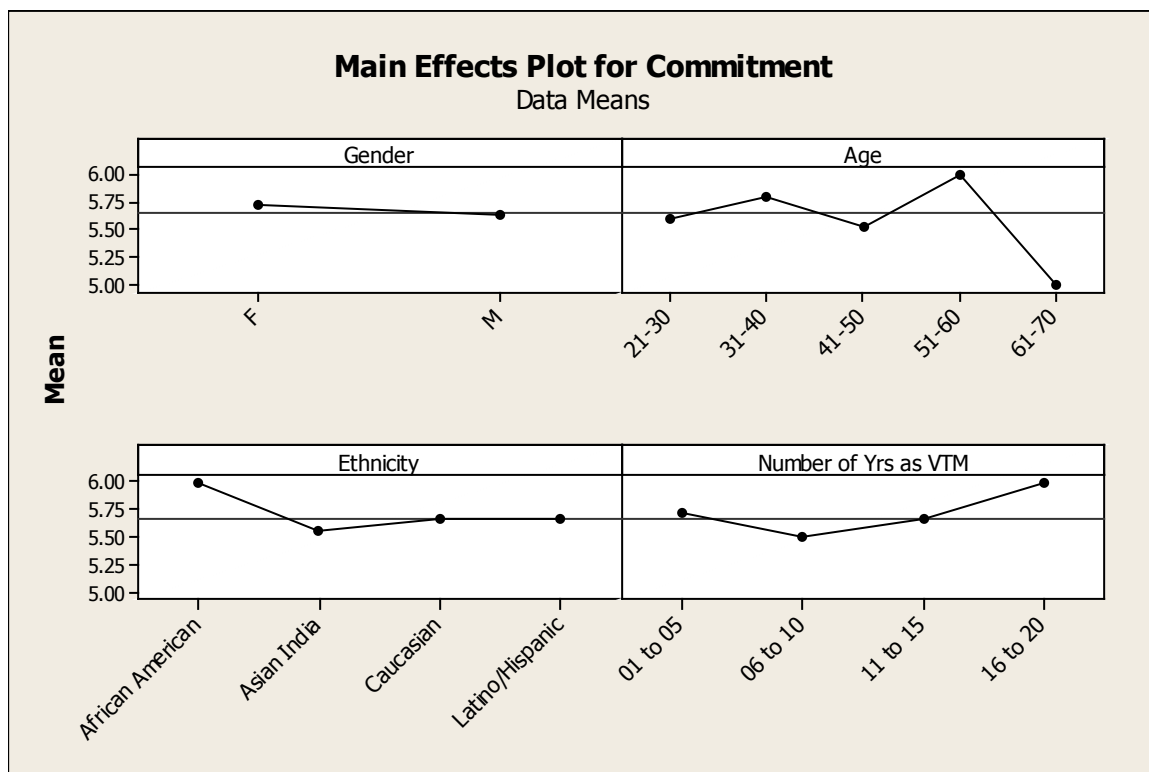


Figure 10. Correlation study of Commitment and Participants' Demographics.

Revealed by the mean effects plot for commitment was that female participants rated commitment a higher scale of 5.73 than the male population that rated commitment at 5.63. The data of the age groups against commitment provided a varied rating average wherein the older age group of 61-70 years rated commitment 5.00 while the previous age group of 51-60 rated commitment at 6.00 indicating that the 51-60 age group found commitment to be a highly important component of trust in VTs. The remaining three age groups provided an average rating score of 5.64. The study of the data on ethnicity against commitment revealed that the African American population rated commitment at a high score of 6.00 when compared to the average rating of the remaining ethnic groups at 5.62. Participants with 16-20 years of experience as VT members rated commitment at a high score of 6.00 while the average rating of the 6 – 10 years was low at 5.50. The age

groups 1-5 to 11-15 provided a rating of 5.73 and 5.66 respectively. The results of the average rating of commitment as an essential trait of trust appear in Table 12.

Table 12

Average Rating of Building Block of Trust - Commitment

Demographics	Category	Rating Score
Gender	Female	5.73
	Male	5.63
Age	21-30	5.60
	31-40	5.80
	41-50	5.53
	51-60	6.00
	61-70	5.00
Ethnicity	African American	6.00
	Asian Indian	5.55
	Caucasian	5.66
	Latin American	5.66
Number of years as VT members	1 to 5	5.73
	6 to 10	5.50
	11 to 15	5.66
	16 to 20	6.00

Further analysis of the data was used to study the correlation of each demographic item against the building blocks of trust that influences the success of VTs. Indicated by the study of gender against the building block of trust was that female VT members rated a high degree of ranking to accountability, dependability, and commitment. The male participants ranked communication, integrity, and collaboration / teamwork on a higher scale. Highlighted in the data were the components of trust participants viewed as important based on gender.

An opportunity of further research would be to study the impact of gender on the components of trust that influence the success of VTs. The results of the data analysis appear in Table 13.

Table 23

Summary of Correlation Results – Gender and Building Blocks of Trust

Gender	Rating	Building Block of Trust
Female	Low	Communication
Female	High	Accountability
Female	High	Dependability
Female	Low	Integrity
Female	Low	Collaboration/Teamwork
Female	High	Commitment
Male	High	Communication
Male	Low	Accountability
Male	Low	Dependability
Male	High	Integrity
Male	High	Collaboration/Teamwork
Male	Low	Commitment

The data were used to interpret the correlation of the age groups against the building blocks of trust that influence the success of VTs. Survey participants in the age group of 21-30 provided a high ranking to accountability indicating that the younger workforce relied on the team to take ownership of their assigned task items to ensure the success of their deliverables as VT members. Interestingly, the age group did not rate commitment, communication, and dependability as highly important components of trust. The second age group of 31-40 years was analyzed, which rated the components on the scale of medium and low. The next age group of 41-50 provided similar ratings as the 31-40 age group. None of the six essential components of trust identified in the study were rated as highly important by the two groups indicating that the groups utilize the six components together to ensure their success as VT members. In the analysis of the responses of the population in the 51-60 age group, it was found that integrity and commitment were the two most highly ranked components of trust. Members of the age group rely on integrity and commitment to ensure the success of their team's deliverables

as VT members. The last age group studied in the category was 61-70 wherein communication, integrity, and collaboration/ teamwork were rated as highly essential components of trust. Revealed in the analysis was that older VT members relied heavily on communication among the team members who had a high level of integrity, and work efficiently as a team to ensure their success as VT members. A study of the various age groups of VT members may yield interesting results to understand better the role of age on the success of VTs. The results of the data analysis appear in Table 14.

Table 34

Summary of Correlation Results – Age Groups and Building Blocks of Trust

Age Group	Rating	Building Block of Trust
21-30	Low	Communication
21-30	High	Accountability
21-30	Low	Dependability
21-30	Medium	Integrity
21-30	Medium	Collaboration / Teamwork
21-30	Low	Commitment
31-40	Medium	Communication
31-40	Low	Accountability
31-40	Medium	Dependability
31-40	Low	Integrity
31-40	Low	Collaboration / Teamwork
31-40	Medium	Commitment
41-50	Low	Communication
41-50	Low	Accountability
41-50	Low	Dependability
41-50	Medium	Integrity
41-50	Medium	Collaboration / Teamwork
41-50	Low	Commitment
51-60	Low	Communication
51-60	Medium	Accountability
51-60	Low	Dependability
51-60	High	Integrity
51-60	Low	Collaboration / Teamwork
51-60	High	Commitment
61-70	High	Communication
61-70	Low	Accountability
61-70	Low	Dependability
61-70	High	Integrity
61-70	High	Collaboration / Teamwork
61-70	Low	Commitment

Analysis of the data to study the correlation of the ethnic backgrounds of the participants against the building blocks of trust that influence the success of VTs indicated that the African American population of the survey participants rated accountability, integrity, and commitment as high components of trust that were essential to the success of VTs. The next ethnic group studied was the Asian Indian group, which

rated communication and team collaboration as the highly important components of trust. When compared to the African American population that rated integrity as high ranking, the Asian Indian group rated integrity at a low scale. The Caucasian group rated communication and dependability as highly important components of trust, while they rated accountability and integrity as the lower components, and commitment and collaboration as medium. The final group studied was the Latin American ethnic group, which rated accountability as a highly important component of trust in VTs against communication, dependability, and integrity were rated low. The use of VTs across the globe would be likely to provide a beneficial base to study the correlation of the ethnic backgrounds of VT members. The perspectives of the ethnic groups on the building blocks of trust could provide worthwhile results to understand better the roles of ethnicity on the success of VTs. The results of the data analysis appear in Table 15.

Table 15

Summary of Correlation Results – Ethnicity and Building Blocks of Trust

Ethnicity	Rating	Building Block of Trust
African American	Low	Communication
African American	High	Accountability
African American	Low	Dependability
African American	High	Integrity
African American	Low	Collaboration / Teamwork
African American	High	Commitment
Asian Indian	High	Communication
Asian Indian	Low	Accountability
Asian Indian	Medium	Dependability
Asian Indian	Medium	Integrity
Asian Indian	High	Collaboration / Teamwork
Asian Indian	Low	Commitment
Caucasian	High	Communication
Caucasian	Low	Accountability
Caucasian	High	Dependability
Caucasian	Low	Integrity
Caucasian	Medium	Collaboration / Teamwork
Caucasian	Medium	Commitment
Latin American	Low	Communication
Latin American	High	Accountability
Latin American	Low	Dependability
Latin American	Low	Integrity
Latin American	Medium	Collaboration / Teamwork
Latin American	Medium	Commitment

Gathered was demographic data on the number of years each of the 35 survey participants spent as a VT member to determine if there was a correlation between the tenure of VT members and six building blocks of trust identified during the study. Revealed in the data analysis were that VT members with 1-5 years rated dependability and integrity as the highly important components of trust in VTs, the remaining four components were rated a medium. The slightly older tenured groups of 6-10 and 11-15 years rated communication, integrity, and collaboration as the highly important components and accountability as a low rating. The 16-20 years experienced group rated

accountability on a high rating along with commitment. The same group rated integrity and team collaboration on a low rating. A study of the tenure of VT members and their perspectives of the six building blocks of trust would provide an interesting basis to understand the efficient functioning of VTs. The results of the data analysis appear in Table 16.

Table 16

Summary of Correlation Results – Number of Years as VT Member and Building Blocks of Trust

Number of years as a VT member	Rating	Building Block of Trust
1 to 5	Medium	Communication
1 to 5	Medium	Accountability
1 to 5	High	Dependability
1 to 5	High	Integrity
1 to 5	Medium	Collaboration / Teamwork
1 to 5	Medium	Commitment
6 to 10	High	Communication
6 to 10	Low	Accountability
6 to 10	Medium	Dependability
6 to 10	High	Integrity
6 to 10	High	Collaboration / Teamwork
6 to 10	Low	Commitment
11 to 15	High	Communication
11 to 15	Low	Accountability
11 to 15	High	Dependability
11 to 15	Medium	Integrity
11 to 15	High	Collaboration / Teamwork
11 to 15	Medium	Commitment
16 to 20	Low	Communication
16 to 20	High	Accountability
16 to 20	Medium	Dependability
16 to 20	Low	Integrity
16 to 20	Low	Collaboration / Teamwork
16 to 20	High	Commitment

Summary

Provided in Chapter 4 was a detailed analysis of the data obtained in the research study. Indicated by the data from the study was a validation that camaraderie of trust exists in VTs, enabling team members to perform effectively. Revealed was that there were six essential building blocks of trust that influenced the success of VTs. The identified building blocks of trust were ranked in order of importance. The result of the study was the development of a VT illustration.

Presented and explained in Chapter 5 is the VT model. Provided in Chapter 5 is a summary of the purpose of the study and a synopsis of the research procedure and methodology. Presented in Chapter 5 is a conclusion that discusses the results of the hypotheses testing through the analysis of the data presented in Chapter 4.

Chapter 5: Conclusions and Recommendations

Chapter 5 contains a summary of the purpose of the study and a synopsis of the research procedure and methodology. Presented in the chapter also is the conclusion based on the results of the data analysis posed in Chapter 4 and the tested. Also present are the inferences about the importance of those findings, lessons learned, and limitations of the study. The chapter concludes with recommendations for future research.

