TEMPORARY NETWORK DEVELOPMENT CAPABILITY IN HIGH VELOCITY ENVIRONEMENTS: A DYNAMIC CAPABILITY STUDY OF DISASTER RELIEF ORGANIZATIONS

by

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DEDICATION

This study is dedicated to my mother, Dr. Dellanna O'Brien. Mom, your unconditional love is with me always. I only wish you could be here to see the fruition of your prayers, encouragement and example.

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First and foremost, I give thanks to God for the opportunity, resources, ability and support He has given to me. I pray that the “talent” given will be invested wisely to provide a return that can enrich the lives of many.

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ABSTRACT

TEMPORARY NETWORK DEVELOPMENT CAPABILITY IN HIGH VELOCITY ENVIRONEMENTS: A DYNAMIC CAPABILITY STUDY OF DISASTER RELIEF ORGANIZATIONS

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Organizations involved in crisis relief after a natural disaster face the multifaceted challenge of significantly changing needs of their various stakeholders, limited, ambiguous and even incorrect information, and highly compressed time limitations. Yet the performance of these organization in these high velocity environments is critical for the lives and welfare of disaster victims. This research suggests that relief organizations that possess a dynamic capability to proactively form temporary networks are better suited to respond to crises. Further, the study identifies antecedents of such a temporary network development capability (TNDC), specifically prior network experience, swift trust, prior crisis experience, a generalist strategy, organizational humility, minimal political behavior, reputation and legitimacy. In addition, the study demonstrates the relationship between TNDC and organizational performance, along with the moderating impact of factors in the external environment and internal resource availability on this direct relationship. Building on the foundation of extant literature in the areas of interorganizational networks and dynamic capabilities, the study begins with a qualitative

analysis to develop a theory to support TNDC. Semi-structured interviews were conducted with relief organizations in the US Gulf Coast after Hurricane Katrina and in Banda Aceh, Indonesia after the Asian Tsunami. Interview responses were coded to develop a model which could be further analyzed. From the extant literature and results of the qualitative study, a survey instrument was developed to measure the relationship between various antecedent factors and TNDC, as well as between TNDC and organizational performance. The survey was pilot tested to ensure reliability and validity and then submitted to relief organizations involved in disaster relief activities to evaluate the nature of the hypothesized relationships.

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INTRODUCTION

But, Mousie, thou art no thy lane,
In proving foresight may be vain;
The best-laid schemes o' mice an' men
Gang aft agley,
An' lea'e us nought but grief an' pain,
For promis'd joy!
Robert Burns, *To a Mouse*

1.1 Introduction and Contributions of the Study

The poet Robert Burns could not have known how applicable his statement lamenting the inadequacy of planning for disaster would be for individuals, organizations, and even nations in the twentieth and twenty-first centuries. The world has faced crises of overwhelming proportions in the past century, including natural disasters, world wars, financial crises, terrorism, industrial accidents, and pandemics. Depending on the scope, crises can be widespread or local and long- or short-term but are typically complex and difficult to predict. They create environments marked by uncertainty, lack of reliable information, challenges to communication and coordination, and continuous, often radical, change. It is in these contexts that organizations must find ways to collaborate to access necessary resources, including information, and to utilize their key resources more effectively. It is also in these contexts that forces within the environment most challenge efforts at collaboration (Moore, Eng & Daniel, 2003; Stephenson, 2005).

This research suggests that relief organizations that possess a dynamic capability to proactively form temporary networks are better suited to respond to crises. Further, the study identifies antecedents of such a temporary network development capability (TNDC). While the context of the study is the work of relief organizations responding to natural disaster, it is

suggested that the theory that is developed should be tested among for-profit organizations in other high velocity environments.

Management literature has described organizations operating in high velocity environments as those that face “rapid and discontinuous change in demand, competition, technology, or regulation, so that information is often inaccurate, unavailable, or obsolete” (Eisenhardt & Bourgeouis, 1988: 738). While researchers have typically linked high velocity environments to studies involving for-profit businesses (Brauer & Schmidt, 2006; Eisenhardt, 1989; Judge & Miller, 1991), nonprofit and government organizations also operate in environments marked by significantly changing needs or requirements of their various stakeholders and in which information is either inaccessible or unreliable.

Research related to the work of government and nonprofit organizations responding to crises often cites the importance of collaboration (Bryson, Crosby & Stone, 2006; Comfort, 2005; Moore, et al., 2003; Simo & Bies, 2007; Stephenson, 2005). Some of these studies include discussions of the relevant literature on network formation, including conditions in which networks are likely to form (Berry, Brower, Choi, Goa, Jang, Kwon & Word, 2004) and the benefits and drawbacks of networks (Hardy, Phillips & Lawrence, 2003; Kiefer & Montjoy, 2006; Provan, Milward & Brinton, 2001). However, with few exceptions (Comfort, 2005; Moynihan, 2008), the use of network research in these studies often does not reflect the fact that environments surrounding these crises are markedly different from the typical environments involved in interorganizational network formation. While many of these studies support the contention that collaboration among relief organizations is critical in post-crisis responses, they do not consider how the circumstances in these environments might influence the type of network that should be developed. Therefore, one contribution that this study makes is to consider the influence of the environmental context on network formation, specifically involving the development of quickly forming, short-lived, interorganizational networks in the context of

large-scale, natural disasters. In so doing, the study lays a foundation for a configurational view of network formation.

Further, extant literature on network formation tends to focus on steps or routines for collaboration (Gulati, 1999), motives for network participation (Galaskiewicz, 1985), conditions for network formation (Gulati & Garguilo, 1999) or the benefits and drawbacks of collaboration (Brass, Galaskiewicz, Greve & Tsai, 2004; Powell & Smith-Doerr, 1994). In an important study, Gulati (1999) introduced the idea of an alliance formation capability. Building on this, Dyer, Kale and Singh (2001: 38) suggest that an alliance function, one type of dynamic capability, can positively impact firm performance, reporting that firms that utilize a dedicated alliance function "achieved a 25% higher long-term success rate with their alliances…and generated almost four times the market wealth whenever they announced the formation of a new alliance." However, little work has opened the black box of the organization to examine what firm-level characteristics are more likely to enable an organization to possess and utilize such a dynamic capability. Therefore, as the second contribution, this study utilizes qualitative and quantitative methodology to provide a fine-grain and course-grain analysis of the organizational characteristics that are linked to a TNDC among relief organizations.

Finally, the question is asked whether organizations that possess a dynamic capability for forming and utilizing temporary networks in these high velocity environments perform better in crises than do organizations that do not possess this capability. Literature on capabilities discusses three primary roles of dynamic capabilities (Helfat, Findelstein, Mitchell, Peteraf, Singh, Teece & Winter, 2007; Teece, 2007): to sense changes in the environment, to shape resources to respond to those changes, and then to seize upon the opportunities and threats by implementing strategy. However, little empirical research exists demonstrating a link between a dynamic capability and organizational performance (Ambrosini & Bowman, 2009). A TNDC should improve organizational responses to crises due to the organization's ability to access information and resources found in their networks (facilitating the sensing and shaping roles) as

well as the organization's ability to utilize their networks to execute strategy (facilitating the seizing role). The third contribution that this study provides, then, is a quantitative test of the link between a TNDC and organizational performance.

The setting in which the research is established is among relief and development organizations responding to natural disasters. However, it is suggested that a TNDC can provide a strategic advantage for any organization, not-for-profit or for-profit, operating in high velocity environments.

1.2 Crisis as High Velocity Environment

On December 26, 2004, an earthquake of magnitude 9.3 struck off the coast of Aceh Province, Indonesia. In the brief, few hours afterwards, the resulting tsunami killed approximately 300,000 people across fourteen countries in Asia and Africa and left 1.5 million people homeless (Arnold, Chen, Deichmann, Dilley, Lerner-Lam, Pullen & Trohanis, 2006). In Indonesia alone, the death toll was 220,000 people with a recovery price tag of $7 billion (Badan Rehabilitasi dan Rekonstruksi, 2006). While this disaster stands out as the worst in recorded history, the following year recorded 360 natural disasters worldwide, resulting in the deaths of 90,000 people and financial losses of $159 billion. The World Bank estimates that natural disasters result in a loss of up to 15 percent of national GDP in countries across the globe (Arnold, et al., 2006). These examples include only natural disasters. When combined with acts of war, military action, civil unrest, and terrorism, the extent of crises of various kinds is overwhelming.

Beyond these more obvious forms of crises, organizations must deal with the risk of financial crises (firm-, industry-, national- or global-levels), product tampering, workplace violence, and other forms of crises (Pearson, Clair, Misra & Mitroff, 2002). Mitroff (2002) distinguishes between normal and abnormal accidents by examining the intentionality of the incident. "Normal accidents represent the breakdown of complex systems; abnormal, the breakup" (Mitroff, 2002: 19). Using this distinction, this paper examines the equivalent of

“normal accidents,” limiting analysis to the natural breakdown of complex systems in nature, such as hurricanes, tsunami, earthquakes, etc. However, crises such as the current global financial crisis could be included in this category of “normal accidents” when one considers the global financial system as a complex system. Further, from a Schumpeterian view of creative destruction, advances in technology that lead entire industries to ruin or forces of globalization that result in shifting operations from one country to another could be seen as a “normal accident.”

In each of these examples, the resulting environment is one of disruptive and discontinuous change; ambiguous, incorrect, or insufficient information; and dynamism and high uncertainty-characteristics used to describe high velocity environments in high technology settings (Eisehnardt, 1989; Eisenhardt & Bourgeois, 1988; Judge & Miller, 1991) and health care settings (Yun, Faroj & Sims, 2005). Therefore, this research suggests that the circumstances in which relief organizations operate in the wake of natural disaster can also be labeled high velocity environments, and it is in these challenging environments that relief organizations must respond efficiently and effectively or risk the lives and welfare of those they seek to serve.

1.3 Organizational Responses to Crisis

Organizations of all types, government, for-profit, and nonprofit, seek to limit or mitigate risks related to crises and to continue to achieve organizational objectives in the face of crises. In an effort to coordinate the work of government agencies responding to crises of all kinds, the US Federal government, through the newly formed Department of Homeland Security, initiated the National Incident Management System (NIMS). This system facilitates coordination of federal, state and local government agencies. Key to the efforts of NIMS is the Incident Command System (ICS), developed originally in response to California wildfire management. ICS provides standard operating procedures and response protocols in a structured, yet scaleable, format, providing all government agencies responding to a crisis with a predictable

plan of response and coordination (United States Department of Homeland Security, 2006). Yet even this tool, which had proven effective in coordinating the efforts of multiple agencies in response to large-scale wildfires, proved ineffective in response to Hurricane Katrina. This failure was, to a limited degree, due to inadequacies of the tool itself but to a greater degree to problems with the responding organizations' failure to collaborate effectively (Lester & Krejci, 2007).

Similarly, research on nonprofit organizations suggests that these organizations are not immune to crises of various types. Nonprofit organizations, like their counterparts in the for-profit world, face the potential crisis of financial disaster (Greenlee & Trussel, 2000; Trussel, 2002; Tuckman & Chang, 1991). Financial crisis can arise due to poor financial management or failure to compete for donor funding among the growing nonprofit industry (Lindenberg, 2001). Also similar to their for-profit counterparts, nonprofit organizations must maintain a sense of legitimacy among their stakeholders or risk a failure of trust, resulting in organizational crisis (Bryce, 2007).