Summary of the Study

The purpose of the non-experimental, exploratory, mixed method research study was to encourage the consensus of identifying the building blocks of trust that influence the success of VTs, and ranking the identified building blocks of trust in order of importance. Sought in the current study was a consensus among individuals who have worked or were currently working with VTs as VT leaders, managers, and non-managerial members. The participants in the study validated that camaraderie of trust existed in VTs, enabling team members to perform effectively. A Delphi study was appropriate to gather the perspective of experts with experience in VTs. Given the highly automated environment of VT functioning, a Web-based application was appropriate for data collection, storage, tabulation, and analysis.

The parameters of the electronic instrument initially required answers to all questions. Participants identified six essential components of trust that influence the success of VTs. In Survey Round 1, the 35 participants confirmed that there were certain components of trust that they believed influenced the success of VTs. Participants identified 87 components. In the qualitative aspect of the study, the participants responded to the questions regarding trust, VTs, trust in teams, success of teams, and

success in VTs. In Survey Rounds 3 and 4 participants responded to the identification of the building blocks of trust. Survey Rounds 2, 3, 4, and 5 were used to gather responses for the quantitative aspect of the study.

Provided in the literature review was the foundation for the study. Revealed in the extensive literature review was that success in VTs was a result of trust that VT members have on one another (Ambler, 2008; Boone & Holmes, 1991; Jarvenpaa et al., 1998; Joinson, 2002; Townsend et al., 1998). According to Jarvenpaa et al., “Trust is critical in new organizational arrangements where traditional social controls do not exist, and lies at the heart of success” (p. 4). Understanding how certain indicators of trust influence the efficient working of a VT is one of the keys to developing theories and practices that can help select, organize, and manage VTs effectively. Revealed through the research in the study was the suggestion that there were six essential building blocks of trust that are critical to the success of VTs. The building blocks were ranked in order of importance, as presented in Table 6 in Chapter 4 (see p. 170). The results should be viewed within the limitation that the responses of the 35 participants and that the results are not an accurate indication of the perspectives of the demographics of an entire subject base. Further studies on the views of VT members of a diversified demographic population revealed varied responses discussed in the correlation analysis section of Chapter 4.

The estimated time required to conduct the Delphi study was 4 weeks per round, any follow-up to the participants would be completed in 2 weeks, and 1 week was allotted for data analysis between each round. The schedule was on track despite competing participant work demands, institutional schedules, and holidays. The average

survey completion time for each round was 4 weeks. The five-round Delphi study consumed 23 weeks. The response rate for any round for each of the five rounds was 100%. Though time consuming, the study provides timely and useful information for understanding the building blocks of trust that influence the success of VTs.

Conclusions

The objective of the current mixed method Delphi study was to identify building blocks of trust that influence the success of VTs. The identified building blocks were ranked further in order of importance. The success of VTs was measured through the perspective of experts by rating the quality of the effectiveness of products delivered by the VTs, such as evaluating the influence of a marketing campaign that was developed by the VT. The measured deliverable was the influence of the campaign on the sales of the product.

Researchers indicated that elements such as technology, communication, behavioral factors affected the trust among the VT members (Holton, 2001; Kling & Jewett, 1994; Piccoli & Ives, 2003). Prior studies led to the development of the research questions used in the current study. There were two primary questions posed for the study:

1. How do VT members define trust in VTs used by modern day organizations?
2. What are the key components of trust that are important to ensure the success of VTs?

The null and corresponding alternate hypotheses for the current study were stated as follows:

H_{10} : There are building blocks of trust that influence the success of a virtual team.

H_{1A} : There are no building blocks of trust that influence the success of a virtual team.

H_{20} : There is a rank order of importance for the building blocks of trust.

H_{2A} : There is no order of importance among the building blocks of trust.

The aim of the study was to explore whether or not there was evidence that building blocks of trust existed in VTs. To accomplish the aim, Survey Round 1 was used to gather participants' responses on trust, the definition of trust per their perspectives, value of trust in VTs, and the component of trust that contribute to the success of VTs. During the course of the study, through the responses of the participants, it was established that trust was indeed an essential factor that influenced the success of VTs, and there were six essential building blocks of trust, ranked in order of importance that influenced the success of VTs. Thirty-five VT members participated in the five-round Delphi study that sought a consensus among individuals who have worked or were currently working with VTs as VT leaders, managers, and non-managerial members. The participants in the current study further validated that camaraderie of trust exists in VTs enabling team members to perform effectively.

Based on the analysis of the data provided in the study, hypothesis H_1 confirmed there are building blocks of trusts that influence the success of VTs and hypothesis H_2 , there are some components that are more important than the others, failed to be rejected. Posited in the first hypothesis was that there are building blocks of trusts that influence the success of VTs. Responses from 35 VT members agreed that there were building

blocks of trust that did influence the success of VTs. Through a series of five survey rounds, the survey participants arrived at a consensus suggesting that there were six essential building blocks of trust that were vital to the success of VTs.

The second hypothesis posited there was a rank order of importance for the building blocks of trust. Through the rank orders gathered over five surveys rounds, results in the data analysis for the study suggested that six building blocks of trust identified in the first hypothesis of the study, some were more important than the others were. Using the Kendall's W , the levels of consensus in responses by building blocks of trust and the corresponding rank order were compared. Calculated Kendall's W values range from 0 to 1, where 1 represents perfect agreement. "Using W , one can make a realistic determination of whether any consensus has been reached, whether the consensus is increasing, and the relative strength of consensus" (Schmidt, 1997, The Reanalysis section, para. 4).

Using the Kendall's W , the levels of consensus in responses in Survey Rounds 3, 4, and 5 were compared. The evaluation of consensus for identifying the building blocks of trust in Survey Round 3 revealed only a nominal level of consensus. The Kendall's W was only 0.294 for ranking the building blocks of trust that influence the success of VTs. With a maximum value of 1, the resulting Kendall's W value did not demonstrate a strong level of consensus prompting the administration of Survey Round 4.

The evaluation of consensus in Survey Round 4 raised the Kendall's W to 0.315 for ranking the building blocks of trust that influence the success of VTs. With a maximum value of 1, the resulting Kendall's W value did not demonstrate a strong level of consensus. In Survey Round 5, the Kendall's W value increased significantly to 0.92.

The resulting Kendall's W value demonstrated a strong level of consensus. Through the final round, the study participants were able to arrive at a close consensus on the building blocks of trust, ranked in order of importance, that are essential to the success of VTs. The arrival of the tight statistical value of the Kendall's W in Survey round 5, enabled the conclusion of this study.

Implications

Revealed through the analysis of the data results of the study were suggestions of statistically significant tightnesses in the perception of the components of trust in VTs. Certain commonalities existed regardless of the demographic variances of the survey population. Concluded through Survey Rounds 3, 4, and 5, was a possibility of close consensus on the building blocks of trust that influence the success of VTs. In the section that follows, the analysis and the inferences of the study based on the demographic commonalities or differences of the responses of the 35 study participants against each of the six identified components of trust identified in the study is presented. The limitation of the analysis and the results were based on the information shared by the 35 participants of this study. The results should be viewed within the limitation that the responses of the 35 participants and that the results are not an accurate indication of the perspectives of the demographics of an entire subject base.

In Chapter 4, provided are the results of the detailed statistical results of correlation study of each of the six building blocks of trust against the demographic characteristics of the survey population. These are the components of trust identified from the study as critical to the success of VTs. The sections that follow include

descriptions of the six components and their possible impact on demographic variables analyzed in the study.

Communication. In the analysis of building block, Communication, female VT members of the 35 study participants rated communication slightly lower than the males (difference of 0.11). The age groups of 21-30, 31-40, 41-50, and 51-60 rated communication lower than the 61-70 age group did. The difference was high, 0.7, indicating that communication was a very important component of trust that influenced the success of VTs to the participants in the age group of 61-70. In studying the rating of communication based on the ethnic background of the survey participants, the African American population rated communication 0.44 ratings lower than the Latin Americans did showing a slight variance on the rating of communication by ethnic groups. The remaining ethnic groups shared more commonalities in the ratings than the Latin Americans did. Participants with 11-15 years of experience as VT members rated communication at a much higher rate than the 6-10 years group with an average difference of 0.7 indicating that the participants who were VT members for 11-15 years believed communication to be a highly important component of the building blocks of trust. Virtual team members in the 16-20 years experience range rated communication at a lower scale than the rest of the population.

The inferences of the analysis of communication, as the most important building block of trust revealed that 61-70 year old Latin American males, who were VT members for 11-15 years, rated communication as a highly important component of trust. However, in the current study, there was only one participant in the 61-70 age group. Hence, the inference cannot be applied across for all 61-70 year old VT members, but the

inference can be used as a research question for future studies. Furthermore, researchers found a study conducted by the Center for Creative Leadership's World Leadership Study (WLS) that overall; women were less trusting than men in the workplace (Stawiski, Deal, & Ruderman, 2010, p. 2). Stawiski et al.'s finding concurs with the findings in the current study that women rated communication lower than men which indicates that since women are less trusting than men in the workplace, they tend to communicate less as well.

Accountability. The observation of the results of the study when researching the second most important building block of trust – accountability, revealed that women rated accountability 10 base points higher than men did. All age groups except for the 61-70 years rated accountability at a high rate, as did the ethnic groups of Latin America and African Americans. Participants who were VT members for 16-20 years, rated accountability higher than the remaining three groups indicating that accountability was an important component of trust in their perspectives.

Revealed in the statistical analysis of the data was the suggestion that Latin American and African American women in the age group of 61-70 years, who were VT members for 16-20 years, rated accountability as an important building block of trust in VTs. In the study, there was only one participant in the 61-70 age group. Hence, the inference cannot be applied across for all 61-70 year old VT members unless a detailed study is performed to confirm this as a hypothesis. The inference could be used as a research question for future studies.

Dependability. The third most important building block of trust, identified through this study, was dependability. Revealed in the analysis of the results of the study

was that the gender of the survey participants did not yield significantly different perspectives of the influence of dependability on the success of VTs. The age group of 31-40 indicated that a significantly higher rating on dependability than the other age groups. All ethnic groups except African Americans provided a low rating on dependability. The responses from all the participants with respect to their tenure as VT members revealed a high degree of commonality in the ratings of dependability.

Reflected in the analysis of the study were commonalities in the perspectives of the males and females participants that responded to the survey. The same commonality was witnessed with the responses of the participants based on the number of years they utilized VTs. About 29% of the survey participants belong to the 31-40 age group, which rated dependability significantly higher than the other age groups indicating that the 31-40 age group valued dependability of VTs as an highly essential building block of trust. A strong value in conducting further studies to understand the mechanics of the influence of dependability of VTs that contributes to the success of VTs.

Integrity. Revealed in the study was integrity as the fourth important building block of trust. Reflected in the statistical observations of the data was that female participants rated integrity at a slightly lower scale than the male population. Members of the age groups of 51-60 and 61-70 provided a high rating while the age group of 31-40 provided the lowest rating indicating that the 31-40 age group found integrity as a less important trait of trust than the other age groups. The analysis of the data on ethnicity pointed towards the African American population valuing integrity at a significantly high score than the Asian Indian, Caucasian, and Latin American groups that displayed commonalities from their scores on integrity. Participants with 11-15 years of experience

as VT members rated integrity at a low score while the mean average rating of the other three groups was similar indicating that the population in the age group 11-15 did not believe integrity to be a highly important component of trust.

Reflected in the findings of the study were similarities in the perspectives of the male and female participants that responded to the survey. Commonalities were also displayed among all ethnic groups except for African Americans who rated integrity at a high rating of 51-60 and 61-70 years of age. Participants having tenure of VT members in the 11-15 years groups suggested that integrity was not a very highly important building block of trust. Participant comments align with Platt's (1999) perspective that "Trust takes time to build, but no time at all to destroy" (p. 3) and further asserted that factors such as competence and integrity underlined trust on VTs. Further studies on the social influence of integrity on the success of VTs, focused on the perspectives of ethnic populations through all age groups used in the current study, may yield interesting information to help understand the success of VTs among ethical backgrounds.

Collaboration / Teamwork. The fifth important building block of trust was found to be collaboration and teamwork. About 90% of the survey participants mentioned teamwork and or collaboration as an important component of trust that influence the success of VTs. Provided in an evaluation of the statistical data of the surveys was evidence that female VT members rated collaboration and team lower than the male members did. Members of the age group of 61-70 provided a higher rating than the remaining three age groups indicating that the older age group believed collaboration / teamwork to be a highly important component of trust than the other age groups. The study of the data on ethnicity against collaboration / teamwork revealed that the African

American population rated collaboration / teamwork at a low score when compared to the average rating of the remaining ethnic groups though the difference was not highly pronounced. Participants with 16-20 years of experience as VT members rated collaboration / teamwork at a low score than the other three groups indicating that the population in the age group 16-20 did not believe collaboration / teamwork to be a highly important component of trust.

Considering the high volume of outsourcing of jobs from the United States to India, it interesting to note that Asian Indian participants with 6-10 years tenure as VT members valued collaboration and teamwork as essential building blocks of trust. Shaker (2010) reported on the success of outsourcing and explained, “Trust in teams enables cooperation and becomes the means for complexity reduction in situations where individuals must act with uncertainty because they are in possession of ambiguous or incomplete information” (p. 11). Shaker’s analysis resonates with the findings in the current study where teamwork and collaboration from the Asian Indian population having 6-10 years tenure in VTs are rated high.

Commitment. The sixth and final most important building block of trust identified in the study was commitment. Derived through the observations from the analysis was that female participants rated commitment at a higher level than the male population did. Provided in a comparison of the data of the age groups against commitment was a varied rating average wherein the older age group of 61-70 years rated commitment lower than the age group of 51-60 did. Members of the 51-60 years rated commitment at much higher rating, indicating that the 51-60 age group valued commitment to be a highly important component of trust in VTs. Revealed in the

analysis of the study of the data on ethnicity against commitment was that the African American population rated commitment at a high score when compared to the average rating of the remaining ethnic groups. Participants with 16-20 years of experience as VT members rated commitment at a higher score than the average rating of the 6-10 years. Jones et al., (2005) explained that a key to an effective VT was that the VT members kept their commitments to each other and therefore only made commitments they could fulfill.

General Observations and Conclusions

Participant observations support the perspectives of scholars whose research have explained trust as a contributing factor in the success of VTs. Echoed in the analysis of the results were the findings and indications made by various researchers who have studied trust in VTs and their influence on the success of VTs such as Jarvenpaa et al. (2004), Lipnack and Stamps (2000), Powell et al. (2004), and Holton (2001). Several participants commented throughout the study on the importance of the six building blocks of trust and the influence on the success of VTs. One participant commented, “One of the key success factors of virtual teams is to ensure good, consistent communication among team member in different locations” (Participant 8). The participant elaborated further, “Consistent, formal and informal communication is key to successful delivery of virtual team projects and in building team morale that will contribute to future projects” (Participant 8). Another participant highlighted, “They must be accountable for their deliverables” (Participant 5).

One of the key deliverables of the study was to examine the definition of trust in VTs based on the responses gathered from the study participants. Development of a definition of trust in VTs was based on the responses that were collected. According to

study participants, VTs are defined as a team of employees having unique skills, located in distant locations, whose members collaborate with one another, using technology, and depend on one another to accomplish assigned organizational goals. The participants define trust in VTs as a team with members who communicate effectively with each other, are accountable for their actions, depend on one another to complete each member's assigned task, work with a high degree of integrity, collaborate with one another as a team, and show a high level of commitment. Based on the responses generated by the five surveys in the study, a VT illustration was designed, which is explained in the section that follows.

Virtual Team Illustration

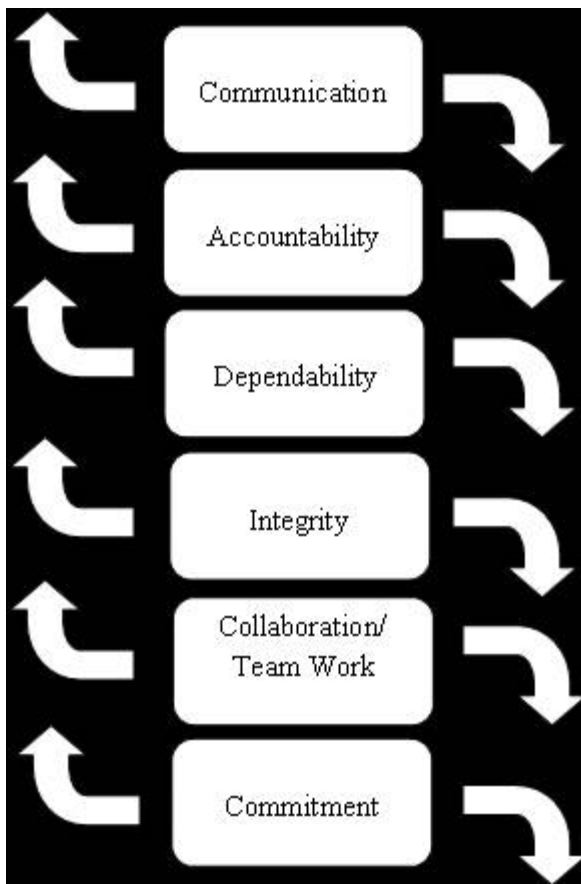
Presented in the section is another result of the study – a VT illustration that may be used by business owners and corporations that encourage VTs and VT leaders to manage their teams efficiently. Although numerous organizational leaders use VTs, only a few developed educational programs to teach the employees how to use VTs successfully. The VT illustration may assist VT practitioners to understand how to be effective and successful. Organizational leaders who utilize VTs may also find significant value and use of the illustration to train the VT members to increase efficiencies.

This section was designed to present the VT illustration, which was built using the data results from the mixed Delphi study. In the first part of the study, identified were the building blocks of trust that influenced the success of VTs. Revealed in the study were six essential components. In the second part of the study, a ranking of the six building blocks of trust in order of importance was obtained. In the final part of the

survey, a VT illustration was designed, the intent of which was to provide businesses and VT leaders a tool to use within their VTs to gain maximum efficiency. Another goal of the VT illustration was to use it as a training tool for new VT members in colleges and universities, corporations, healthcare, military, and other institutions that utilize VTs. Due to the limitation of the population size in the study, it is recommended the use of the study as a base to utilize the VT illustration in the designing of VTs curriculum by studying the influence of the demographic data with a much larger sample size.

Presented in Figure 11 is the illustration created based on the data analysis of the study. Each of the six building blocks of trust that influence the success of VTs is listed in order of importance. The illustration is simple depiction to interpret. Indicated by the arrows on the left side of the illustration is suggestion that the higher the levels of the six essential building blocks of trust (communication, accountability, dependability, integrity, collaboration / teamwork, and commitment), the higher are the levels of trust among VTs resulting in a higher success rate of the VTs. Consequently, indicated by the right side of the illustration is that the lower the levels of the six essential building blocks of trust (communication, accountability, dependability, integrity, collaboration / teamwork, and commitment), the lower are the levels of trust among VTs resulting in a lower success rate of the VTs.

Higher Levels of Building Blocks of Trust = Higher Rate of Success of VTs



Lower Levels of Building Blocks of Trust = Lower Rate of Success of VTs

Figure 11. Virtual Team Illustration.

Recommendations

Every VT leader, VT member, and corporate official that uses VTs may benefit from the study that not only includes identification, but also a ranking in order of importance of the essential building blocks of trust that influence the success of VTs. In the study, identified were numerous opportunities of further study that may assist the end users of VTs to understand better and apply the mechanics of successful VTs. Affirmed by the study was that trust was vital to the success of VTs. Also confirms was that there were certain components of trust that were more essential than others were.

Examined in the study of VTs were the effects of gender, age range, ethnicity, and VT tenure on the six component of trust identified by participants in the study. A comprehensive correlation analysis presented further research opportunities that can provide meaningful value to the utilization of VTs. All six building blocks of trust discussed in the study were perceived as necessary to the success of VTs. The interesting fact about VTs is that researchers studied VTs from numerous aspects: technology (Breu & Hemmingway, 2004), organizational management (Handy, 1995), education (online, long distance) (Coutu, 1998), and even from the social aspects that include honesty, integrity, trust, and more (Bergiel et al., 2006). Affirmed by the results of the current study were the similar findings by Bergiel et al., that there were social and moral values owned by people who played a vital role in their roles in their personal and professional lives. In the current study, each of the six components – communication, accountability, dependability, integrity, collaboration / teamwork, and commitment – are values that are possible for VT practitioners to possess.

The observations shared by the participants in the study reveal practitioner perceptions regarding the influence of the building blocks of trust that influence the success of VTs. The current study was limited to 35 VT practitioners from corporate organizations based in south Florida. Virtual teams are in all types of business segments, including the military, health care (telemedicine), and education (online classrooms and distance learning). Indicated by the results of the study was that further research was necessary to determine if there was a stronger correlation between the building blocks of trust that influence the success of VTs to the gender, age, ethnicity, and tenure of VT members from different business segments used in the world. Virtual teams exist in

organizations around the world. Consequently, organizational leaders worldwide may apply the generalized results of the current study to VTs. Further studies in a larger group of VT members may yield different results. Kotter (1990/2001) posited, “Individuals who are effective in large leadership roles often share a number of career experiences” (p. 96). Hence, it is recommended that the study may have a different outcome using another geographic region or population.

Revealed in the study were three main possible outcomes.

1. Trust is an important component in the study of VTs.
2. There are certain building blocks of trust that are essential to the success of VTs.
3. A VT illustration, the intent of which is to provide businesses and VT leaders a tool to use within their VTs to gain maximum efficiency.

The objective of using a VT illustration is to use it as a training tool for new VT members in colleges and universities, corporations, healthcare, military, and other institutions that utilize VTs. Due to the limitation of the population size in the study, it is recommended that the use of the study serve as a base to utilize the VT illustration in the designing of VTs curriculum by studying the influence of the demographic data with a much larger sample size. The intent of the recommendation is to gather a much accurate analysis by use of a large sample size that can be used to represent more accurate data on the influence of the demographic population on the building blocks of trust identified through the study.

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Appendix A: Initial Likert-type Survey Instrument

Round One of Delphi Study

Please respond to the following questions based on your experience and knowledge of being virtual team members.

1. Define success of virtual teams. How does this relate in terms to successful delivery of virtual team projects?
2. How do you measure the success of virtual teams you have participated in as a virtual team member? Please explain the metrics you use to measure the success of virtual teams.
3. What factors impact the success of virtual teams?
4. Is trust an important component of success in virtual teams? Please explain your response.
5. Define trust in virtual teams.
6. What building blocks of trust have you noticed within virtual teams you have participated in, as a virtual team member, that contribute significantly to the success of your virtual team?
7. Please list the building blocks that you have identified as significant contributors which have impacted to the success of virtual teams you have participated in.
8. In order of importance, rank the building blocks of trust (identified by you in question 6) on a scale of 1-5, where:
 - a. 1 = Not important
 - b. 2 = Somewhat important
 - c. 3 = Important
 - d. 4 = Very Important
 - e. 5 = Essential

Place the number on the blank line to the right of the building block identified.

For example, if you have identified A, B, and C as the components of trust in your responses, rank each as described in the table below.

Building Block of Trust	Rank	Open Comments
Building Block A	3 (Important)	This building block is significant to a virtual team's success because....
Building Block B	5 (Essential)	This building block is essential to a virtual team's success because....
Building Block C	2 (Somewhat important)	This building block is not highly important to a virtual team's success because....

Appendix B: Permission to Reproduce Figure 2

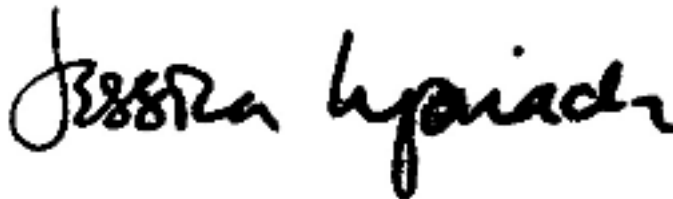
Dear Ms Lipnack,

I am a student in the Doctoral Program in Organizational Leadership at the University of Phoenix. I am preparing to execute my doctoral dissertation project, entitled “A Delphi Study: Influence of Trust on the Success of Virtual Teams”. During my literature review section, I came across a figure that was published in your article Virtual Teams: The new way to work on page 16. The figure was entitled Exhibit 1: Organization Chart of Eastman Chemical Company. This figure adds significant value to the content of my study. I request your permission to reproduce this figure in my study proposal and would greatly appreciate if you could grant me approval to use this figure.

Please sign this permission form, which will be added as an appendix to my dissertation once completed and published.

By signing this form I acknowledge and I understand the request of reproducing Figure 1 in this proposal. My signature on this form also indicates that I am 18 years old or older and that I give my permission to reproduce Figure: Organization Chart of Eastman Chemical Company in the study described.