However, organizations that operate in crisis environments, by nature of their mission, face additional, crisis-oriented challenges. Unlike the US Federal government's NIMS protocols, which were established to coordinate disaster relief efforts of government agencies, nonprofit organizations tend to work in isolation or at least without hierarchical systems such as ICS. Models for cross-sector collaboration have been developed to suggest the conditions under which organizations across the public and private sector are likely to collaborate (Bryson, Crosby & Stone, 2006; Simo & Bies, 2007). Further, organizations such as the Voluntary Organizations Active in Disaster (VOAD) seek to facilitate knowledge transfer and coordinate efforts across a coalition of relief organizations prior to disaster striking as well as during and after crises.

Crises, especially those of a large scale, are complex and multi-staged phenomena (Simo & Bies, 2007), resulting in uncertainty that requires a volume and variety of resources not

often found in any one relief organization. Therefore, collaboration is necessary to respond effectively (Comfort & Kapucu, 2006; Donahue & Joyce, 2001; Waugh & Streib, 2006). Yet even the best efforts of collaborating nonprofits do not necessarily ensure effective outcomes. For example, Kapucu (2006) suggests that "collaboration often occurs among proximal and like agencies, sometimes to the detriment of effective responses" (Simo & Bies, 2007; 126).

While researchers have focused attention on the significance of collaborative efforts in response to crises, little attention has been given to the organization-level characteristics that facilitate the development of these networks. This study seeks to identify those organization-level attributes that make possible the important work of network formation, especially in relief organizations facing crisis environments. The study is based on two streams of literature in the strategic management and organization theory domains: dynamic capabilities and interorganizational networks.

1.4 Theoretical Rationale for the Study

These two streams of literature are both well developed and important fields of research. Network theories have been more fully developed across a wider number of disciplines and over a longer period of time. However, dynamic capabilities, emerging out of the resource-based view, has taken center stage in strategic management as a new paradigm or model seeking to explain why firms exist and the boundary conditions in which they operate (Teece, 2007).

The study of dynamic capabilities arose from the research on the resource-based view (RBV) of the firm (Barney, 1991; Wernerfelt, 1984). A dynamic capability "is the capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat, et al., 2007: 4). When an environment is characterized by unpredictable and rapid change, the resources that led to a strategic advantage before might not be the ones to help an organization maintain that strategic advantage in the current or future setting. Since the setting of this study involves the aftermath of natural disasters, which can be described as dynamic, complex, and uncertain, the

ability of relief organizations to create, extend, or modify their resources is critical to their success in providing relief services.

According to Eisenhardt and Martin (2000), the dynamic capability itself is not the resource that enables organizations to gain or maintain a competitive advantage. Rather, when organizations use these capabilities to reconfigure and extend their strategic resources in the face of dynamic and uncertain change, they better position themselves to gain and/or maintain their advantage. This study proposes that this is true for relief organizations operating in crisis environments as well. Even the largest and most resource-rich international nongovernment organizations (INGOs) do not possess all the necessary resources (money, knowledge, social capital, technology, skills, etc.) to respond single-handedly in all disaster settings. Further, since the needs that arise in any given crisis differ from one event to another, the organizational response that worked effectively in one crisis event might not work effectively in another. Therefore, relief organizations including INGOs must develop the ability to reconfigure their resources, to extend their key resources, and to attain necessary resources through network partners.

Research on interorganizational relationships and networks have formed a deep and rich area of study over the past twenty years. Starting in the field of sociology (Burt, 1992; Coleman, 1988; Granovetter, 1985; Oliver, 1990), research on networks later extended to the field of strategic management, including work related to joint ventures (Gulati & Westphal, 1999; Hennart, 1988; Hennart & Reddy, 2000; Kogut, 1988), strategic alliances (Doz, 1996; Gulati, 1999; Hamel, 1991; Shan & Walker, 1994), and networked firms (Jarillo, 1988; Powell, 1987), among others.

From a theoretical perspective, interorganizational relationships posed a challenge to the dominant paradigm of transaction cost economics (TCE) because these arrangements did not seem to fit the make or buy framework proposed by TCE (Eisenhardt & Schoonhoven, 1996; Ghoshal & Moran, 1996; Williamson, 1985). Some researchers suggest that networks are

a wholly other structure involving a different set of antecedents and requiring a unique form of governance (Jones, Hesterly & Borgotti, 1997; Provan, 1993; Ring & van de Ven, 1992). Still others suggested that networks simply fall within the make or buy continuum and that TCE can explain network arrangements such as joint ventures (Hennart, 1988; Williamson, 1985).

Practically speaking, interorganizational networks provide many benefits to organizations but also some risks. Benefits include access to important network partners, acquisition of resources, reduction of uncertainty, enhanced legitimacy, increased learning, access to new markets, access to information about other organizations, and attainment of organizational goals (Brass et al., 2004; Jarillo, 1988; Powell & Smith-Doerr, 1994; Shane & Venkataraman, 2000), among others. However, these same network arrangements can create problems for organizations. Drawbacks to networks include the risk of being overly embedded, resulting in a decline in efficiency and innovation; the expense of maintaining network relationships; and the risk of both inertia and unethical behavior due to repeated network interaction (Adler and Kwon, 2002; Powell & Smith-Doerr, 1994).

Network governance structures establish the expectations and framework for interaction across an interorganizational network. These structures include joint ventures, strategic alliances, coalitions, consortium, and associations (Alter & Hage, 1993). The appropriate governance structure depends on the goals of the organizations involved and the industry and general environments in which the organizations find themselves.

In the most challenging general environments, those that are highly dynamic, complex, and uncertain, organizations have a great need for nonredundant, accurate information and access to necessary resources. In these uncertain environments, organizations are more likely to utilize network governance structures, such as strategic alliances, to overcome this uncertainty (Dickson & Weaver, 1997). However, in these environments, the factors that normally make networks the most attractive also make networks very difficult to form and maintain (Moore, et al., 2003; Stephenson, 2005).

What, then, might enable an organization to form network partnerships in these challenging circumstances? Past research suggests that organizations are more likely to participate in network arrangements when they have previous experience with networks; when there exists a level of interdependence due to the scale or scope of a project, in the presence of interlocking directorates; when third-party ties provide access to information about possible partners; when organizational members are embedded in other organizations; and when the need for resources is great (Grandori & Soda, 1995; Gulati, 1995; Gulati & Garguilo, 1999).

However, little work has examined what firm-level characteristics are more likely to enable an organization to initiate network formation. Gulati (1999) introduced the idea of an alliance formation capability, measured as the number of previous alliances, diversity of previous alliances, and amount of time since last alliance formation. This was the first study to suggest that organizations can possess a capability to formulate alliances. Gulati used this construct to investigate whether an organization was likely to form an alliance in the future. While this study did provide a rationale for considering firm-level capabilities as an advantage in network formation, Gulati did not take the next step to examine firm characteristics, processes, routines, or experiences that created this capability in the first place.

Combining these two streams of literature, it has been suggested that organizations that create and utilize a dedicated strategic alliance function will extend the value of strategic alliances beyond that of other organizations (Dyer, et al., 2001). Such a function “improves knowledge-management efforts, increases external visibility, provides internal coordination, and eliminates both accountability problems and intervention problems” (Dyer, et al., 2001; 38). To the degree that lessons learned can be codified, organizations that use an alliance function transfer knowledge across the organization and create routines useful for alliance formation and management. The increase in external visibility opens doors for future alliances, builds organizational reputation, and strengthens trust in the organization. The internal coordination of resources, information, and priorities ensures that alliances receive the necessary attention

required for success. Finally, the use of alliance functions tends to lead organizations to develop metrics by which the organization measures the performance of the alliance. The work of Dyer and his colleagues provides a very practical tool for organizations involved in alliances. However, it focuses more on the structure, processes, and behaviors of the organization rather than on the characteristics or capabilities of the organization. This study suggests that even among those organizations that develop a formal alliance function, some will be better able to use that function than will others. The difference is found in the characteristics of the organization. In other words, simply implementing an alliance function will not necessarily lead to a competitive advantage. If it did, then an alliance function would not be rare or inimitable.

Current research suggests that there are many different types of dynamic capabilities (Helfat, et al., 2007). However, if these capabilities can be codified and transferred or even imitated in other organizations, they no longer provide a unique strategic advantage (Eisenhardt & Martin, 2000). To this end, then, this study examines the nature of the organization as a critical antecedent of a dynamic capability to form temporary networks and suggests that this dynamic capability can lead to strategic advantage to organizations operating in dynamic, complex, and uncertain environments.

1.5 Overview of the Dissertation

Chapter 1 has laid a foundation for the study. This chapter has identified the three primary contributions that the study makes in the field of strategic management. These include:

1. An examination of the influence of the external environment on the formation of temporary networks.
2. An identification of the organizational characteristics that are linked to a TNDC among relief organizations.
3. A test of the relationship between a relief organization's TNDC and its organizational performance and how the environment in which it operates might influence that relationship.

In the following chapter, I review the extant literature in the areas of interorganizational networks and dynamic capabilities. In Chapter 3 I briefly describe the elements of this study, laying the theoretical rationale for the study. Based on extant literature and interviews conducted with relief organizations active in disaster response, I develop hypotheses regarding TNDC, the antecedents of this capability, and the effectiveness of this capability among relief organizations. In Chapter 4 I describe the methods utilized in the study: 1) the initial qualitative study, 2) the survey development and testing, and 3) the empirical analysis of the survey responses. Included in this chapter is a description of the two focal crises that set the stage for the research topic and the samples utilized in the pilot test and the empirical testing of the hypotheses. In Chapter 5 I provide results of the various testing conducted within the scope of the research project. Finally, in Chapter 6 I summarize the findings and limitations of the study and makes suggestions for further research.

CHAPTER 2

LITERATURE REVIEW

This chapter provides a review of the extant literature related to interorganizational networks and dynamic capabilities. The review of network literature includes an analysis of the theoretical reasons that organizations form and use networks, key findings regarding the antecedents of network participation, characteristics of networks, various types or configurations of networks, and outcomes of network participation. The key questions addressed in this review of network literature include

1. Why do organizations form networks?
2. Under what circumstances are organizations more likely to form networks?
3. What kinds of outcomes might result from network participation?
4. How can we understand networks so that we can better predict what kind of network would be most appropriate under which circumstances, ceteris paribus?

The second stream of literature reviewed is dynamic capabilities. This review includes a brief history of the dynamic capabilities research along with a discussion of the way in which dynamic capabilities can lead to competitive advantage for firms. The chapter then outlines types of dynamic capabilities in general and specifically relational capabilities. The chapter concludes with a discussion of dynamic capabilities in relief organizations. The key questions addressed in this review of dynamic capabilities literature include

1. What are dynamic capabilities and how do they lead to performance?
2. What is the relationship between organizational attributes and dynamic capabilities?
3. What kinds of dynamic capabilities exist in organizations (for profit and nonprofit)?

The purpose of the literature review is to build a foundational understanding of the relevant literature and identify some of the gaps in this literature that necessitate further study.

Chapter 3 then builds upon this foundation, looking more deeply at the selected gaps in the literature and developing hypotheses for further investigation.