Jessica Lipnack



Date: 10/15/2009

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu
xxxxxxxxxx@adt.com
Tel: Cell: ### ## ###
Cell 2: ### ## ###

Appendix C: Constructs Identified as Antecedents to Factors of Trust

Construct	Operational Definition	# of survey Items	Sample Survey Question(s)	Source
Geographical Distance (GD)	Team members are physically in different cities, towns, states, countries, etc. (Members that are in the same building but may be on different floors (or parts of a floor) are considered to be co-located).	0	This data is known for all members	
Temporal Distance (TD)	Some or all of the team members are in different time zones	4	Most team members were in the same time zone	Sobel-Lojeski et al. (2006)
Relational Distance (RD)	Some or all of the team members work for different organizations	0	This data is known for all members	
Cultural Distance (CD)	Some or all of the team members have different demographic, organizational, values, and /or communication style differences	0	Inadvertently omitted in survey	
Social Distance (SD)	Some or all of the team members are in different hierarchical or social strata within the context of the team or within the confines of the networked organization	3	Status was derived mainly from what people contributed, not from title, affiliation or position	Sobel-Lojeski et al. (2006)
Relationship Distance (ReID)	Some or all of the team members have no common working history with each other or do not know some of the same people	3	I knew most of the other team members prior to the start of the project	Sobel-Lojeski et al. (2006)
Interdependence Distance (ID)	Some or all of the team members do not perceive that their goals and / or tasks are independent	6	The tasks and objectives of each project member depended upon the performance of	Sobel-Lojeski et al. (2006)

Face to Face (FtF)	The team meets face to face at least some of the time, otherwise, communication is done through technology mediation	3	other team members The team had regular face to face meetings	Sobel-Lojeski et al. (2006)
Multi-tasking (MT)	Some or all of the team members are working on other projects and have multiple deliverables due at any given point in time	3	While working on this project I was assigned to several other projects	Sobel-Lojeski et al. (2006)
Technical Skills (TS)	Team members have the necessary skill and support to do their job	3	I was skilled at using the Internet and other electronic media for communicating with the team	Sobel-Lojeski et al. (2006)
Team Size (TS)	Number of members on the team	0	All members were from the same team, so this remained constant	

Note: Developed from Werko, 2006, pp. 51-52. *Virtual teams: The influence of virtual*

distance® on trust and organizational citizenship behavior. Available at ProQuest

Dissertation and Theses database. (AAT No. 3223525)

Appendix D: Permission to Reproduce Table 3

Dear Mr. Bergiel,

I am a student in the Doctoral Program in Organizational Leadership at the University of Phoenix. I am preparing to execute my doctoral dissertation project, entitled “A Delphi Study: Influence of Trust on the Success of Virtual Teams”. During my literature review section, I came across a table that was published in your article: The reality of Virtual teams. The table was entitled Building Blocks of Trust. This table adds significant value to the content of my study. I request your permission to reproduce this figure in my study proposal and would greatly appreciate if you could grant me approval to use this table.

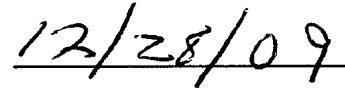
Please sign this permission form, which will be added as an appendix to my dissertation once completed and published.

By signing this form I acknowledge and I understand the request of reproducing Table 1 in this proposal. My signature on this form also indicates that I am 18 years old or older and that I give my permission to reproduce Table: Building Blocks of Trust in the study described.

Blaise Bergiel



Signature



Date

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxx@adt.com

Tel: Cell: ### ## ##

Cell 2: ### ## ##

Appendix E: Email Invitation to Participate in Study

Date: 05/11/2010

Dear _____,

I am a student in the Doctoral Program in Organizational Leadership at the University of Phoenix. I am preparing to execute my doctoral dissertation project, entitled “A Delphi Study: Influence of Trust on the Success of Virtual Teams.” I have identified you as a candidate who meets the criteria for inclusion in this study, For this reason, I am inviting you to participate in my research project, critical not only to my educational pursuits but also to virtual teams leadership across business corporations. For the purposes of my study, I propose to use the Delphi technique, involving a short series of surveys, to determine the building blocks of trust, ranked by order of importance, that impact the success of virtual teams. A Delphi study consists of arriving at a consensus from a panel of virtual team practitioners by administering multiple phases of surveys until the group, as a whole, arrives at a consensus.

In order to build the sample, I respectfully request your participation, as a virtual team practitioner, to provide your responses that would greatly help in the successful completion of my study. It would be a tremendous help to me if you would accept to become a participant for this study. I would also be collecting demographic information such as your title, telephone number and e-mail address so that I may establish contact with you at the start of my survey. Be assured that your personal information will be held in the strictest of confidence, and study participants’ anonymity will be protected.

The research design calls for a sample consisting of 50 members who either have been of currently are virtual team members, from corporations based in South Florida.

The study participants will be selected through a purposeful sampling technique to solicit

expertise from virtual team practitioners. All study participants will have currently or in the past one year worked or led virtual teams.

I sincerely hope that you will assist me in this project and I promise that, if you agree to participate, I will do everything I can to assure a pleasant and fruitful experience for all participating members. Your participation, while completely voluntary, is **absolutely essential** to me in my efforts to complete this doctoral-level study and, in so doing, uncover some valuable information for all of us in understanding how trust plays a vital role in the success of virtual teams.

I will contact you via email within a week of sending you this email invitation letter to discuss any concerns you may have and to gauge your level of interest in this study. If you would like to contact me in the interim, please find my information below.

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxx@adt.com

Tel: Cell: ### ## ###

Residence: ### ## ###

Appendix F: Reminder E-mails

First reminder email

Date: 06/1/2010

Dear Participant,

The first (Round 1) questionnaire was sent to you via an email link on <https://www.surveymonkey.com/s/##XXX#>. I am sending this reminder, as I have not yet received your completed questionnaire for Phase 1. You can still complete this questionnaire. It is extremely important that I receive your completed survey questionnaire by 06/15/2010. Your particular viewpoints are important to this study. If you have not done so already, please complete your questionnaire.

Please let me know if you have any questions. Again, your cooperation and participation is greatly needed and will be much appreciated.

Attached please find another copy of the Phase 1 questionnaire.

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxxxx@adt.com

Tel: Cell: ### ## ##

Cell 2: ### ## ##

Second reminder email

Date: 06/22/2010

Dear Participant,

I still have not received your completed survey for Phase 1. Please contact me, should you have any questions about the procedures for this study. Again, you can still participate in this phase.

It is extremely important that I receive your completed survey questionnaire by 07/01/2010. Your particular viewpoints are important to this study. If you have not done so already, please complete your questionnaire.

Thank you, again for agreeing to assist me in this project. Your continued cooperation is essential to my completing this doctoral program.

Attached please find another copy of the Phase 1 questionnaire.

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxxxx@adt.com

Tel: Cell: ### ## ###

Residence: ### ## ###

Appendix G: Permission to Record

Date:

Dear _____:

Please confirm your permission for the recording of your responses by the researcher, and University of Phoenix to the right to use, distribute, copy and edit the recording, in whole or in part, in any form or media for non-commercial, educational purposes, and to grant rights to third parties to do any of the foregoing, by signing below and returning this letter to me.

Sincerely,

Accept and Acknowledge

Decline

Name: _____

Name: _____

Signature: _____

Signature: _____

Date: _____

Date: _____

Appendix H: Informed Consent Process

Date:05/27/2011

Dear _____,

Thank you for your interest to participate in my study that I am pursuing as a part of my Doctor of Management degree, with an emphasis in Organizational Leadership, through the University of Phoenix. My doctoral research is entitled: “A Delphi Study: Influence of Trust on the Success of Virtual Teams”. The purpose of this study is for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams.

Your participation will involve completing a total of three to four survey questionnaires via e-mail or by hand, over a period of about 10 weeks. Each survey will take approximately 30 minutes to complete. **Remember, the idea of this study is to attain as strong of an agreement as is possible** to identify and rank the components of trust in virtual teams.

Your participation in this study is **very important** to me, yet completely voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the research will be published, but your name will not be used, and your results will be maintained in confidence. Although there may be no direct benefit to you, the benefit of your participation will result in a professional development and training guide for virtual team members (leaders, managers, and non-managerial employees) across business organizations.

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will **not** be reported to indicate individual responses, only aggregate summaries of the results will be provided to the study participants. No one other than I will know your individual responses to this questionnaire. After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of

that questionnaire, as well as the next phase of questions, until all phases have been completed.

If you have any questions concerning this study, please do not hesitate to contact me. I will be happy to do whatever I can do to accommodate any concerns you may have. My contact information is below.

Please note nominations close on _____.

Thank you very much!

Please select any one option, sign the form and return to me by _____.

By signing this form I acknowledge that I understand the nature of the study, the potential risks to me as a participant, and the means by which my identity will be kept confidential. My signature on this form also indicates that I am 18 years old or older and that I give my permission to voluntarily serve as a participant in the study described.

No thank you. I am not interested in participating in this study at this time.

Participant's Signature

Date

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu
xxxxxxxxxx@adt.com
Tel: Cell: #### ### #####
Cell 2: #### ### #####

Appendix I: Email and Informed Consent

Begin

Appendix J: Pilot Participant Invitation

Begin

Appendix K: Email to Pilot Participants

Date:

Dear _____:

Thank you for agreeing to participate in this study, which identifies and ranks the building blocks of trust that impact the success of virtual teams.

Attached below you will find the questionnaire and a list of questions about the survey for your consideration. Please review the survey and make any comments you deem necessary about refining the document. Some of the features to review are clarifying unclear questions/items, providing further instructions, and problems foreseen in completing and returning the survey via e-mail. Please return this questionnaire by the end of the week.

Please let me know if you have any questions or concerns. I will be happy to do whatever I can do to accommodate any concerns you may have. My contact information is below.

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxxxx@adt.com

Tel: Cell: ### ## ##

Cell 2: ### ## ##

Appendix L: Pilot Participant Questions

1. Did you have a clear understanding of the questions posed in the survey?

Yes No

If no, explain below.

2. Did you understand the instructions explaining how to complete the survey?

Yes No

If no, explain below.

3. Did you find the format of the survey easy to follow?

Yes No

If no, explain below.

4. Did the rating scale (1, *not important*; 2, *slightly important*; 3, *important*, 4, *very important*; 5, *essential*) make sense to you for this study?

Yes No

If no, explain below.

5. Are there any additional questions that you think should be added to this survey?

Yes No

If yes, list additional questions below.

6. Are there any questions that you think should be deleted from this survey?

Yes No

If yes, list questions below.

Appendix M: Follow-up Participant Invitation

Follow-up invitation

Date:05/27/2010

Dear _____,

I am a student in the Doctoral Program in Organizational Leadership at the University of Phoenix. I am preparing to execute my doctoral dissertation project, entitled "A Delphi Study: Influence of Trust on the Success of Virtual Teams." I identified you as a candidate who met the criteria for inclusion in this study, For this reason, I sent you an invitation letter on 5/12/2010 to participate in my research project, critical not only to my educational pursuits but also to virtual teams leadership across business corporations.

I am sending this reminder, as I have not yet received your signed letter accepting my invitation to participate in this study. You can still complete this letter. It is extremely important that I receive your signed and accepted letter by 06/01/2010. Your particular viewpoints are important to this study. Please let me know if you have any questions. Again, your cooperation and participation is greatly needed and will be much appreciated.

Attached please find another copy of the letter of invitation.

Sincerely,

Alka Khungar

University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxx@adt.com

Tel: Cell: ### ## ##

Residence: ### ## ##

Appendix N: Invite Survey Round 1

Date: 06/01/2010

Dear _____:

Thank you for agreeing to participate in this study, which identifies and ranks the building blocks of trust that impact the success of virtual teams. The title of the study is A Delphi Study: Influence of Trust on the Success of Virtual Teams. Please visit the following *website* (link to be provided) to access the survey questionnaire. There are two basic parts to the questionnaire. The first section will be used to solicit your opinions about the importance of trust and identifying the building blocks of trust that impact the success of virtual teams. The second section will be used to rank your opinion about the importance of the identified building blocks of trust on a scale of 1-5 (1: Not important – 5: Essential).

Please remember, the goal is to work together to come to as strong of an agreement as possible on the areas of concern listed in the survey instrument. You will find additional instructions on the first page of the survey. Please try to complete and return the questionnaire to me by 06/15/2010. Please let me know if you have any questions or concerns. I will be happy to do whatever I can do to accommodate any concerns you may have. My contact information is below.

The anticipated date for your receipt of the summary of the results to Phase 1 questionnaire is _06/22/2010.

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate

xxxxxxxxx@email.phoenix.edu
xxxxxxxxx@adt.com
Tel: Cell: ### ## ###
Residence: ### ## ###

Dear valued participants,

Thank you for your interest to participate in my study that I am pursuing as a part of my Doctor of Management degree, with an emphasis in Organizational Leadership, through the University of Phoenix. My doctoral research is entitled: “A Delphi Study: Influence of Trust on the Success of Virtual Teams.” The purpose of this study is for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams.

Your participation will involve completing a total of one to three survey questionnaires via e-mail or by hand, over a period of about 10 weeks. Each survey will take approximately 30 minutes to complete. Remember, the idea of this study is to attain as strong of an agreement as is possible to identify and rank the components of trust in virtual teams.

Your participation in this study is very important to me, yet completely voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the research will be published, but your name will not be used, and your results will be maintained in confidence. Although there may be no direct benefit to you, the benefit of your participation will result in a professional development and training guide for virtual team members (leaders, managers, and non-managerial employees) across business organizations.

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will not be reported to indicate individual responses,

only aggregate summaries of the results will be provided to the study participants. No one other than I will know your individual responses to this questionnaire. After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of that questionnaire, as well as the next phase of questions, until all phases have been completed.

Please note nominations close on _06/26/2010.

Select any one option, sign the form and return to me via email, or mail by 06 /26/2010.

Mailing address:

XXXXXXXX St.

Wellington, FL

#####

___ By signing this form I acknowledge that I understand the nature of the study, the potential risks to me as a participant, and the means by which my identity will be kept confidential. My signature on this form also indicates that I am 18 years old or older and that I give my permission to voluntarily serve as a participant in the study described.

Please click on the link to begin the survey:

<https://www.surveymonkey.com/x/xxxxxx>

Participant's Name

Date

___ No thank you. I am not interested in participating in this study at this time.

Participant's Name

Date

If you have any questions concerning this study, please do not hesitate to contact me. I will be happy to do whatever I can do to accommodate any concerns you may have.

My contact information is below.

Sincerely,

Alka Khungar

University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxx@gmail.com

Tel: Cell: ### ### ####

Cell 2: ### ### ####

Appendix O: Summary of Survey Round 1

Participant #	BB A	BB B	BB C	BB D	BB E	BB F	BB G	BB H	BB I	BB J
1	Personal Integrity	Group Integrity	Openness	Perceived	Trust	Accountant	"Presence" in the Form of Participation			
2	Ownership and accountability	Recognition	An anonymous way for team members to bring forth contentious issues	Team leader honesty						
3	Commitment	Cohesion	Communication	Collaboration	Honesty	Integrity	Accountability	Quality	Loyalty	
4	Responsibility	Timeliness	Goal oriented	Attendance good	Feedback	Gratitude	Fraternity	Satisfaction		
5		timeliness	Good listening skills	consensus seeking						
6	Honesty	timeliness	Open-minded	skills	consensus seeking	ability	respect	honesty	Integrity	Responsibility
7	accountability	Reliability	Cooperation	creativity	willingness	Strive for success	Determination	Self Respect	Operational Excellence	Metrics
8	Teamwork	Customer focused	Accountability	Integrity	Honesty	Sense of belonging				
9	Accountability	Integrity	Honesty	Commitment	Responsiveness					
10	Open-mindedness	Ability to work independently	Competence	Accountability	Relevant experience	Commitment				
11	Accountability	Responsibility	Integrity	Honesty	Drive	Competency	Reliability	Fairness		
12	honesty	Trust	accountability	integrity	teamwork	communication	timeliness	teamwork		
13	obligation	Confidence	honesty	integrity	reliability					
14	You are your word	You are your word	You are your word	You are your word	You are your word	You are your word	You are your word	You are your word	You are your word	You are your word
15	Accountability	Motivation	Respect	Open mindedness	Leadership	Organization	Mutual understanding	Initiative	Sense of responsibility	Teamwork
16	accountability	Responsible	honest	transparency	previous success	previous experience	attitude			
17	Honesty	Accountability	Integrity	Sincerity						
18	Accountability	Responsiveness	Motivation							
19	accountability	honesty	reliability							
20	honesty	Accountability	enthusiasm	motivation						
21	Integrity	Teamwork	Accountability			organization	communication			
22	Trust	Accountability	integrity	contribution	respect					
23	honesty	Accountability	reliability	candidness						
24	Responsibility	Honesty								
25	Communication	Accountability	Professionalism	Maturity	Time Management	Technical skills				
25	Honesty	Holding to	integrity	Offering						

		time line		alternative solutions					
26						Accountability	Experience working in virtual teams	Bandwidth to be part of the team	Sense of humor
	Functional Knowledge		Sense of Urgency	Honesty	Integrity				
27		Collaborative Good Communication							
	Accountability		Approachability	Listening skills	Patience				
28						Responsibility			
	Honesty honesty	Dependability integrity	Capability trust measurable performance metrics	Reliability knowledge	Accountability				
29						Micro management	Quarterly Offsite		
30				Open communication	Delegation				
	Accountability	Integrity							
31			Reliability	Respect	Communication	Processes Communication	Honesty		
	Honesty	Integrity					Engagement	Solidarity, congeniality, affiliation	Commitment
32									
	Honesty	Accountability	Responsibility	Information sharing length of relationship with team member	compassion				
33									
	Honesty	Knowing the person	experience with team member	Ability to accommodate cultural differences					
34									
	Accountability Trust	Integrity Accountability	Communication skills Integrity	Sincerity	Team work Communication				
35									

Appendix P: Invite to Survey Round 2

Dear valued team members,

Once again, thank you for your time and interest to participate in my study that I am pursuing as a part of my Doctor of Management degree, with an emphasis in Organizational Leadership, through the University of Phoenix. My doctoral research is entitled: “A Delphi Study: Influence of Trust on the Success of Virtual Teams”. To remind you, the purpose of this study is for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams.

Please click on the link below to complete round two of the survey. There are two questions in this survey.

<https://www.surveymonkey.com/x/XXXXXXXX>

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will not be reported to indicate individual responses, only aggregate summaries of the results will be provided to the study participants. No one other than I will know your individual responses to this questionnaire. After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of that questionnaire, as well as the next phase of questions, until all phases have been completed.

Please note nominations close on 07/24/2010.

If you have any questions concerning this study, please do not hesitate to contact me. I will be happy to do whatever I can do to accommodate any concerns you may have.

My contact information is below.

Sincerely,
Alka Khungar
University of Phoenix Doctoral Candidate
xxxxxxxxxx@email.phoenix.edu
xxxxxxxxxx@gmail.com
Tel: Cell: ### # ## #
Cell 2: ### # ## #

Appendix Q: Summary of Survey Round 2

Begin

Appendix R: Invite Survey Round 3

Dear valued participants,

Thank you for your responses to survey round 2. I am very excited to inform you that we are very close to coming to a consensus. Based on your responses of survey round 2, I extracted the building blocks of trust that received a rating score of 4.00 and above. In round 3 of the survey, I have listed the 16 components of trust and request you to rate them in order of importance.

To remind you, the purpose of this study is for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams.

Please click on the link below to complete round two of the survey. There are two questions in this survey. It should not take more than 3 -5 minutes of your time.

<https://www.surveymonkey.com/x/XXXX#XX>

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will not be reported to indicate individual responses, only aggregate summaries of the results will be provided to the study participants. No one other than I will know your individual responses to this questionnaire. After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of that questionnaire, as well as the next phase of questions, until all phases have been completed.

Please note nominations close on 08/30/2010.

If you have any questions concerning this study, please do not hesitate to contact me. I will be happy to do whatever I can do to accommodate any concerns you may have.

My contact information is below.

Sincerely,

Alka Khungar
University of Phoenix Doctoral Candidate
xxxxxxxxxx@email.phoenix.edu
xxxxxxxx@gmail.com
Tel: Cell: ### ## #####
Cell 2: ### ## #####

Appendix S: Summary Survey Round 3

Begin

Appendix T: Invite Survey Round 4

Dear valued participants,

Thank you for your responses to survey round 3. I am very excited to inform you that we are at the last leg of arriving at a consensus. Based on your responses of survey round 3, I extracted the building blocks of trust that rated as the most important components of trust that influence the success of virtual teams. In round 4 of the survey, I have listed the 6 components of trust and request you to rate them in order of importance.

To remind you, the purpose of this study is for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams.

Please click on the link below to complete round two of the survey. There are two questions in this survey. It should not take more than 3 minutes of your time.

<https://www.surveymonkey.com/x/#XX##XX>

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will not be reported to indicate individual responses, only aggregate summaries of the results will be provided to the study participants. No one other than I will know your individual responses to this questionnaire. After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of that questionnaire, as well as the next phase of questions, until all phases have been completed.

Please note nominations close on 09/28/2010.

If you have any questions concerning this study, please do not hesitate to contact me. I will be happy to do whatever I can do to accommodate any concerns you may have.

My contact information is below.

Sincerely,

Alka Khungar

University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxxx@gmail.com

Tel: Cell: ### ## ##

Cell 2: ### ## ##

Appendix U: Invite Survey Round 5

Dear valued participants,

Thank you so much for your responses to survey round 4. I truly appreciate your patience, time and interest in my study. The responses I received from each one of you in round 4 provided greater insight into the six components you ranked. As a group, our goal is to arrive at a close consensus on the top most important components of trust that influence the success of virtual teams. Upon conducting the statistical analysis of the results from round 4, it was determined that I need a tighter consensus than what was achieved. Therefore, I have designed round 5 of the survey so that you have to select the more and less important of the 1st and 2nd, 3rd and 4th and 5th and 6th components of trust as they were ranked in round 4.

Please click on the link below to complete round five of the survey. There are four quick questions in this survey. It should not take more than 3 minutes of your time.

<https://www.surveymonkey.com/x/XXXXXX#X>

To remind you, the purpose of this study is for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams.

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will not be reported to indicate individual responses, only aggregate summaries of the results will be provided to the study participants. No one other than I will know your individual responses to this questionnaire.

After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of that questionnaire, as well as the next phase of questions, until all phases have been completed.

Please note nominations close on 10/28/2010.

If you have any questions concerning this study, please do not hesitate to contact me. I will be happy to do whatever I can do to accommodate any concerns you may have.

My contact information is below.

Sincerely and with most appreciation,

Alka Khungar

University of Phoenix Doctoral Candidate

xxxxxxxxx@email.phoenix.edu

xxxxxxxxx@gmail.com

Tel: Cell: ### ## ##

Appendix V: Participant Thank-you

Dear valued participants,

It is my pleasure to inform you that with the completion of round 5 of the surveys, as a group, we have arrived at a consensus that deems my study complete. Thank you so much for your continued commitment and participation to all the five survey rounds. I do realize that you invested a great amount of your time and am truly grateful to every one of you.

In terms of my next steps, I will spend the next 30 days writing the final two chapters of my dissertation which will comprise providing a detailed description of the findings of each survey that was conducted. I will then submit my proposal for review and prepare for an oral defense with the Dean of University of Phoenix. Upon receiving approvals from the Dean, my mentor and my committee members, my thesis will be entirely complete. This whole process takes anywhere from 2-4 months. Based on this timeline, I expect to be writing back to all of you around February 2011, hopefully with the news of my thesis being approved. At that time, I will send you an electronic copy of my dissertation.

The purpose of this study was for a panel of active virtual team practitioners to reach a consensus, or as strong of an agreement as is possible, in identifying and ranking, in order of importance, the building blocks of trust, which may influence the success of virtual teams. I would not have been able to reach this stage without your help and want you to know that I greatly appreciate your support and expertise.

In this research, there are no foreseeable risks to you. Your responses will be held in strict confidence, and the data will not be reported to indicate individual responses, only aggregate summaries of the results will be provided to the study participants. No one

other than I will know your individual responses to this questionnaire. After receiving and analyzing each questionnaire, I will send you an aggregate summary of the results of that questionnaire, as well as the next phase of questions, until all phases have been completed.

Sincerely and with most appreciation,

Alka Khungar

University of Phoenix Doctoral Candidate

xxxxxxxxxx@email.phoenix.edu

xxxxxxx@gmail.com

Tel: Cell: ### ## ##

Cell 2: ### ## ##

Appendix W: Transcription of Survey Round 1 Qualitative Responses

Survey Round 1, Question 1. Define success of virtual teams. How does this relate in terms to successful delivery of virtual team projects?