2.1 Interorganizational Networks

2.1.1 Overview

Literature on interorganizational networks spans nearly three decades and includes research from multiple disciplines, including sociology (Burt, 1992; Coleman, 1988; Granovetter, 1985), ecology (Astley & Fombrun, 1983), organizational theory (Pfeffer & Salancik, 1978; Uzzi, 1997; Williamson, 1985), and strategic management (Baum, Calabrese & Silverman, 2000; Boje & Whetten, 1981; Gulati, 1999; Jarillo, 1988).

The theoretical basis on which network research has been based is equally diverse. Barringer & Harrison (2000) identify six theoretical paradigms that serve as a basis for explaining network formation and the behavior of actors within networks. These include transaction cost economics (Williamson, 1975, 1985, 1991), resource dependence (Pfeffer & Salancik, 1978), strategic choice (Berg & Friedman, 1977; Powell, 1990), stakeholder theory (Freeman, 1984, 1994; Jarillo, 1988), organizational learning (Hamel, 1991; Lane & Lubatkin, 1998; Powell, Koput & Smith-Doerr, 1996), and institutional theory (Baum & Oliver, 1991; DiMaggio & Powell, 1983; Meyer & Rowan, 1977).

Further, network research has taken place at various levels of analysis. At the individual level, Granovetter (1985) illustrated the importance of diverse network ties in job searches. Burt (1992, 1997, 2000) discusses the way in which social capital accrues to those who act as brokers of information within and across networks. Also at the individual level of analysis, research on entrepreneurship highlights the importance of the entrepreneur's personal networks in the process of new venture start up (Aldrich & Zimmer, 1986; Birley, 1985; De Carolis & Saparito, 2006; Shane & Venkataraman, 2000).

Analysis of network dynamics at the inter-unit level includes resource-based interdependence among work units (Tsai, 2000), limitations of inter-unit network formation due

to organizational control (Tsai, 2002), and better unit performance among those work units with greater network linkages (Reagans & Zuckerman, 2001).

At the inter-organizational level, studies involving networks have focused on the motives for network participation (Galaskiewicz, 1985; Gulati, Nohria & Zaheer, 2000; Oliver, 1990); benefits and costs of network participation (Adler & Kwon, 2002; Brass et al, 2004; Powell & Smith-Doerr, 1994); conditions for network formation (Gulati & Gargiulo, 1999; Oliver, 1990; Podonly & Page, 1998; Zaheer, McEvily, & Perrone, 1998); and network types, including weak-ties and strong ties networks (Beckman & Haunschild, 2002; Coleman, 1988; Perry-Smith & Shalley, 2003).

Finally, network dynamics and outcomes are important to more than just for-profit business. Millward & Proven (2006) discussed the importance of networks among government agencie, while Moynihan (2007) outlined the network structure of US government agencies responding to forest fires using the Incident Command System. Further, O'Brien (2008) identified the importance of network involvement among nongovernment organizations responding to the Asian Tsunami in 2004 and Hurricane Katrina in 2005.

As can be seen by the brief and limited discussion of network research listed above, the research streams related to interorganizational networks is rich, deep, and wide. This review of the network literature, therefore, will be restricted to issues related to the theoretical explanations of networks, antecedents of network formation, characteristics of interorganizational networks, network configurations, and outcomes of network participation.

2.1.2 Theoretical Explanations of Network Formation

Various theories seek to address the question of why organizations form networks. Barringer & Harrison (2000) briefly describe six theoretical foundations for interorganizational networks suggesting that "while each paradigm is useful, each is also insufficient to capture the complexities involved in relationship formation. Firms tend to have a portfolio of reasons for alliance formation…" (368-369). This claim is reasonable given the variety of organizations that

form interorganizational networks, the many environments in which these networks exist, and the purposes for which they are formed.

Even so, the six theoretical paradigms included in Barringer & Harrison's (2000) work all contribute to a better understanding of why interorganizational networks play such an important role in business and in business research. These six theoretical paradigms are described below, along with a seventh, dynamic capabilities, not mentioned by Barringer & Harrison (2000).

2.1.2.1 Transaction Cost Economics

Transaction cost economics (TCE) is used by many researchers to explain why firms exist and where the boundaries of the firm extend. As such, it is often considered the theory of the firm. Coase (1937) suggested that firms arise when markets are inefficient due to the cost of information, bargaining, and enforcement of contractual relationships. Therefore, the primary decision for businesses is the "make or buy" decision.

In an expansion of Coase's arguments, Williamson (1985) accounted for issues related to transaction-specific investments, as well as emphasizing the assumption of self interest and opportunism, or self interest "with guile" (Williamson, 1985: 47). In any make or buy decision, a firm must consider the uncertainty of the decision, the frequency in which the decision is expected to arise, and the degree to which transaction-specific investments are incurred. If the decision involves relatively generic goods or services that are easily attainable in the market, then the firm will most likely choose to utilize the market for the transaction.

When idiosyncratic investments are involved and when firms select to contract with other firms, both the partners operate in an environment of risk. Trust builds over time at the individual and institutional levels as firms live up to their contractual agreements. However, because of transaction costs, firms will likely not trust their market-oriented partners but instead will establish structured relationships through contracts and monitor the actions of their partners because of the assumption of self-interest. As such, TCE effectively explains network

formations that allow a higher degree of control through formal governance mechanisms. For this reason, interorganizational networks become a boundary condition, limiting TCE's ability to explain the existence of certain forms of networks (Ghosal & Moran, 1996).

2.1.2.2 Resource Dependence Theory

Resource dependency theory emerged from the open systems view (Barringer & Harrison, 2000). Richard Scott (2004) describes open systems as an interconnection between dependent yet distinctive components. This view challenged researchers to examine not only the inner workings of the firm but also the external environment in which the firm operated and the permeable boundaries that existed between these two.

Within the context of this interconnected and interdependent environment, firms interact to gain resources or to gain an advantage by sharing resources (Barringer & Harrison, 2000). When resources are not readily available or are limited or if a firm perceives itself to be resource deficient, the firm must compete or collaborate for the necessary resources. Resource acquisition is assisted through the use of power both within and outside the organization (Salancik & Pfeffer, 1977). Firms that have power over key resources can use that power to gain access to other resources or to maintain a position of control in a network arrangement. When firms do not have access to critical resources and are limited in their power to gain these resources, one solution is to form alliances. In these alliances, firms can share the expenses of research and development, develop economies of scale, learn necessary management or marketing skills, or lobby for government policy changes. This is especially true of firms involved in the manufacturing of complex goods (Mitchell & Singh, 1996).

Resource dependency can, therefore, explain when an alliance might be formed and with whom the alliance is formed (Elg, 2000). For example, many times young, small, innovative firms are sought out for alliances due to their knowledge capital, especially in high technology and biotech industries (Das, Sen & Sengupta, 1998; Baum, Calabrese & Silverman, 2000). Further, the type of interaction involved, resource-pooling vs. resource transferring, can also

shape the type of network formed (Grandori & Soda, 1995). These alliances can create opportunities for shared gains. However, as Mitchell and Singh (1996) suggest, rather than helping firms deal proactively with their resource dependence, alliance arrangements can cause firms to become more dependent on their alliance partners, resulting in greater challenges to survival when an environmental shock occurs.

2.1.2.3 Institutional Theory

Similar to resource dependency, institutional theory emerges from an open systems view in which external forces influence firm operations and structure. However, different from other dependency-oriented theories, institutional theory suggests that firms also must respond to sociological and political forces in their environment. These forces are shaped by normative expectations formed through habitualized practices in a “socially constructed reality” (Berger & Luckmann, 1966). Typically, this response involves a homogenization of actors within an organizational field through isomorphic processes. Causes of homogenization include dependence on other organizations and/or volume of interaction with other organizations, centralization of resources, uncertainty in the environment, and homogenous populations. (DiMaggio & Powell, 1983; Meyer & Rowan, 1977)

Three types of isomorphism help to explain why structures, strategies, and processes of firms within given fields begin to converge over time: coercive isomorphism, mimetic isomorphism, and normative isomorphism (DiMaggio & Powell, 1983). Coercive isomorphism involves external pressures to abide by certain laws or policies. Normative isomorphism involves actions taken, based on the assumption that the actions are superior. Mimetic isomorphism takes place primarily due to uncertainty and constraint.

In addition, central to institutional theory is the need for firms to gain legitimacy in the eyes of external stakeholders. Legitimacy is “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995:574). Legitimacy is the

gateway through which firms gain necessary resources, especially in uncertain environments. Therefore, firms follow the norms and constraints of environmental forces to gain legitimacy in the eyes of external stakeholders (DiMaggio & Powell, 1983). One means of achieving this legitimacy is through the formation of and participation in interorganizational networks.

2.1.2.4 Strategic Choice

In response to research by scholars examining what was perceived as a deterministic relationship between firms and various factors, John Child (1972) claimed that managers play a more critical role in firm outcomes than they had previously been credited. Previous work had demonstrated a relationship between a firm's structure and various dimensions, including the firm's external environment (Aldrich 1979; Burns & Stalker, 1961; Khandwalla 1973; Lawrence & Lorsch, 1968), technology (Perrow, 1967; Thompson, 1967; Woodward, 1970), and firm size (Blau, 1970; Weber, 1947). This deterministic view was described by Astley & Fombrun (1983: 576) in the following way: "The environment typically is regarded as a more or less intractable externality, a predefined context that ultimately establishes what is feasible in operational terms."

Child suggested factors, such as the environment, technology, and size, while important, do not limit in and of themselves the actions that managers can take. For this reason, much of the work on networks in the field of strategic management is built upon Child's principle of managerial choice. Managers decide in which industries they will operate and which customers they will target. These choices place the firm in certain industrial and geographic environments rather than the other way around. In fact, decisions made by managers influence the very external environment in which the firm operates (Smircich & Stubbart, 1985). Further, Child suggested that since managers operate within the limits of bounded rationality (Weick, 1969), the very act of interpreting external environments demonstrates the influence that managers have on their firms. Network behavior, then, can be explained as a manager's chosen strategy to gain an advantage over the firm's competition.

2.1.2.5 Stakeholder Theory

The foundation of stakeholder theory is based on the belief that organizations are cooperative systems forming associations to achieve shared objectives (Barnard, 1948; Barringer & Harrison, 2000; Lado, Boyd & Hanlon, 1997). Freeman's seminal work on a stakeholder theory positions it as "a strategic management approach aimed at enabling the firm to survive in turbulent times by becoming more responsive to the many constituencies that could play a role in the firm's success" (Dunham, Freeman & Liedtka, 2006: 25). According to Freeman (1984: 25), a stakeholder is "any group or individual who can affect or is affected by the achievement of the firm's objectives."

By definition, the theory emphasizes the interactive and interdependent nature of organizations. Even so, early work on stakeholder theory centered attention on the focal organization and its dyadic relationships with other organizations (Donaldson & Preston, 1995; Freeman, 1984; Rowley, 1997). The result of this primarily normative approach has been research showing the relationship between the firm's behavior on the one hand and the firm's performance on the other (Donaldson & Preston, 1995). More recently, "perspectives on stakeholder theory have moved away from an entirely corporate-centric focus in which stakeholders are viewed as subjects to be managed, towards more of a network-based, relational and process-oriented view of company-stakeholder engagement" (Andriof , Waddock, Husted & Rahman, 2002: 19).

One of the biggest challenges to the stakeholder theory is the need to respond in an appropriate way to all the demands of an organization's stakeholders. Freeman & Gilbert (1988), therefore, suggest that organizations establish processes for dealing with the conflict of interests and needs that arise within the network of relationships, while Harrison & St. John (1996) recommend identifying which organizations within the network of stakeholders hold the highest priority. Closely linked to the stakeholder view is the concept of stewardship. Those who hold to a stewardship view believe that managers should participate in interorganizational

networks only to the extent that these networks best serve the interests of the organization for which they serve as stewards (Davis, Schoorman & Donaldson, 1997).

2.1.2.6 Learning Theory

McEvily & Marcus (2005) point out that managers must deal with the challenge of guiding their organizations through uncertain situations with the limitations of bounded rationality (March & Simon, 1958) and the reality of satisficing outcomes (Simon, 1982). Under these less than favorable conditions, managers seek to learn not only from their own resources and experiences, but they also "vicariously learn from the insights, experiences, or abilities previously accumulated by linked organizations" (McEvily & Marcus, 2005: 1035).

The span of learning is broad and holds several implications for organizations, four of which are mentioned here. First, network arrangements take on several forms, such as alliances, joint ventures, trade associations, coalitions, and interlocking directorates, among others (Barringer & Harrison, 2000). The kind of information needed, to a degree, shapes the type of network that is formed and into which an organization will invest itself.

Second, network-based knowledge accrues within the context of the network (McEvily & Marcus, 2005) similar to the way social capital is formed within the context of structural relationships (Coleman, 1988). Therefore, issues of trust and information sharing are important within these networks. Uzzi and others have discussed the way in which embedded ties facilitate knowledge transfer by mitigating concerns about trust and creating a channel for knowledge transfer (Granovetter, 1985; Hite & Hesterly, 2001; Uzzi, 1997). However, network-based learning also has its limitations, as delimited both by the redundancy or diversity of knowledge capital among networked organizations (Coleman, 1988) and by the ability of an organization to exploit this knowledge (Inkpen & Tsang, 2005; Levinthal & March, 1993).

Third, the type of information available to networked organizations is both broad and deep. Organizations use networks to advance their knowledge base regarding new markets (Lane, Salk & Lyles, 2001; Tsang, 2002), new products (Deeds & Hill, 1996; Powell, et al.,

1996), new technologies (Lam, 2005), and even future network partners (Gulati, 1995, 1999). Further, organizations tap into network arrangements to learn about access to financial capital, human capital, and other key resources, especially in their early stages of firm development (Inkpen, 2002).

Fourth, the process of learning has implications for an organization. The depth and breadth of organizational learning from network partners is limited by an organization's absorptive capacity and, in turn, strengthens its absorptive capacity (Barringer & Harrison, 2000; Cohen & Levinthal, 1990; Gulati, 1999). If a firm's prior related knowledge is weak, it will not learn as much as it might if that knowledge were stronger. However, each lesson learned through a network alliance advances the firm a step further in its acquisition of knowledge. In fact, one danger in interorganizational relationships is a race for knowledge, in which partners seek to acquire and exploit external knowledge before their partners can do the same (Hamel, 1991; Khanna, Gulati & Nohria, 1998).

2.1.2.7 Dynamic Capabilities

Barringer & Harrison (2000) did not list dynamic capabilities as a theoretical foundation for network formation. However, it plays an important role in the development of this dissertation and will be briefly covered here. Presented below is a brief discussion of the way dynamic capabilities explains the formation of interorganizational networks.

The dynamic capabilities literature emerged out of the resource-based view of the firm, though its roots reach back through decades of research on firm capabilities. As such, the focus of the literature has historically been on capabilities and resources within the boundaries of the firm (Teece, Pisano & Shuen, 1997). However, more recent research has suggested that dynamic capabilities exist that extend the reach of firms outside their natural boundaries (Dyer, Kale & Singh, 2001; Helfat, et al., 2007). One example is a relationship capability, defined by Helfat, et al. (2007: 66) as "the capacity to purposefully create, extend, or modify the firm's resource base, augmented to include the resources of its alliance partners."

A distinct characteristic of a relationship capability is the unique nature of resulting alliances, involving the "creation of relationship-specific assets, access to complementary capabilities, substantial flow of knowledge between the partners, and the presence of effective governance mechanisms that can limit transaction costs between firms involved" (Helfat, et al., 2007: 67). Alliances that reflect these attributes are unique, rare, inimitable, and nonsubstitutable, as is the ability to form these alliances. Further, the capability to form these types of alliances is path dependent, building upon prior experiences over time. This brief description illustrates the point that the formation of networks can be explained as a mechanism that firms utilize to create, extend, or modify their resources, especially in dynamic, high velocity environments marked by uncertainty.

2.1.3 Antecedents of Network Formation

The previous section identified the theoretical foundations for why organizations form or participate in interorganizational networks. Attention is now given to factors that lead to the formation and participation in these arrangements. In doing so, this study follows the suggestion to apply configuration theory to new levels of analysis (Meyer, Tsui & Hinings, 1993; Short, Payne & Ketchen, 2008). Network configurations can be associated with various antecedent factors, including factors in the external environment in which the network operates (industry, technology, financial, political, and other factors) and the internal environment of the firms involved in the network (firm capabilities, resources, strategy, prior network arrangements, firm leadership, and other firm-level attributes). For example, Wang & Zajac (2007) examine the "alliance or acquisition" decision, a network configuration decision, in light of key organizational attributes, such as resource similarity, relational capabilities, and partner-specific knowledge. As the authors suggest, "There is to date no research that has examined how the configuration/combination of two firms' resources and knowledge-based capabilities can drive a pair of specific firms to embark on a partial or complete resource combination" (Wang & Zajac, 2007: 1292). While developing such a configurational view is not in the scope of this research,

identification of key antecedents of networks does play an important role. Table 2.1 identifies research regarding these antecedents of network formation and/or participation. As this study focuses on the organization-level antecedents of network formation, only the internal factors will be discussed. However, external factors are listed for future research.

Table 2.1 Antecedents of Network Involvement

Source	**Antecedent**	**Representative Studies**
External Factors		
Industry Environment and Conditions	Product life cycle Network density Appropriability regime Type of industry	Walker, Kogut & Shan, 1997 Rowley, Behrens & Krackhardt, 2000 Gulati & Singh, 1998 Lavie, 2007
Technology	Cost of technology Level of innovation Uncertainty	Grandori & Soda, 1995 Zaheer & Bell, 2005; Rowley, et al 2000 Steensma, Marino, Weaver & Dickson 2000
Globalization	Level of globalization	Grandori & Soda, 1995
Internal Factors		
Existing Relationships	Board interlocks 3rd party ties Prior networks Embedded ties	Gulati & Westphal, 1999 Gulati, 1999
Resource Needs	Need for resources	Powell & Smith-Doer, 1994; Baum, Calabrese & Silverman, 2000; Dyer & Singh, 1998
Strategy	Level of diversification Internationalization	Skinner & Guiltinan, 1986 Shane, 1994; Brothers & Brothers, 2001; Pan & Tse, 2000
Characteristics of leadership	CEO traits and entry modes CEO perceptions and attitudes	Herrmann & Datta, 2006 Dickson & Weaver, 97
Firm characteristics	Alliance/network function Trust Humility Legitimacy Reputation Skill specificity Weak-ties experience	Dyer & Singh, 1998; Helfat, et al., 2007 Kapucu 2006; Inkpen & Currall, 2004 Casper, et al, 2009 Pfeffer & Selancik, 1978 Lavie, Lechner & Singh, 2007 Harned, et al., 2004 Rowley, et al. 2000; Zaheer & Bell, 2005

2.1.3.1 Internal Antecedents of Network Participation

A great deal of research has been conducted to determine what firm-level factors tend to predict or at least positively relate to participation in interorganizational networks. Much of this research has been based on a transaction cost perspective, with the focus on lowering both the cost of transactions and the associated risks involved. For example, firms utilize existing relationships to mitigate risk and lower costs. Research on the link between existing relationships and future network participation suggests that interlocking boards, third party ties, embedded ties, and prior networks all have a relationship, with the likelihood of future network participation (Gulati, 1999; Gulati & Gargiulo, 1999; Gulati & Westphal, 1999).

From a resource-dependence standpoint, firms engage in interorganizational networks to gain access to resources that they would not have otherwise. In so doing, they seek to transform the nature of interdependence to gain a strategic advantage over the competition or even over the network partner (Gandori & Soda, 1995). As Saxton (1997: 443) suggests, "Alliances are undertaken to secure scarce and valuable resources critical for a firm's survival and prosperity." Therefore, antecedents of network formation are also related to the need for resources and the expectation that resources will be available through network partners.

While all firms must deal with the need for resources, start up firms, due to their liability of newness (Stinchcombe, 1965) and liability of smallness (Singh, Tucker & House, 1986), often utilize interorganizational networks to gain access to much-needed resources, including tangible resources, such as capital, and intangible resources, such as knowledge and reputation (Lavie, Lechner & Singh, 2007). Smith-Doerr & Powell (2005) suggest that networks provide access to tangible and intangible resources, while Dyer & Singh (1998) highlight the importance of resources that exist within a network, not solely within any one firm.

Firms also form or join interorganizational networks to facilitate strategy implementation. For example, Skinner & Guiltinan (1986) suggest that when firms specialize, the need for external resources becomes more critical. The greater the dependence on these resources, the

more likely the firm is to acquiesce to partner firm decisions. However, Harned, Keay & Schrader (2004) suggest a contradictory view of diversification, suggesting that technology firms that seek to diversify have a better chance at success if they form network partnerships. Also in the category of strategy implementation, firms that internationalize often utilize network forms of organization to alleviate the liability of foreignness (Lu & Beamish, 2001) and to gain fast access into new markets (Ito & Rose, 2004). Further, research has shown that firms that internationalize in early stages of firm development utilize networks to gain access to markets, competitive knowledge, and key resources (Oviatt & McDougal, 1994, 2005; Zahra, 2005).

A rich stream of research within the field of organizational strategy focuses on characteristics and traits of organizational leadership. While the field of interorganizational networks resides within the firm-level domain, key decisions regarding network formation must be made by individuals or groups of individuals. Therefore, considering traits and attributes of key decision makers is not only viable but also important for understanding the attributes that lead to network formation. Herrmann & Datta (2006) link CEO age and experience to foreign market entry mode decisions regarding FDI or joint ventures. Also, Dickson & Weaver (1997) link the choice of alliance formation to a manager's perception of uncertainty combined with his or her entrepreneurial orientation and individualism/collectivism orientation.

Finally, firm level characteristics are important antecedents of the likelihood of network formation and participation. Helfat, et al. (2007) discuss the importance of relationship capabilities within the firm. Alliances formed by organizations that possess a relationship capability involve "relationship-specific assets, access to complementary capabilities, substantial flow of knowledge between the partners, and the presence of effective governance mechanisms" (Helfat, et al., 2007: 67). Research suggests that firms that possess an alliance function are more likely to utilize network forms of governance and better able to leverage this dynamic capability through the resulting alliance relationships (Dyer & Singh, 1998; Kale, Dyer & Singh, 2002).