Participant 1: “Virtual Team success is not the only, but a key, contributor to project success, which can be generally defined as meeting the key metrics of scope, schedule, cost, and quality.”

Participant 2: “Success for virtual teams is being able to enlist feedback from team members freely and conveniently in a timely fashion to make progress on the effort being worked on by the team.”

Participant 3: “Since virtual teams allow companies to procure the best talent without geographical restrictions, it creates many benefits for internal departments, and one being the bottom line, which is “Time” and “Time is Money”. Increased productivity equals doing the same job for less amount of time, equals bigger savings and more profitability in the long run.

Success is determined if the goal established is attained. Trust in your co-workers is an important factor in successful delivery of projects.”

Participant 4: “Resolution of an existing problem.”

Participant 5: “One and the same.”

Participant 6: “A successful virtual team works well together and has a wide variety of talent and contributions. They deliver outstanding results on time on their projects.”

Participant 7: “Success is feeling connected to a wider team and working together using different methods of communication. Successful team projects are measured in the same way for virtual teams as we measure teams on site: delivery time,

communication, cost of the project.”

Participant 8: “One of the key success factors of virtual teams is to ensure good, consistent communication among team member in different locations. Consistent, formal and informal communication is key to successful delivery of virtual team projects and in building team morale that will contribute to future projects.”

Participant 9: “Defining the roles and responsibilities of individual team members and identifying the steps involved in ensuring timely completion of projects. Real time communications between the team members to facilitate problem solving to meet deadlines and ensure quality of the work.”

Participant 10: “Success of Virtual Teams is being able to complete tasks or projects regardless of geographical location or time differences. To be successful each individual needs to understand what their role in the team is and be able to complete their part of the project and report back to the team on a periodic basis.”

Participant 11: “A team where each team member values the resources being built; respects the talent and contributions of other team members; trusts that all deadlines will be met; and, as a creative problem solver, and enjoys contributing to the success of the team.”

Participant 12: “Virtual teams are successful when they accomplish the mission they were assigned.

1. Open Communication
2. Project completion with goal attainment
3. Clearly defined goals and objectives as well as consequences for not meeting them
4. Success is meeting milestones set by the point person.”

Participant 13: “The only difference between virtual teams and in-person teams is physical presence and in the case of virtual teams, the inability to read body language or read a person's emotions. The success criteria remain the same in my opinion.”

Participant 14: “Success of virtual teams means successful communication leading to a project's completion. Roles and deadlines must be clearly defined, and responsibilities must be met by each team member assigned.”

Participant 15: “The success of virtual teams encompasses team values, members respect for the talents and contributions of other team members, respect team members time (timeliness of deadlines), and enjoy their contribution to the team.”

Participant 16: “Success of a virtual team is achieved when the team can work together efficiently to complete their goals. Obstacles are present whether the team is virtual or located in the same geographic location. It is the team's determination to work through these obstacles to complete the task at hand that makes them successful.”

Participant 17: “Reaching agreed upon milestones for a common goal. Success should be identical to non-virtual teams. The team makeup should not affect success.”

Participant 18: “Coordination and organization to the max. If the teams are coordinated and organized it really shouldn't matter if the teams are virtual or not. It should be seamless, like work getting done IN the office versus from different locations.”

Participant 19: “Achievement of goals based on active participation of all team members.”

Participant 20: “A virtual team requires common goals. Since there is sometimes less face to face interaction, it increases efficiency as it removes noise from

the message being communicated.”

Participant 21: “A team where each team member values the resources being built; respects the talent and contributions of other team members; trusts that all deadlines will be met; and, as a creative problem solver, and enjoys contributing to the success of the team.”

Participant 22: “As long as every team member can understand that each and every person is responsible and is needed to complete a project, everything will be successful if they respect the team enough to try their best to contribute what they have the project should be successful.”

Participant 23: “The ability for a team to work remotely while being able to utilize technology to communicate well enough to work towards a single goal.”

Participant 24: “Success of virtual teams:

- Deliver projects on time and on budget using resources spread out over multiple time-zones and varied cultures.

This relates to successful delivery of virtual team projects:

- working towards a shared common goal
- communicate regularly and often
- establish common SLAs and internal metrics to track the progress of the projects”

Participant 25: “Timely completion of projects and tasks. Success is often measured by the time it takes to efficiently and effectively deliver.”

Participant 26: “Virtual Teams allow me to delegate certain amount of expertise so that I don't need to know everything, just who is responsible for certain aspects of the

project at hand and who that expert is”

Participant 27: “They are one and the same. A successful virtual team should be measured the same as a non-virtual team in terms of deliverables and behaviors.”

Participant 28: “I'd say that the success of the virtual teams is directly related to the successful delivery of those teams. I think that the definition above in this page is not necessarily what the success in a virtual team is. I think it is that the virtual team accomplishes their objectives. The respect, contributions, trusts, etc., are just prerequisites, but all those things could exist and still a virtual team can miss their objective and not be successful.

Interaction of team members where each performs their role effectively and complements the rest of the team and the work product.”

Participant 29: “Virtual teams need to work together in order to achieve success through internet conversations via email etc. Using today's technology enables virtual teams to share information and to effectually meet goals and objectives on time.”

Participant 30: “Virtual Teams success depends on open communication and trust between team members.”

Participant 31: “Virtual team members share a common goal or objective. The work and deliverables are clearly defined and there is a clear path for completing those items. Ideally the team also collaborates to improve upon any existing processes. These variables are fundamental to the successful delivery of virtual team projects.”

Participant 32: “Virtual team members have complementary skills and are committed to a common purpose, have interdependent performance goals, and share an approach to work for which they hold themselves mutually accountable. One of the main

benefits of virtual teams is that members tend to form and share knowledge on the basis of information pull from individual members, not a centralized push and one of the key objectives is to find ways that support the transformation of individuals' personal knowledge into organizational knowledge.”

Participant 33: “The only way virtual teams can succeed is if all the members buy into the project. All virtual team members must agree on the end result they are trying to achieve and everyone must be included in the designing of the project so everyone has a stake in its success”

Participant 34: “Virtual team success is defined as the successful completion of projects while working in an environment of remote networking. Conduct our refs checks and get in-depth knowledge in detail. We know the subject matter, we take their word. We trust their resume and take ref checks to get verification.”

Participant 35: “Success of virtual teams is measured by on time delivery goals. This can be achieved by commitment of individual team member towards achieving a common overall goal.”

Survey Round 1, Question 2. What metrics do you use to measure the success of virtual teams you have participated in as a virtual team member? Examples: response time to emails, response time on voicemails, and ability of completing a project.

Participant 1: “Willingness to freely interact and express ideas, followed by an equal willingness to accept group decisions and take action on same. Responsiveness is just a mechanical representation of these factors.”

Participant 2: “The main metrics is the ability to completing the deliverables

assigned to either individual team members or collectively to more than one team members within the expected delivery timeframe”

Participant 3: “In my field I would say that the most important metrics is the Project Metrics which improves process improvement and determines project success. As a creative marketing designer interacting with other creative minds is much easier and effective doing it through a remote digital source, since the end result of a project will be digital most likely. So bypassing traditional meetings and communicating straight through your computer platform will save response time to emails, voicemails, chat, images correspondence, art submissions, etc...”

Participant 4: “Customer satisfaction, timeliness of project completions, and all the examples that were previously mentioned are good measures of success.”

Participant 5: “Solely on ability to resolve an existing issue or complete a project.”

Participant 6: “Successful virtual teams have quick turn-around time on all communications and project deliverables.”

Participant 7: “Delivery of project milestones, budgets to forecast, responsiveness to project deliverables. There is also the noise level from the customers when things are not going well”

Participant 8: “1. Timely delivery of projects, breaking down into timely delivery of different activities and milestones within an overall project.
2. Timely and effective support to the customer in day-to-day support and problem resolution activities.”

Participant 9: “Recognizing time zone differences and taking it into account

when setting check points and deadlines. Establishing response times for emails and voicemails.”

Participant 10: “Some of the Metrics include meeting deadlines on critical path items of the project plan, on time delivery of the project deliverables, and on time delivery of the entire project.”

Participant 11: “The ability to complete a project.”

Participant 12: “I do not find response times linked to the success of the team. Success is only defined by achieving what the team set out to do.”

Participant 13: “1. Emails should be responded to within 24-28 hours depending on the urgency 2. If it's important, call the other person and they should return the call within the same day.

3. Rules should be set up that if you are going to be "out of pocket" for a specific amount of time, a call will be made to the point person.

4. Another rule should be that if you are unable to handle your responsibility, you need to find a backup to fill the gap.”

Participant 14: “Metrics that may measure success of virtual teams include a project plan with clearly defined roles & due dates, as these roles/responsibilities are completed they are marked as done. Deliverables may include email communication, data programming, or creation of a physical or electronic medium.”

Participant 15: “Though ability to accomplish set goals may be measured in timely e-mails, phone and completion time of projects to measure the success of a virtual team, I believe that just as strongly are some unmeasurable aspects such as team effectiveness and synergy also play a vital part.”

Participant 16: “Team evaluations, sales goals, spoliation costs”

Participant 17: “Was project, task completed against expectations. The key is that all expectations are defined and team buys in. ex time for response, milestones.”

Participant 18: “Response time to emails is noted first. Then the response time on voicemails. However, none of these two should have an impact on the ability to complete a project. That is based on the individual assigned to the project. As I said before, there is no difference in my mind of working as part of a virtual team on a virtual project or a team in the office working on a project in the office.”

Participant 19: “Metrics are established up front based on tangible deliverables with established deadlines.”

Participant 20: “Ability of completing a project. "The team may not be there when you want it, but will always be there when you need it.”

Participant 21: “Trust, responsibility,”

Participant 22: “response time is important as well as being able to communicate using email, same-time and the phone.”

Participant 23: “Time - turnaround time for emails, voicemails and document reviews. Quality - adherence within tolerable thresholds of previously defined quality metrics (e.g. number of defects per lines of code, number of defects during Systems testing, integration testing and UAT). Cost - variation between budget to actual”

Participant 24: “Most often, I measure success by the amount of rework that is required after first completion.”

Participant 25: “Response time is number one. Most projects are time critical so it is important to have good team members that respond in a timely fashion or who

delegate to the appropriate person in a timely manner”

Participant 26: “There are results-oriented metrics such as meeting deadlines, delivering quantifiable monetary results, regular team communications, and % attendance at meetings, etc. There are also softer metrics such as whether or not the project team is enjoyable for the participants and whether or not the people on the team work well together.”

Participant 27: “Completion of the objectives of the virtual team on time, budget and quality.”

Participant 28: “Quality of the final product. Satisfaction of the customer. Time to complete a project.”

Participant 29: “Delivering on time”

Participant 30: “On time completion of project deliverables”

Participant 31: “We generally have a deadline. Meeting that deadline without missing any important steps is a key metric. Participation is also a key indicator of how on board the team is. You can also measure how engaged the team member are by how they are drivign their deliverables forward.”

Participant 32: “Figure out what needs to be done and by when. Start with major milestones such as early deadlines, deliverables, and team meetings. Think about who will tackle the items on the timeline, and how the team will conduct itself while working. Formal roles must be based based on expertise, and are task or content related. You have identified the “owner” on the timeline, and members who will have inputs. Members should communicate the status of each other’s work , no matter how bad the news may be. We speak our mind rather than hide things from each other. When we

evaluate each other's work, our focus will be on the work and not on who did it (focus will be on WHAT rather than WHO). We challenge each other in the spirit of helping the team exceed its expectations (e.g., can "we" think of a way to make this easier for the customer? rather than "did you not realize that this is going to be difficult for the customer?") We must come prepared to meetings and in case we are unable to attend, we will complete our work and forward its status to the team leader. In case the team leader is unable to attend, member A will lead the meeting. In case conflict about what we should do, we refer to our guiding values to resolve our conflict. We respond to email or phone queries from others in the team within 24 hours. If we don't have an answer, we will at least acknowledge the query within 24 hours and let the sender know about our inability to help."

Participant 33: "Response time to emails is an important parameter as this keeps everyone informed to progress being made in each area of the project and also keeps the team members connected which is an important aspect for success of the project."

Participant 34: "We look at how quickly we communicate, responsive on assigned action items, understand needs of the project and match against the appropriate environment and offer client what we can deliver."