In addition to a specific relationship capability or alliance function, this research hypothesizes that organizations that have the ability to trust swiftly; have strong organizational humility; have experience with weak-ties networks; and have the ability to leverage learning from prior experiences will more likely be able to form networks for future endeavors. Chapter 3 discusses of each of these hypothesized antecedents in more depth.

2.1.4 Characteristics of Networks

Based on a configurational approach to network formation, it is suggested that the internal and external antecedent factors listed above will lead an organization to form networks with specific characteristics appropriate to meet the needs of the organization in that situation. Network characteristics include the degree of system coupling, multiplexity of ties (Stern, 1979), network density (Pfeffer and Salancik, 1978), weak or strong network ties (Granovetter, 1973), structural holes (Burt, 1992), centrality (Brass & Burkdardt, 1992), and time orientation (Perez-Nordtvedt & O'Brien, 2006).

The degree of system coupling "is often defined as the degree to which events within one part of a system are felt by other parts of that system" (Stern, 1979: 245). In a tightly coupled network, changes within one area of the network will be felt more directly than in a loosely coupled network. Loosely coupled networks provide a means for each network actor to adapt to local environmental changes without negatively impacting the network, thereby providing the actor with greater autonomy.

Multiplexity of ties reflects the strength and number of ties between network actors. A single network tie between two nodes is not as strong as two or more linkages between them. Nodes connected by more linkages allow for greater flow of information. The greater the multiple ties between network partners, the stronger the overall network (Aldrich, 1979; Stern, 1979). Similar to multiplexity is network density. The density of a network "is calculated as a ratio of the number of relationships that exist in the network, compared with the total number of possible ties if each network member were tied to every other member" (Pillai, 2006: 135).

While density does not measure the strength or number of ties between various network partners, it does demonstrate where structural holes exist within the network. “Structural holes are gaps in information flows between actors linked to the same firm but not linked to each other” (Pillai, 2006: 137). When firms are indirectly linked, they tend to provide nonredundant information. The network actor that acts as the bridge or buffer between these two indirectly related actors has greater access to new information as well as greater power within the network (Burt, 1992). Similarly, networked organizations that maintain a more central location within an interorganizational network relative to others within the network have more access to information and resources (Brass & Burkhardt, 1992).

Additionally, networks can be described as having weak or strong network ties. Networks defined by strong ties involve a close bonding connection, trust, and willingness to work toward collective goals. Within these networks, norms of conduct develop, ensuring network-oriented behavior. In these strong-ties networks, social capital grows as well. (Coleman, 1988) Strong-ties networks also foster trust and group identity usually associated with group cohesion. Weak network ties, on the other hand, describe networks in which participants are more diverse and have fewer norms and expectations of reciprocity. Granovetter (1973) demonstrated the benefits of diverse or weak network linkages when an individual searches for a job. Looking only to existing network ties for assistance limits the volume and diversity of information available to those within the network. By filling the “structural holes” within the network with disparate sources of information, network members move beyond the limitations of redundant information and increase the social capital available to the network (Burt, 1992). So which type of tie strength is most beneficial for an organization? It depends on the purpose for the network and the need of the participating organization. Lechner & Dowling (2003: 21) suggest that “knowledge creation seems to depend on strong ties while knowledge acquisition depends on weak ties.” Similarly, Hebbert, Keast and Mohannak (2006) demonstrate that entrepreneurial, innovative firms must oscillate between weak and strong ties at different

times in the firm's development to make the most effective use of network connections. Uzzi (1997), in his discussion of embeddedness, recommends that organizations should look at the contingent requirements and determine whether strong-ties or weak-ties strategy best fits the particular needs of the moment.

A final way to examine networks is by determining the length of time required to form the network and the duration of time the network endures (Alter & Hage, 1993; Perez-Nordtvedt & O'Brien, 2006), in other words, a temporal dimension. Network formation speed and duration are dependent on several factors. First, the external environment plays a role in the speed with which networks are formed. Crisis environments can lead organizations to quickly form networks even with alters they do not know and with which they have never before collaborated. Typically, the expected duration of a network reflects the willingness to invest in the network on the part of network actors. Investments come in different forms, including investment of information or resources at one end of the continuum to investment in interdependent collaboration at the other end. The expected duration of the network will reflect the degree of investment on the part of the parties. Network structures such as joint ventures and trade associations that involve equity investments or the development of an administrative function take time to develop and, in theory, last longer than non-equity partnerships. However, when these relationships are comprised of competing organizations, they often fail due to lack of trust or self-serving behavior. This, in part, reflects the high rate of joint venture failures.

A coalition or strategic alliance, on the other hand, might form quickly to respond to some change in their environments. A coalition that forms around a single action item might form quickly, but will dissipate as soon as its purpose is completed. Temporary networks form quickly to respond to exogenous threats or opportunities, but by their nature, they end as soon as the network is able to respond to the cause of their formation. These shocks include natural and man made disasters, unexpected government actions including military, regulatory or

economic actions as well as discontinuous and dramatic changes in technology and the external environment.

2.1.5 Network configurations

Barringer and Harrison (2000) provide a good overview of six different network forms: joint ventures, networks, consortia, alliances, trade associations and interlocking directorates. These forms differ in their purpose, tightness of coupling, degree of hierarchical structure, strengths and weaknesses. Three of these six types of relationships will be discussed here: joint ventures, strategic alliances and networked organizations.

Prior to a discussion of these network types, one must be aware of the issue of control as a means of mitigating moral hazard. Firms considering network participation must be aware of the cost of moral hazard, as well as the coordinating costs involved. Network governance structures are used to control these costs as much as possible. Gulati and Singh (1998) examined four factors that relate to levels of control in alliance governance structures: task interdependence, technology, appropriability regime of the industry, and trust among partners.

Joint ventures occur when two or more parent firms establish an equity investment in a newly formed organization. One reason for establishing a joint venture is to gain access to a new market, especially a foreign market (Doz and Hamel, 1998; Lu and Ma, 2008). Other purposes for joint ventures include opportunities to develop economies of scale in production and to expand product lines (Barringer and Harrison, 2000; Dussauge, Garrete and Mitchell, 2004; Hennart, 1988).

Due to the complex nature of joint venture arrangements, partnering firms must consider both the strategic and financial goals of the arrangement, both their own goals as well as the goals of the joint venture, to ensure that a joint venture is the best form of collaboration. Governance of joint ventures is an important predictor of the long term success of the partnership (Inkpen and Li, 1999). Governance issues include structure and selection of board members, selection of the joint venture's executive officers and monitoring mechanisms

(Barringer and Harrison, 2000). Inkpen and Li (1999) suggest a degree of flexibility in initial phases of governance to allow the managers involved in the joint venture to identify strengths and weaknesses, and to establish the joint venture's strategic direction. The degree of pre-joint venture interaction and planning, inter-firm trust and third party ties can improve the joint venture's chances at success (Park and Russo, 1996).

Less tightly coupled than a joint venture, strategic alliances involve two or more organizations cooperating for joint gain in which no equity stake occurs. Alliances also differ from trade association in that they can cross industry lines and have no central coordinating body. Therefore, alliances tend to have a shorter life span than joint ventures or trade associations. Their strength is in their flexibility and speed of arrangement and operation. Alliances provide a means by which firms can share the cost and risk of research and development (Das, Sen and Sengupta, 1998), gain legitimacy and enhance their reputation (Stuart, Hoang and Hybels, 1999), and strengthen marketing (Park and Ungson, 2001) among other benefits.

However, research indicates that over 50% of all strategic alliances fail (Park and Ungson, 2001). To a degree, the failure rates of alliances can be attributed to the fact that this form of interorganizational relationship is less tightly coupled than other forms with fewer hierarchical and governance structures in place. However, Park and Ungson (2001) suggest that the data on alliance "failures" might be skewed. Some alliances end simply because they have accomplished the purpose for which they were formed. Further, simply because the nature of the relationship has ended, such as is the case with an acquisition, does not mean that the alliance was a failure.

A third form of interorganizational relationship based on Barringer and Harrison's (2000; 387) description is the networked organization, defined as, "constellations of businesses that organize through the establishment of social, rather than legally binding, contracts." Similar to the alliance structure, a network allows partnering firms to specialize in their particular

competency and benefit from the specialization of network partners. Networks are most beneficial when the external environment is uncertain and organizations need to act quickly (Jones, Hesterly and Borgotti, 1997). One difference between a network and an alliance is the use of hub and wheel formation in which a larger firm serves as the hub coordinating the work of smaller firms. As Barringer and Harrison (2000: 388) suggest, "(a) network of firms tied together by a hub organization, social norms, and clearly aligned interests can move quickly to bring new products to market."

2.1.6 Network Outcomes

The interest in network arrangements from both academics and practitioners has grown significantly over the past two decades, especially in the area of joint ventures and strategic alliances. As Dyer and Singh (1998) suggest, interorganizational networks provide rent-seeking advantages for firms by extending the firm's access to resources beyond the boundaries of the firm. Beneficial outcomes of network participation include learning advantages (Schildt, Maula and Keil, 2005) market share increases (Binder, Bowers and Yung, 2004; Dussauge, Garrette and Mitchell, 2004; Sarkar, Echambadi and Harrison, 2001), market strength and IPO performance (Das, Sen and Sengupta, 1998; Stuart, Hoang and Hybels, 1999), and survival (Mitchell & Singh, 1996). However, the actual outcomes of network involvement do not always live up to the expected outcomes (Park & Ungson, 2001). Many such network arrangements fail, resulting in lost investments, lost technology, and lost reputations. However, when networks operate in productive ways, many positive outcomes can result, as well.

As described in the learning theory approach to networks, organizations form network arrangements to learn from other organizations (Barringer and Harrison, 2000; McEvily and Marcus, 2005). Yet the relationship between network involvement and learning is not necessarily straight forward. Schildt, et al. (2005) found that the type of network structure influenced the type of learning that took place. Strategic alliances and joint ventures more than acquisitions are more closely associated with explorative (rather than exploitative) learning.

Further, the authors also found that external ventures in related industries were more closely aligned with exploitative learning rather than explorative learning. Inkpen (2002) differentiated between three types of learning: joint learning, inter-partner learning and learning by doing. Building on this distinction, Dussauge, et al. (2004) found that benefits accrue at different rates based on the type of learning occurring. Finally, an additional learning outcome of network involvement occurs when partners race to learn such that they no longer are dependent on the network for necessary information, skills or knowledge (Hamel, 1991; Khanna, Gulati and Nohria, 1998).

A second outcome of network involvement is an increase in market share. Sarkar, et al. (2001: 701) found that alliance proactiveness, "the extent to which an organization engages in identifying and responding to partnering opportunities," was positively related to measures of organizational performance including market share increases. A McKinsey study demonstrated that joint ventures between small Chinese insurance companies and foreign firms provided unique market share growth in a highly competitive Chinese market dominated by three larger, domestic insurance companies (Binder, et al., 2004). However, alliances between firms within the same industry can result in asymmetric benefits depending on the type of alliance formed. Dussauge, et al. (2004) found that scale alliances, in which all alliance partners invest in one or more value chain stages, utilize joint learning and benefit partners more symmetrically related to outcomes such as market share. However, firms involved in link alliances each contribute unique skills, knowledge and resources, and become involved in inter-partner learning and learning by doing, and result in more asymmetrical benefits to partners, inclusive of market share differences.