Participant 35: "The biggest metric to measure success for me is if the project met its deadlines and delivered on all the requirements. Success of a virtual project requires synergy between various team players with key understanding of the roles and responsibilities to accomplish the common goal."

Survey Round 1, Question 3. What factors impact the success of virtual teams?

Participant 1: “Team leadership, participant maturity, and perceived importance of the project outcome to the individual and team.”

Participant 2: “1)Experience or skill of team leader or facilitator in managing virtual teams

2)Comfort level of individual team members in using virtual collaboration tools

3)Push from the top to use virtual teams to cut down on expenses vs travel to have face to face meetings”

Participant 3: “Trust between teams, comfort level, communication effectiveness, cohesion, motivation, cost, schedule, client satisfaction, team performance, learning effectiveness, and project success”

Participant 4: “Respect among team members, agreement on goals, attendance of members & grievance procedures evident (if applicable) are some imperative factors.”

Participant 5: “Finding necessary time/effort needed to complete assigned tasks”

Participant 6: “Meeting scheduling and respect for other team members contributions impacts the success.”

Participant 7: “Strong communication and the feeling of being connected. Getting face to face time over video conference or skype. Strong leadership that stays in touch with what the teams are working on.”

Participant 8: “1. Effective, consistent communications.
2. Trust among team members.
3. Strong project tracking techniques without getting into micromanagement.”

Participant 9: “Setting expectations for each team member and ensure understanding of the overall picture of the project. Setting up lines of communications to address road blocks.”

Participant 10: “Factors that impact the success of virtual teams include competency of the individual team members, the ability of team members to remain part of the team even though they are not physically working with the team, and their ability to communicate using other methods of communication other than face to face (ie. phone, video conference, email).”

Participant 11: “integrity, trust”

Participant 12: “I do not find that there is any difference between success on virtual teams than there are for non-virtual teams. According to Kanaga and Browning (2003), you can say a team is successful if the Outcomes, products, services, ideas, or recommendations meet or exceed stakeholder expectations. The Members of the team feel satisfied with the process and the product of their effort. Team Members have learned lessons that will make themselves and the organization more effective in future initiatives.”

Participant 13: “1, Availability of team members.

2. Ability to relinquish responsibility if not qualified early in the project.
3. Ability for all team members to adapt to unforeseen circumstances.
4. Ability for all team members to check their egos at the door.
5. Open communication.
6. Point Person - One person needs to control, manage and keep everyone on course”

Participant 14: “Clearly defined responsibilities, a strong leader and mutual

respect of that leader from team members, a willingness to communicate openly, and use of technology to keep ideas & thoughts flowing through the team.”

Participant 15: “Responsiveness, collaboration, common goal and eagerness to accomplish the goal. These traits must be shared by all the team members for the most success.”

Participant 16: “Teams member's individual self-motivation, The quality of technology available, Concrete goals being set”

Participant 17: “Defining and measuring against goal.”

Participant 18: “Response time and the ability to make an individual decision if the boss cannot be found. To make the decision, there should be sufficient amount of autonomy while relying on the team as a whole to get the job done.”

Participant 19: - “participation, - steady check-ins”

Participant 20: “Common goal, Ability of self motivate”

Participant 21: “Team work and communication”

Participant 22: “a good manager to organize the effort. honest co-workers.”

Participant 23: - “Common language and its interpretation (completion of a task at a certain time means that the task is completed including any testing, etc.), - Culture - Communication - Shared Vision”

Participant 24: “Time management! Everyone on the team has to take this very seriously and adhere to team imposed deadlines. This requires proper communication amongst all members of the team.”

Participant 25: “Attention to detail and time constraints”

Participant 26: “I think the soft metrics directly impact the hard metrics. If a

virtual team is enjoyable and the team members like each other and work well together, the team typically delivers better quantifiable results.”

Participant 27: - “Common language and terminology - Ability to effectively interact and communicate through remote communication mechanisms (phone, web conferences, e-mail, chat, etc.) - Clear understanding of team objectives - Support from management - Good team leadership - Good teamwork spirit”

Participant 28: “Availability of team members. Quantity of communication Quality of communication Capability of team members Dependability Honesty”

Participant 29: “the ability to connect to each other on a day to day basis and be accountable, and communicate via instant messaging etc.”

Participant 30: “Ability and technology that allows team members to communicate and collaborate with each other. Ability of Team Leader to keep the team motivated to share knowledge and be actively involved in team activities/projects.”

Participant 31: “Team members have to be capable. They also have to be given a reasonable time to perform. Collaboration is enable when the communication environment is open and friendly. People like beign a part of a positive, energetic and focused team.”

Participant 32: “Some of the key ideas to keep in mind when working in virtual teams include:

- Teamwork is fundamentally social - Knowledge is integrated in the life of teams and needs to be made explicit - Create ways for team members to experience membership - Knowledge depends on engagement in practice, people gain knowledge from observation and participation - Engagement is inseparable from empowerment - In my

opinion, "failure" to complete a project is often the result of exclusion from the process.”

Participant 33: “Setting of deadlines and sharing of information to update the progress made by each individual can really have an impact on how successful is the virtual team.”

Participant 34: “Communication is most important, timely response, reciprocate in appropriate fashion, honesty, clear cut communication in providing clarity, openness, knowledge sharing”

Participant 35: “Success of virtual team can be negatively impacted by factors such as cultural differences (more of a global virtual team factor), time zone differences, inability to communicate clearly via phone/email. On the other hand, strong work ethics, ability to work independently without lot of supervision and clear sense of individual goals can be major factor for a successful virtual team.”

Survey Round 1, Question 4. Is trust an important component of success in virtual teams? Please explain your response.

Participant 1: “Yes -- without trust, the degree of willingness to share ideas and accept decisions can be severely limited.”

Participant 2: “Yes. Typically it is difficult to gauge body language and facial expressions even when using video technology in virtual teams which can be a barrier in building the needed trust”

Participant 3: “Trust is very important particularly in the context of virtual teams because virtual team members are geographically dispersed and lack “shared social-context” and “face-to-face encounter” that are considered by many researchers

irreplaceable for building trust. Since it's difficult to assess teammates' trustworthiness without ever having met them, it is key to establish the trust and commitment each member will have with one another. It can be a difficult challenge, but with the right discipline and process in place, the rewards are priceless.”

Participant 4: “Yes because if the opposite were the case, a project would not be worth even discussing.”

Participant 5: “Trust is important. Trusting that team members complete assigned tasks with diligence, accuracy, and timeliness.”

Participant 6: “Trust is very important. A team must trust the other members if they are to be productive.”

Participant 7: “Trust is important to ensure that you don't micro manage and overwhelm the virtual team so that they cannot do their job.”

Participant 8: “Yes, trust is an extremely important component of success in virtual teams. Trust is important even in physically co-located teams, but critical when team members are not able to see each other. It is also an essential component of the manager-subordinate relationship. Trust in virtual teams is not necessarily automatic, it needs to be built over time and proven with delivery of milestones and commitments.”

Participant 9: “Yes it is. Past experience of team members working together helps foster trust.”

Participant 10: “Yes, trust is a very important component of virtual teams. Each team member needs to trust that their team members will take responsibility and have the ability to complete their tasks.”

Participant 11: “Yes. There must be trust in order to establish a successful

virtual team”

Participant 12: “Yes - just like non-virtual teams it is very difficult to succeed where team members do not trust each other.”

Participant 13: “Trust is important in any human endeavor that involves a team of individuals. Without it, there is no organization, There is ability to move forward. If you can't trust a person they should not be part of the team.”

Participant 14: “Yes, trust is important in virtual team because you cannot physically see a team member working on your project. You must trust that they are doing so, and this trust is proven by response to deliverables.”

Participant 15: “Yes. Without a significant level of trust through the team, it can definitely be detrimental to the success of the virtual team. Trust is at the foundation because without trust the collaborative process will fail. It will lead to members "second guessing" the other team members work, participation, collaboration and work.”

Participant 16: “Trust is an important factor because when a team geographically dispersed one cannot physically check up on other team members. Each team member has to trust that others are doing their tasks between calls, emails, etc.”

Participant 17: “Trust is crucial to any team project. The team will not achieve its goals. Virtual teams allow team members to work independently with minimal oversight.”

Participant 18: “Yes! Trust is an important component. While the teams might work cohesively to get the project done, the boss might not have visibility into the work performed. The boss might want to get updated constantly to be kept current on the project causing a delay in the project.”

Participant 19: “yes - but trust is equally important in non-virtual teams”

Participant 20: “Yes. You need trust in your team members to complete the task as you are not there to directly monitor process.”

Participant 21: “Of course, if you are not trusting others to do there job you wouldnt be able to do your effectively”

Participant 22: “Trust does not factor in so much as it is clear which individuals are getting their part of the project completed.although, if there are dishonest individuals, it is easy for honest members to have their reputations stained and get blamed for mistakes they had nothing to do with.”

Participant 23: “Trust lies at the core of virtual teams - If the team members don't trust each other then all the above mentioned metrics fail. The virtual team members have the burden of ensuring that the trust is maintained and any breach reported proactively to ensure there is no finger pointing.”

Participant 24: “Absolutely. Team members cannot be micro-managed while working on a virtual team. It is important for each team member to be a self-starter and update other team members on their progress along the way.”

Participant 25: “Yes, since I rely on their ability to give me the correct information or to research for the correct answer from realiable sources”

Participant 26: “Yes. Trust as defined as the point person for each role (each member) being perceived by the other team members as capable in their respective field, capable of delivering their share of the workload, and contributing positive input to the team as a whole or helping other team members when needed. These types of teams work well together to deliver success. Teams with no trust or with team members

that do not know each other or have not established trust take longer to deliver results (i.e. need to add in time to build trust for new teams), or not at all (teams where members do not trust each other tend to be unproductive) .”

Participant 27: “Yes, but that is required in all teams, not just virtual teams. And the factors that are described in question 3 are also important in all types of teams, but they are more critical in virtual teams.”

Participant 28: “Yes, it is imperative. You have to believe and have confidence that someone is going to do what they say they are going to do, and that their deliverable is reliable.”

Participant 29: “Yes, in order to participate in this group one must be able to commit to on time tasks and be able to share data effectively. More over they must also be a great time manager.”

Participant 30: “Yes it is important but it takes time to build trust . It is important that team members collaborate with each other so that they can understand the team dynamics.”

Participant 31: “Always. Your team members will repsond and perform better if they feel like they are not going to be criticized but instead supported. It enables a sense of "team" spirit and cameraderie and makes people want to support the overall team.”

Participant 32: “Yes, trust is critical to the success of virtual teams. Trust in virtual teams depends largely upon reliability, engagement and accountability. When virtual team members feel they can count on one another to do what they say they will do, trust builds quickly.”

Participant 33: “Yes, trust is almost essential for the success of any team but more so a virtual team as the team members do not have the ability or time to get together face to face and get to an understanding. This means that they have to rely on what ever someone is saying during the virtual meeting and believe that all members are being honest about the progress.”

Participant 34: “Absolutely because lack of ability to physically see people or be with them is a huge factor to trust virtually.”

Participant 35: “Trust is very important component of success in virtual teams. Since in virtual environments, team members are remote, trust is not very easy to come by. Trust is built slowly based on the working experience with the virtual coworkers and the ability of the coworkers to deliver the tasks assigned.”

Survey Round 1, Question 5. How would you define trust in virtual teams?

Participant 1: “Willingness to openly share ideas and accept outcomes of a valid decision making process.”

Participant 2: “1)Individual team members taking ownership and accountability for their specific deliverables and contributions
2)Clear recognition of good or outstanding performance by team members
3)Virtual team members getting encouragement from people outside of the team that their progress is noteworthy and making an impact in the organization
4)Team leader coming across as being genuinely honest in sharing both the good and the bad on team performance”

Participant 3: “Trust is the commitment and collaboration of all team members

to have outstanding communication so that all may feel secure when it comes to the risk of a negative consequence and vulnerability. Since the virtual process is depended partly on the technologies and response of each member, trust is accomplished by believing that there will be a positive expectation to the goal at hand.”

Participant 4: “Trust is where the job that each team member sets out (or is appointed) to do is accomplished.”

Participant 5: “See #4.”

Participant 6: “Trust is knowing each team member will deliver all deliverables on time.”

Participant 7: “Trust is when you ask people to deliver on a project and you can rest assured that they will.”

Participant 8: “Trust is the ability of team members to believe that the others in the team will fulfill their commitments with integrity.”