A third outcome of network involvement is an improvement in investor perception of firm value (Das, et al., 1998). Announcements of technological alliances are associated with greater abnormal market returns. However, when smaller firms join alliances with larger, more profitable firms, the smaller firm experiences the greater benefit of this alliance in terms of market

performance. Related to this finding, Stuart, et al. (1999) found that when biotechnology firms participate in strategic alliances prior to going public, their speed to market is faster and IPO performance is stronger compared to firms not participating in such alliances.

A final outcome has to do with the survivability of firms in network arrangements. Watson (2007) found that network participation has a positive relationship to firm survival, and more specifically, network intensity is related to survival. Mitchell and Singh (1996) found that collaboration, in general, strengthens firm survival rates.

The previous discussion of the interorganizational network literature has identified why organizations form networks, the antecedent conditions leading to network formation and participation, types of network governance structures and the potential outcomes of network participation. Chapter 3 will develop hypotheses specifically related to the type of networks formed in crisis environments by relief organizations for the purpose of delivering relief and development services to victims of these crises, and the organizational antecedents that enable this formation.

2.2 Dynamic Capabilities

The literature on dynamic capabilities has developed more recently than that of interorganizational networks, and is more limited to the field of strategic management. Even so, a great deal of support for the theories and framework of dynamic capabilities already exists. The following review will 1) provide definition and background to the development of the concept, 2) outline the processes that enhance firm capabilities leading to competitive advantage, 3) describe types of dynamic capabilities in general and relational capabilities in particular, and 4) identify the role of dynamic capabilities in nonprofit organizations.

2.2.1 Background and definitions

The concept of dynamic capabilities is rooted in the resource based literature (Teece, et al., 1997). Starting in the 1980s, first Wernerfeldt (1984) and Teece (1984) and later Barney (1991) led management theorists back to the early roots of firm level capabilities found in the

work of Penrose and Andrews among others. The transition from the dominant structure-conduct-performance paradigm (SCP paradigm) of Porter (1980) to a capabilities emphasis took the focus of strategy development off the industry level of analysis and shifted it to examining firm level resources that could lead to a competitive advantage (Hoskisson, Hitt, Wan & Yiu, 1999). Supporting this transition was the empirical analysis of Rumelt (1991), among others, who demonstrated that firm-specific factors had a greater impact on rent-generation within industry groups than did industry effects (Teece, et al., 1997).

Obviously not just any resources could lead to a firm competitive advantage. Barney (1991) suggested that resources that are valuable, rare, inimitable and nonsubstitutable (VRIN resources) are required to create a sustainable competitive advantage. Further, resource based researchers suggested that the development of these VRIN resources is path dependent, meaning they cannot simply or easily be bought in the market. These differences from the SCP paradigm are significant and have significant implications on strategy development and execution in business. However, Teece et al. (1997) suggest that neither alone is sufficient to provide a complete analysis of markets and path to the successful development and execution of strategy in those markets.

In this setting, the idea of dynamic capabilities was developed. An early definition of dynamic capabilities was formed by Teece, et al. (1997: 516) as, the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." However, many definitions, each with their own unique dimension, have been developed. Table 2.2 provides some of the more significant contributions to the definition of dynamic capabilities in the strategic management literature.

As with any new field of study, debate has occurred regarding the definition of dynamic capabilities. Even so, most definitions share important commonalities. Before a definition can be suggested, a conceptual foundation must be developed, inclusive of the definition of resources and capabilities. Since dynamic capabilities research highlights the importance of firm

resources, it is important to delineate what is meant by a resource. According to Helfat and Peteraf (2000: 999), a resource is “an asset or input to production (tangible or intangible) that an organization owns, controls, or has access to on a semi-permanent basis.” Further, since a dynamic capability is a type of organizational capability, it is necessary to define this term, as well. Again, according to Helfat and Peteraf (2000: 999), an organizational capability is “the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result.” Similarly, Winter (2003: 991) suggests that organizational capabilities are “a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type.”

The definitions in Table 2.2 highlight important similarities in the conceptualization of dynamic capabilities. First, Zollo and Winter (2002), Winter (2003) and Helfat, et al. (2007) distinguish an organizational capability from a dynamic capability, suggesting a hierarchical nature to capabilities. Operational or zero-order capabilities enable a firm to carry out their operations. First-order dynamic capabilities transform these operations through the creation, extension or modification of the resources involved in that capability. Zollo and Winter (2002) and Collis (1994) even suggest the possibility of a second-order dynamic capability such as learning mechanisms that become systematized within a firm. Teece (2007: 1344) seems to agree with this hierarchical view when he describes dynamic capabilities as “high-level activities.”

Second, several authors highlight the intentional nature of dynamic capabilities. Helfat, et al. (2007) emphasize dynamic capabilities as those that enable an organization to act purposefully, while Zahra, Sapienza & Davidsson (2006) highlight the decision maker’s intentionality and Teece, et al. (1997) illustrate the role of these capabilities to address changing environments. Helfat and Peteraf’s (2003) and Winter’s (2003) descriptions suggest an element

of learning, repetition and intentionality. This degree of intentionality distinguishes dynamic capabilities from routines, which Helfat et al. (2007: 4) refer to as “rote organizational activities.”

Third, Eisenhardt and Martin (2000) and Helfat, et al. (2007) both agree that a specific dynamic capability is not a strategic advantage in and of itself, but rather it is the resource arrangement that results from the use of a dynamic capability that can enable an organization to capture a competitive advantage. In fact, Zahra, et al. (2006) and Winter (2003) both point out that the maintenance and use of dynamic capabilities can be costly and do not by themselves ensure a particular performance outcome. Finally, Winter (2003) and Helfat and Peteraf (2003) both imply that capabilities are specific, suggesting that a generic dynamic capability does not exist. Rather, particular dynamic capabilities are linked to specific objectives.

Even with these commonalities, several challenges exist within a definitional framework of dynamic capabilities. Primary challenges relate to the problem of tautological definitions and challenges in measuring the construct that can lead to ambiguity in labeling. First, similar to criticisms of RBV (Priem & Butler, 2001), definitions of dynamic capabilities have been accused of having tautological problems. Teece (2007: 1344) suggests that dynamic capabilities “enable(s) a firm not just to invent, but also to innovate profitably.” One problem arises when the outcome of the construct being defined is made a part of the definition or description itself (e.g. innovate profitably). To avoid this problem, both Zahra, et al. (2006) and Winter (2003) disaggregate the capability from the outcome, suggesting that possession of a dynamic capability may or may not create an advantage for an organization. A second tautological problem of early definitions involved linking dynamic capabilities specifically to dynamic environments. While a dynamic capability should provide the best opportunity for creating a competitive advantage in a dynamic environment, by definition the firm can develop and use a dynamic capability in any environment (Zahra, et al., 2006). Further, since the development and maintenance of a dynamic capability can be costly, an organization might seek to utilize the capability in less dynamic environments, resulting in less efficient operations (Winter, 2003).

Table 2.2 Definitions of Dynamic Capabilities

Source	Definition	Unique contribution
Teece, et al., 1997	"the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments"	Extends the RBV logic to dynamic environments; focus on strategic choice and creative destruction
Eisenhardt & Martin, 2000	"the firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die."	Delineated between dynamic capabilities in stable and high velocity environments; describes them as routines; suggests that the capabilities are not the source of competitive advantage, but rather the resulting resource configuration
Zollo & Winter, 2002	"a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness."	Considers dynamic capabilities as systematic, not ad hoc activities
Winter, 2003	"those (capabilities) that operate to extend, modify or create ordinary capabilities."	Creates a hierarchical order to capabilities
Zahra, et al., 2006	"the abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by the firm's principal decision-maker(s)."	Avoids a tautological definition by distinguishing between what a dynamic capability is and its outcome
Helfat, et al., 2007	"the capacity of an organization to purposefully create, extend, or modify its resource base"	Describes dynamic capabilities as capacities, and infers that they can operate in static or dynamic environments

A second challenge facing the research in dynamic capabilities is one of measurement and labeling. Teece (2007) suggests that dynamic capabilities can be "disaggregated into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary,

reconfiguring the business enterprise's intangible and tangible assets" (Teece, 2007: 1319). He then explains each of these capacities and also suggests many organizational assets and processes that support, or potentially limit, these capacities. However, he does not explain them in a way that is either measurable or observable. Rather, they are known by their outcomes and by the processes that support them. Accordingly, Ambrosini and Bowman (2009: 37) suggest that "capabilities have been poorly specified," making empirical analysis more challenging. In fact, as they point out, few empirical studies of dynamic capabilities exist.

The problem of labeling has also made research in dynamic capabilities more challenging. As already described, research makes a distinction between ordinary or zero-order capabilities and the dynamic capabilities that transform them. There is a clear distinction between these very different capabilities. However, some (Collis, 1994; Winter, 2003) suggest that firms that posses *higher-level* dynamic capabilities will have the capacity to continually create new dynamic capabilities or modify and extend existing dynamic capabilities. The upward limit of this type of hierarchy of dynamic capabilities could be limitless in theory, creating confusion and perhaps extending the definition of dynamic capabilities beyond a reasonable scope. Rather than a dynamic capability, perhaps what is actually involved in these "higher-level dynamic capabilities" is a firm-level orientation, somewhat like entrepreneurial orientation, that enables firms to proactively sense and adapt to changing environments through the creation of specific dynamic capabilities. Further research should be conducted on the possibility of a firm-level construct to measure this possible dynamic orientation.

Based on the prior research in this field, for the purpose of this study, I define dynamic capabilities as:

> second-order capabilities that provide an organization the capacity to purposefully create, extend, or modify its ordinary capabilities in the manner envisioned and deemed appropriate by the firm's principal decision-maker(s).

2.2.2 Processes that enhance firm capabilities leading to competitive advantage

As defined above, a dynamic capability is a second-order capability that provides an organization the capacity to purposefully create, extend, or modify its ordinary capabilities. Dynamic capabilities change processes, routines and resources in an effort to better align the organization with changes in the task and general environments. Many theories from the domains of organizational theory and strategic management discusses how important it is for an organization to fit its environment, including population ecology (Hannan and Freeman, 1977), institutional theory (DiMaggio and Powell, 1983), contingency theory (Donaldson, 1987), strategic choice (Child, 1972), and industrial organization economics (Porter, 1980). Dynamic capabilities theory builds on this proposition by emphasizing the importance of technical and evolutionary fit within organizations (Helfat, et al., 2007; Teece, 2007).

Evolutionary fitness involves the means by which a firm uses its dynamic capabilities to establish a profitable position within the firm's chosen competitive environment. Technical fitness on the other hand, reflects the way a dynamic capability is used to maximize the efficiency of organizational processes to which the capability relates (Helfat, et al., 2007). In other words, firms utilize dynamic capabilities to create a competitive advantage by intentionally responding to market transitions with innovative processes and products through the coordination and reconfiguration of firm-level competencies.

Teece (2007) developed an integrative model of dynamic capabilities that establishes not only the key processes (sensing, seizing and managing/transforming) involved in gaining a competitive advantage, but also the micro-foundations within organizations that facilitate the key processes. For example, firms that effectively sense opportunities and threats in the environment have processes in place to identify knowledge within the firm and from outside sources such as suppliers, customers and technology development centers such as universities.

Learning plays an important role in this sensing process. While learning takes place at an individual level, it is inextricably linked to social interaction and has implications for the organization as a whole, as is found in the literature on absorptive capacity (Cohen & Levinthal, 1997). Further, learning takes place within an organization, but can also be enhanced through interorganizational networks, such as strategic alliances based on technology development (Teece, et al., 1997).

Next, firms that are able to seize upon the opportunities discovered are unique in their ability to break free of old paradigms, form new business models, make financing decisions based on uncertain returns and align loyalty and incentives to facilitate innovation (Teece, 2007). Finally, firms must also maintain their competitive advantage by continually realigning tangible and intangible assets, and can do so due to decentralized structures, co-specialization and knowledge management routines (Teece, 2007).

As Teece points out, simply identifying new knowledge, routines, opportunities or threats is not sufficient for building a strategic advantage. Organizations must integrate that new knowledge into the organization and coordinate the various people, departments, and resource bases of the organization. Coordination and integration involves the process by which various tasks within the network of persons, groups and firms involved in an organization's activities are combined. Those firms that are able to coordinate and integrate more efficiently and effectively tend to outperform those firms that cannot do so (Eisenhardt & Tabrizi, 1995). Further, firms that are able to adapt their processes to incorporate changing technology are less likely to be limited by outdated technology (Henderson & Clark, 1990).

The first two processes, sensing and seizing, are similar to exploration and exploitation processes described by March (1991). However, a key distinction is that while March highlighted the conflicting forces between these processes, Teece (2007) suggests that sensing and seizing do not need to act independently or in contradiction to each other. Further, in

Teece's (2007) model, sensing and seizing must be followed by an organization's ability to transform the organization to capitalize on new knowledge or opportunities while defending itself against threats. The full model constitutes a dynamic capability, and is closely linked to "superior long-run business performance," according to Teece (2007: 1319).

However, simply possessing a dynamic capability cannot ensure the development or maintenance of competitive advantage. As with any capability or resource, knowing when and how to use it is of critical importance. For example, Helfat, et al. (2007) describe an acquisition-based dynamic capability as including the ability to determine if an acquisition is the best way to create, extend, or modify an organization's resources. But they do not take into consideration the bounded rationality (March & Simon, 1958) under which managers operate. Decision makers are influenced by their prior experiences and expectations (Moliterno & Wiersema, 2007). As creatively stated by Simon (1973: 347), "Managers, of course, swim about in the organizational environment, are influence by it…" Therefore, a potential exists for managers to implement inappropriate dynamic capabilities (Ambrosini & Bowman, 2009). Therefore, based on prior experience, personnel working with acquisitions will be more likely to perceive that an acquisition is the appropriate growth strategy when given the assignment of determining if an acquisition is the best way to create, extend, or modify an organization's resources.

To illustrate, for years, Johnson and Johnson has utilized an acquisition strategy to effectively increase the value of the company. However, in doing so it has also driven up the prices of acquired firms and resulted in organizational divisions that work in isolation, failing to generate synergistic advantages that could accrue in such a related diversification strategy (Dess, Lumpkin & Eisner, 2008). If J&J continues to use an acquisition strategy because it has worked for them in the past, and fail to develop new products or shared distribution channels across divisions, the dynamic capability responsible for much of their growth might also be responsible for their decline.

Dynamic capabilities can also be costly to develop and to use (Ambrosini & Bowman, 2009; Lavie, 2006; Pablo, Reay, Dewald & Casebeer, 2007). “(D)ynamic capabilities typically involve long-term commitments to specialized resources. The more pervasive and detailed the patterning of the activity involved, the higher the costs of the commitments tend to be” (Winter, 2003: 993). In addition, for these capabilities to continue to be maintained, they must be used (Helfat, et al., 2007). However, depending on the type of dynamic capability, the nature of the organization and the environment in which it exists, an organization might not have many opportunities to utilize the capability. Using the example of acquisitions again, unless a firm plans to use an acquisition strategy on an on-going basis, it might be more cost efficient to use what Winter (2003) calls an ad hoc solution.

2.2.3 Types of Dynamic Capabilities

As has already been established, dynamic capabilities enable a firm to sense opportunities and threats, seize upon the knowledge and opportunities that exist and transform the resource base within the organization in order to capitalize on these opportunities. However, these three basic processes represent a variety of specific dynamic capabilities. While few empirical studies exist, several authors have discussed various types of dynamic capabilities. Helfat, et al. (2007) utilize case-based descriptions to illustrate an innovation capability at Rubbermaid and Intel, and an acquisition capability at Quaker Oats. Further, they also discuss a relational capability that enables firms to more effectively form and use alliances. Ambrosini and Bowman (2009) discuss dynamic capabilities for reconfiguring assets and resources, capabilities for leveraging processes or systems in new domains, learning capabilities and creative integration capabilities.

In addition to these examples, other researchers have also identified specific dynamic capabilities involving research and development (Helfat, 1997), acquisition (Karim & Mitchell, 2000), product innovation (Danneels, 2002), absorptive capacity (Zahra & George, 2002),

organizational structure reconfiguration (Karim, 2006) and even resource divestment (Moliterno & Wiersema, 2007).

Closely related to a TNDC, Dyer, et al. (2001: 38) describe an alliance capability as one that "coordinates all alliance-related activity within the organization and is charged with institutionalizing processes and systems to teach, share and leverage prior alliance-management experience and know-how throughout the company." Such a capability adds value in four ways: managing alliance-related knowledge, providing visibility to external stakeholders, accessing and coordinating internal resources across the organization, and measuring alliance performance. The authors found that organizations that utilize a dedicated alliance function have longer-lasting alliances as well as better market responses to alliance announcements.

2.2.4 The Role of Dynamic Capabilities in Nonprofits

As reflected in the extant research discussed in the previous sections, most research in dynamic capabilities involves for-profit organizations. However, Helfat, et al. (2007) suggest that nonprofit organizations can utilize dynamic capabilities, as well. Nonprofit organizations possess resources and operational routines utilized to carry out their operations. Similarly, they can possess capabilities to create, extend or modify their resource base as they transform operational capabilities to take advantage of opportunities or defend themselves from environmental threats. Finally, nonprofit organizations must also deal with competition, though in different ways than for-profits. Nonprofits compete for funding (Lindenberg, 2001), for experienced personnel (Bishop, 2004), volunteers, (Leonard, Onyx & Hayward-Brown, 2004) and media attention (Stride & Lee, 2007), among other things.

Like their for-profit counterparts, these organizations are directly impacted by their external environments and must adapt to changes in these environments or run the risk of extinction (Bishop, 2004). Forming and using dynamic capabilities can enable a nonprofit organization to better adapt to its changing environment. One example of an organization utilizing an alliance formation dynamic capability is CARE, a large INGO based in the USA. As

Lindenberg describes (2001: 248), “CARE experimented with a variety of private and public sector strategic frameworks to help reposition itself to achieve greater impact, relevance, and efficiency in a more competitive global environment.”

Another example of nonprofits utilizing dynamic capabilities is provided by Pablo, et al. (2007). The authors identify how a regional health authority (RHA) in Calgary, Canada used “learning by experimentation” to realign their resources to better deliver healthcare to the public in spite of, or perhaps because of, a significant reduction in their budget. This proactive strategic move on the part of the authority reflects the use of a learning capability to realign resources to adapt to a changing environment.

2.3 Conclusions from the Literature

This research identifies three important gaps in the literature. First, while the importance of fit within the environment is suggested, the effects of environmental forces upon specific dynamic capabilities has not been addressed. As discussed above, Winter (2003) suggests that use of dynamic capabilities might be unnecessary and costly when an ordinary capability is sufficient in and of itself. It would be important to know if environmental forces might influence when a certain dynamic capability should be utilized and when it should not. The coordination and integration role takes on different dimensions under differing levels of environmental dynamism. In moderately dynamic environments, managers can create routines based on explicit and tacit knowledge that provide a sense of predictability for the firm. Further, in moderately dynamic environments managers can use a more comprehensive, linear form of decision making. However, in high velocity environments marked by discontinuous change and uncertainty, firms cannot depend on past routines to help them. In these conditions, dynamic capabilities involve simple processes that help managers avoid being tied to past practices as well as overly committed to new processes until appropriate priorities can be defined (Eisenhardt and Martin, 2000).

Second, little is mentioned about how organizational characteristics influence the development or use of dynamic capabilities. For instance, Teece, et al. (1997: 521) indirectly make reference to the important role of organizational attributes when they say, “narcissistic organizations are likely to be impaired.” Indeed, narcissistic organizations are limited in their ability to learn and change. Brown (1997) suggests that, like individuals, firms behave in narcissistic ways when they deny, rationalize, self-aggrandize, enact attributional egoism, assume entitlement and are driven by anxiety. Denial in an organizational context could involve an unwillingness to recognize when changes are necessary or when changes enacted are failing. Brown reflects Starbuck’s (1983) contention that “organizations act unreflectively and non-adaptively most of the time…a large portion of what seems to be rational behavior actually consists of actions that are post hoc justified (rationalized) to the organization’s employees and to managers themselves” (Brown, 1997: 657). It is easy to see how narcissistic organizations would find it difficult to utilize learning processes or processes related to reconfiguration and transformation effectively.

To fill this gap in the literature, this research suggests that certain organizational attributes act as antecedents to the development and use of dynamic capabilities. Specifically, I examine the antecedent role of swift trust, prior network experience, prior crisis experience, political behavior, skill specificity and organizational humility on the dynamic capability for forming and using temporary networks.

Third, while a great deal of theoretical literature exists regarding dynamic capabilities, few empirical studies have been conducted. Those that exist “by and large describe broad organizational processes: they do not delve into the detailed, micro-mechanisms of how these capabilities are deployed or how they ‘work’” (Ambrosini & Bowman, 2009: 37). This study attempts to shape a theoretical foundation for a particular dynamic capability, TNDC, and then empirically measure characteristics of that capability including antecedents and outcomes.

CHAPTER 3

THEORY AND HYPOTHESIS DEVELOPMENT

Based on the review of the interorganizational networks and dynamic capabilities literatures, this study proposes to fill the gaps identified by establishing the following propositions and hypotheses. The research is divided into two phases. Study 1 follows an inductive approach to identify key constructs and develop theory regarding the characteristics of relief organizations that facilitate the development and use of interorganizational networks when responding to a natural disaster. Accordingly, I develop propositions regarding these characteristics. Study 2 builds on this theory development to test the relationship between the antecedent factors identified in Study 1, temporary network development capability (TNDC) and organizational performance. In Table 3.1 I summarize the propositions and hypotheses that were developed in this chapter. Further, Figure 3.1 models the relationships hypothesized in this chapter. In Chapter 4 I provide the rationale for this mixed methods approach, as well as the steps taken in each phase of the study.