Participant 9: “Knowledge that each member will contribute successfully to the part of the project they pledged for in the beginning.”

Participant 10: “Trust is being able to feel confident that the virtual team members will produce the same level of product they would if they were physically together as a team. They need to be accountable for their time and responsible to getting their work done.”

Participant 11: “The ability to rely on another person and believe in them”

Participant 12: “Trust in virtuals teams exist when team emembers belief or have confidence in the honesty, integrity, reliability of each other.”

Participant 13: “Trust is "Say what you will do and do what you say". Simple as

that.”

Participant 14: “Similar to stated above, trust in virtual teams is knowing that team members are doing their part to contribute to the project outcome & common goals.”

Participant 15: “I would define trust in virtual teams as members able to trust that their other team members will accomplish their tasks in the agreed upon manner. To trust that this team member will meet the goals, accomplish the work, and respond in a timely manner.”

Participant 16: “Complete faith that others are doing their tasks in a responsible and honorable manner.”

Participant 17: “Comfort level that teams memeber do what they say they are going to do.”

Participant 18: “I would define trust as depending on your team to complete their tasks in the time allotted and if not, to be kept current on if things are not going per plan.”

Participant 19: “believing that all participants will work on tasks and help achieve goals according to assigned work and deadlines”

Participant 20: “Being able to count on the members to perform their roles as expected”

Participant 21: “it is like falling backwards and knowing that someone will catch you without even seeing anyone there”

Participant 22: “an environment that welcomes questions without chastising, honesty and putting in an equal effort towards the project.”

Participant 23: “Trust can be defined by mutual agreement between the virtual team members by committing to standard definitions of responsibility and accountability amongs each other so that they can rely upon each other to reach the common goal.”

Participant 24: “Trust = confidence that proper channels of communication will be open and the team will meet all deadlines with a work product that they are proud to present.”

Participant 25: “Timely, accurate completion of tasks and the acknowledgement of "not knowing" the answer but the willingness to find the answer.”

Participant 26: “Each team member is perceived by the other team members as capable in their respective field, capable of delivering their share of the workload, and contributing positive input to the team as a whole or helping other team members when needed.”

Participant 27: “The same as trust in a team working in the same physical place. I don't see there is a difference.”

Participant 28: “Have full confidence is someone's ability and in what they say.”

Participant 29: “a group that shares a common task to get the job done as a team. must be a team player.”

Participant 30: “I would say their is trust in a Virtual Team when team members work independently on their deliverables while keeping open channel for communication and collaboration”

Participant 31: “Open communication. Ability to vocalize concerns or new ideas. Showing support and acting in the spirit of project success.”

Participant 32: “As the team develops, members themselves can do quite a bit to

build trust. Virtual team leaders must do all they can to clarify task responsibilities, roles, processes, and other sources of uncertainty. Team members should do all they can to send signals that they are engaged and listening whenever communication happens. It's important to be on time for meetings or conference calls, and warn teammates ahead of time of absences. Responding to communications (voicemail messages, emails) promptly ensures that teammates know the message was received and the content is being attended to. Provide opportunities for team members to get to know one another - both their work-related skills and their personal interests should be included.”

Participant 33: “Trust in virtual teams is based on team members delivering what they promised by the set deadlines. This ensures the project stays on track and as only one team member may have access to material for a particular aspect, a project does not get derailed.”

Participant 34: “Keeping me in the loop at every level of the project, sharing information via communication, regular updates, feedback is important.”

Participant 35: “In physical work environments interpersonal relationships play a big role in building trust but in virtual environment trust is based on the effectiveness of the team member in delivering on time towards the common goal of the team.”

Survey Round 1, Question 1. In order of importance, rank the identified building blocks of trust (identified by you in question 6) on the scale shown: Not Important, Somewhat Important, Important, and Essential.

The building blocks are significant to a virtual team's success because,

Participant 1: “They are all vital to open and balanced team interaction and completion of the project. The latter cannot be achieved without the former.”

Participant 2: “In my opinion, this is what determines the "Trust Building" between virtual teams and how productive and effective they will be in accomplishing their goals. Devoting adequate time and attention to the building blocks that support a virtual team's successful performance can prove an invaluable up-front investment.”

Participant 3: “These are essential because there need to be ground rules and goals should be measured so that team members know what they are doing/accomplishing.”

Participant 4: “with them expectations are established.”

Participant 5: “Each team member should go above and beyond to contribute to the team's success. They must be accountable for their deliverables. You must be able to rely on their participation. They respect each other's opinions. They are always willing to go the extra mile.”

Participant 6: “If they have all of the components required the team will be successful whether it is virtual or not”

Participant 7: “Without these building blocks, a good team spirit cannot be built. The feeling of belonging to the team helps in accomplishing team goals.”

Participant 8: “the dynamics of a virtual team necessitate the presence of these blocks given the barriers of lack of physical proximity.”

Participant 9: “You need all of these at some level or another to make a virtual team a success.”

Participant 10: The participant suggested the survey administrator should not

complicate this topic of trust. “That is not to say that you should not put a lot of emphasis on its importance. A team by its very definition cannot exist without trust. It is like a chain. If one link is weak, it will break. If one member of a team is weak or is not trustworthy, the team will fail.”

Participant 11: “These building blocks are all traits that are necessary for team members to have, to ensure success of a virtual team. Not all team members must be strong in all traits, but collectively the team must have all traits.”

Participant 12: “They are the cornerstone to most successful teams and to the accomplishment of a unifying goal”

Participant 13: “without trust each team member cannot completely focus on their goals and take pride in the work they are doing.”

Participant 14: “Without them team will fail.”

Participant 15: “they are building blocks for ALL projects in general”

Participant 16: “without them, the team might not succeed”

Participant 17: “They make team members into stakeholders.”

Participant 18: “Without these ingredients, a team can not communicate nor easily work together if they are always wondering what motives an untrustworthy member is up to, rather than being able to just focus on the task at hand. There is a lot of wasted time and energy when there is a team member that ruins it for the rest.”

Participant 19: “The team members have to be completely accountable for all they agree to do without any excuses. The team members also need to be honest and responsible otherwise the basic benefit of the virtual team disappears.”

Participant 20: “I have been in a professional environment for 10 years, the

team will not be successful without these few building blocks.”

Participant 21: “Ensures that everyone is working towards the same goal with similar values”

Participant 22: “In order for a team to work well together, there needs to be mutual respect for all the individuals. These attributes will help build that trust/respect if it does not already exist.”

Participant 23: “without them the success is not at all possible.”

Participant 24: “without them you lose confidence in your team member and will start doing things yourself rather than leveraging the abilities of your team members.”

Participant 25: “to achieve any form of success in this type of atmosphere you must have all of these elements in order to get a project done with total satisfaction.”

Participant 26: “in a Virtual environment when team member primarily communicate over phone it very important that there mutual trust and respect in each other capabilities.”

Participant 27: “They make or break the success of any project. Without them people lose interest and motivation.”

Participant 28: “Without honesty and accountability there can be no trust and without trust a virtual team will not succeed. Integrity is an important aspect as this allows each team member to have confidence in the work being put in by other members. If a team members is not willing to take on responsibility or if the team is not able to depend on this team member it can lead to resentment and trust can be lost. Sharing of information can increase the chances of success as each member can add to

the other aspects of the project. By showing compassion for all the other members of the team, the team can feel more connected and will be more willing to work towards the common goal, thus contributing to the success of the team.”

Participant 29: “they are needed to ensure that a virtual team can complete thier projects as planned without having a breakdown in trust.”

Participant 30: “In my experience, accountaility is one of the most essential component of a virtual team's success as without accountability, team members can feel resentment building up. Honesty, integrity and team work are also very important as they increase trust and as stated earlier without trust no virtual team can succeed. Besides these factors, the ability to communicate and to accomodate cultural differences can be the defining factors in how successful a team is.”

Appendix X: Survey Round 1 Results Chart

Building Blocks of Trust	1	2	3	4	5	Rating Average	Response Count
Ability to work independently	2	2	12	11	8	3.6	35
Accountability	0	2	1	13	19	4.4	35
Adhere to timeline	0	2	7	16	10	3.97	35
An anonymous way for team members to bring forth contentious issues	4	12	10	7	2	2.74	35
Approachability	0	3	10	20	2	3.6	35
Positive Attitude	0	1	7	21	6	3.91	35
Bandwidth to be part of the team	3	5	10	13	4	3.29	35
Candidness	1	2	16	15	1	3.37	35
Capability	0	3	7	23	2	3.69	35
Cohesion	0	5	11	16	3	3.49	35
Collaboration	0	2	4	15	14	4.17	35
Commitment	0	0	5	14	16	4.31	35
Common goal	1	3	5	14	12	3.94	35
Communication	0	1	2	9	23	4.54	35
Competence	0	2	5	22	6	3.91	35
Confidence	0	5	12	13	5	3.51	35
Consensus seeking	5	5	15	10	0	2.86	35
Contribution	1	1	12	17	4	3.63	35
Cooperation	0	0	6	21	8	4.06	35
Creativity	2	8	16	8	1	2.94	35
Credible in their Role on the team	1	3	8	16	7	3.71	35
Customer focused	4	5	5	10	11	3.54	35
Defined and realistic objectives	2	2	9	13	9	3.71	35
Delegation	2	2	17	11	3	3.31	35
Dependability	0	0	4	17	14	4.29	35
Determination	0	3	15	15	2	3.46	35
Drive	1	4	13	13	4	3.43	35
Effectiveness	0	3	10	18	4	3.66	35
Enthusiasm	0	5	14	13	3	3.4	35
Excellence	1	4	12	15	3	3.43	35

Experience working in virtual teams	6	10	9	8	2	2.71	35
Fairness	1	7	13	9	5	3.29	35
Feedback	0	6	11	16	2	3.4	35
Fraternity	6	10	14	4	1	2.54	35
Functional Knowledge	1	2	11	19	2	3.54	35
Goal oriented	0	3	10	15	7	3.74	35
Good Communication	0	1	4	13	17	4.31	35
Good listening skills	0	1	7	15	12	4.09	35
Gratitude	3	11	13	7	1	2.77	35
Group Integrity	0	5	4	18	8	3.83	35
Honesty	0	2	5	9	19	4.29	35
Humor	7	9	10	8	1	2.63	35
Initiative	1	2	9	19	4	3.66	35
Integrity	0	0	4	17	14	4.29	35
Job quality	0	4	6	20	5	3.74	35
Knowledge	0	2	13	16	4	3.63	35
Leadership	0	5	12	10	8	3.6	35
Listening skills	0	2	5	13	15	4.17	35
Loyalty	4	6	8	14	3	3.17	35
Maturity	3	6	12	13	1	3.09	35
Measurable performance metrics	1	6	7	13	8	3.6	35
Metrics	3	4	7	15	6	3.49	35
Micro management	11	10	11	3	0	2.17	35
Motivation	1	4	6	22	2	3.57	35
Mutual understanding	0	5	5	23	2	3.63	35
Obligation	6	6	11	11	1	2.86	35
Offering alternative solutions	2	8	8	17	0	3.14	35
Open-minded	2	2	9	19	3	3.54	35
Operational Excellence	3	2	9	16	5	3.51	35
Organization	2	2	7	22	2	3.57	35
Patience	3	3	14	15	0	3.17	35
Perceived Importance and Impact of Project	2	2	11	16	4	3.51	35
Presence in the Form of Participation	4	2	9	18	2	3.34	35
Previous success	6	9	9	11	0	2.71	35
Professionalism	0	1	9	17	8	3.91	35
Quality	0	2	4	14	15	4.2	35

Recognition	5	4	8	16	2	3.17	35
Reliability	1	0	6	14	14	4.14	35
Respect	0	1	9	13	12	4.03	35
Responsible	0	0	6	16	13	4.2	35
Responsiveness	0	1	3	22	9	4.11	35
Satisfaction	1	7	7	19	1	3.34	35
Self Respect	2	7	9	14	3	3.26	35
Sense of belonging to the team	1	3	7	16	8	3.77	35
Sense of Urgency	1	3	10	15	6	3.63	35
Sincerity	1	3	6	16	9	3.83	35
Strive for success	0	5	7	15	8	3.74	35
Teamwork	0	1	3	12	19	4.4	35
Technical skills	2	10	6	13	4	3.2	35
Time Management	2	2	7	15	9	3.77	35
Timeliness	0	3	8	13	11	3.91	35
Transparency	0	3	12	17	3	3.57	35
Willingness	0	0	9	23	3	3.83	35