Table 3.1 Summary of Research Propositions and Hypotheses

P1	Relief organizations with prior network experience will more likely participate in networks when responding to a natural disaster.
P1a	Relief organizations with prior experience with weak-ties networks will be better able to quickly form temporary networks when responding to natural disasters.
P2	Relief organizations that possess the ability to swiftly trust others will be better able to quickly form temporary networks when responding to natural disasters.
P3	Relief organizations that are seen as legitimate will be better able to quickly form temporary networks when responding to natural disasters.
P4	Relief organizations that are seen as having a strong reputation will be better able to quickly form temporary networks when responding to natural disasters.
P5	Relief organizations with prior experience in crisis response will be better able to form temporary networks quickly when responding to natural disasters.
P6	Relief organizations that take a generalist strategy will be better able to quickly form temporary networks when responding to natural disasters.
P7	Relief organizations characterized by humility will be better able to quickly form temporary networks when responding to natural disasters.
P8	Relief organizations characterized by more political behavior will be less able to quickly form temporary networks when responding to natural disasters.
H1	There is a positive relationship between a relief organization's prior experience with interorganizational networks and its TNDC.
H1a	The strength or prior network ties will moderate the relationship between prior network experience and TNDC such that experience with weak-ties networks will strengthen the relationship between prior network experience and TNCD.
H2	There is a positive relationship between a relief organization's ability to trust swiftly and its TNDC.
H3	There is a positive relationship between a relief organization's prior crisis experience and its TNDC.
H4	There is a negative relationship between a relief organization's degree of skill specificity and its TNDC.
H5	There is a positive relationship between a relief organization's organizational humility and its TNDC.
H6	There is a negative relationship between a relief organization's level of internal political behavior and its TNDC.
H7	A relief organization's TNDC will be positively related to the achievement of its goals and objectives.
H8	The relationship between a relief organization's TNDC and its organizational performance will be moderated by the external environment such that in high velocity environments the relationship between TNDC and performance will be stronger.
H9	The relationship between TNDC and organizational performance will be moderated by the amount of resources available to the relief organization such that at very low levels and very high levels of resources available to the organization, fewer network linkages will be formed and the organizations' objectives will be attained to a lesser degree.

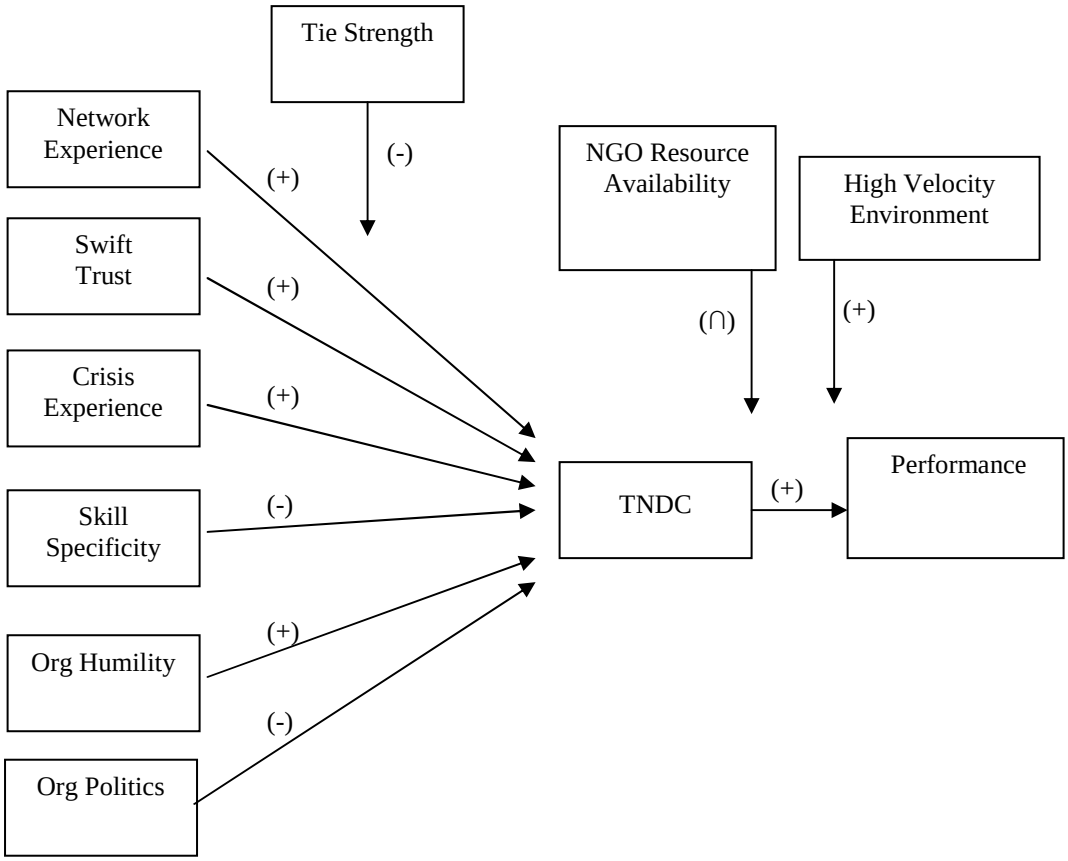

Figure 3.1 Model of Hypothesized Relationships

3.1 Study 1

In the first study, I follow a grounded theory approach (Glaser & Strauss, 1967; Strauss & Corbin, 1998), seeking to move beyond existing knowledge in interorganizational networks and dynamic capabilities to discover the characteristics of relief organizations that better enabled them to form and utilize interorganizational networks in the midst of responding to a natural disaster. I believed that through the use of semi-structured interviews, key organizational characteristics could be identified. Methods for developing and conducting these interviews and their outcomes are discussed in Chapters 4 and 5. Below are the propositions developed during this qualitative phase of the investigation.

3.1.1 Prior Network Experience

A great deal of interorganizational network literature affirms the idea that one predictor of future network experience is prior network experience (Gulati, 1999; Gulati & Gargiulo, 1999; Gulati & Westphal, 1999). In this current study, the same phenomenon was expected, that is, I expected to find that relief organizations that had collaborated in previous disaster responses would be more likely to collaborate in future disaster responses.

However, not all network experience is the same, just as not all network configurations are the same. As has already been described in Chapter 2, interorganizational networks take various forms. Some network linkages can be described by strong ties between the partners while others have weak ties (Granovetter, 1973). The concept of tie strength is similar to that of multiplicity of ties (Aldrich, 1979; Stern, 1979) and system coupling (Stern, 1979). The greater the number of linkages between partners and the impact of those ties on multiple areas within each partner's organization, the stronger the ties that bind these organizations together.

The type of network desired depends, in part, on the goals of the partnering organization (Hebbert et al., 2006; Lechner & Dowling, 2003; Uzzi, 1997). Under many conditions, organizations would prefer to utilize strong-ties networks due to the degree of

predictability, certainty, trust, reciprocity, and social capital that accrues within these types of networks (Coleman, 1988; Granovetter, 1973).

However, weak-ties networks provide outcomes not available to strong-ties networks, and it is suggested that experience with this form of network is more beneficial to relief organizations responding to disaster than strong-ties networks. Weak-ties networks provide focal organizations with access to unique information (Burt, 1992). Further, Zaheer and Bell (2005) point out that since network ties can be costly to maintain, reducing the number of redundant ties can provide cost advantages. Relief organizations responding to natural disasters seek to overcome the environmental challenges of uncertainty and insufficient information. They typically operate on limited budgets through donations or government grants. Given these factors, organizations capable of utilizing weak-ties networks will be better able to provide their services more effectively than those that utilize strong-ties networks.

However, organizations that have little experience with weak-ties networks might not be able to form these networks in the time-sensitive and uncertain environments in which they operate. This is true for at least three reasons. First, Rowley, Behrens and Krackhardt (2000) suggest that organizations that are deeply embedded in strong-ties partnerships risk sanctions by their alters when considering partnerships outside the network. Second, weak-ties networks provide access to information about organizations outside existing networks (Powell and Smith-Doerr, 1994; Uzzi, 1997; Zaheer and Bell, 2005). If prior networks involve only strong-ties partnerships, member organizations will have less access to information about potential partners outside the existing networks. Finally, extrapolating from the literature on knowledge acquisition, firms that focus primarily on knowledge exploitation can be limited in their efforts at knowledge exploration (Cohen & Levinthal, 1990). Rowley et al. (2000) suggest that organizations operating in uncertain environments must focus their attention on knowledge exploration. Expanding this concept to the realm of relief organizations responding to natural disasters, organizations with prior experience in gaining new knowledge through partnerships

with diverse alters will be better equipped to tap into diverse sources of new knowledge when responding to a natural disaster. For these reasons, the first proposition established in Study 1 follows.

Proposition 1: Relief organizations with prior network experience will more likely participate in networks when responding to a natural disaster.

Proposition 1a: Relief organizations with prior experience with weak-ties networks will be better able to quickly form temporary networks when responding to natural disasters.

3.1.2 Swift Trust

The crisis relief literature as well as interviews with representatives of relief organizations support the fact that collaboration within the context of disaster response requires trust (Kapucu 2006; McGuire 2006). While trust is a multi-dimensional construct, and therefore difficult to define, Li (2007) identified four basic elements that exist in most definitions of trust. Trust involves a degree of 1) uncertainty and 2) vulnerability within the situational context, as well as 3) an expectation of trustworthiness and 4) a willingness to trust in that context. These dimensions reflect Das and Teng's (2001: 255) effort to define trust as, "a reliance on the other in a risky situation."

Uncertainty in the trust literature involves a lack of information either about the trustee's competence or their goodwill (Das & Teng, 2001; Mayer, Davis and Schoorman, 1995). Therefore, trust occurs when an organization, faced with these uncertainties, willingly makes itself vulnerable to the alter or alters in the network, expecting that the alter(s) will be trustworthy. Trusting organizations can seek to manage this vulnerability through formal control mechanisms including threats of sanctions, as well as through informal means such as goodwill and shared values and purpose (Li, 2007).

Trust is seldom blind or completely irrational. Restated, "Trust… is always associated with at least some knowledge and control" (Sydow & Windeler, 2003: 74). Inkpen and Currall

(2004) suggest that while a degree of trust is required at the outset of a joint venture, it evolves over time, influencing decisions about control mechanisms and joint venture continuance. Further, according to a transaction cost approach, trust builds over time through repeated engagements (Williamson, 1985). However, relief organizations operating in the aftermath of a natural disaster do not have the opportunity for trust to evolve. They typically do not have the time for trust to grow, nor do they often have sufficient information about possible partners at the outset of the crisis response. In these contexts, trust must emerge swiftly.

Meyersen and her co-authors described a similar phenomenon in their work on temporary teams when they said that trusting swiftly "means that people have to wade in on trust rather than wait while experience gradually shows who can be trusted and with what: Trust must be conferred presumptively or *ex ante*" (Meyerson, Weick, & Kramer, 1996: 170). Swift trust emerges in temporary teams when the environment is complex, when the work of those in the team is interdependent, when tasks are non-routine, in spite of diverse team membership and limited prior interaction among those members (Adler, 2007; Meyersen et al., 1996). Although Meyersen's work took place at the team level of analysis, the environment of temporary teams effectively mirrors that of relief organizations operating in response to a natural disaster.

Swift trust enables an organization to quickly make decisions about collaboration, allowing trust to grow within the context of the working partnership rather than requiring trust to fully inform the decision to collaborate. Swift trust, then, requires an ability to trust as well as a choice to accept the risk of trusting prior to having certainty of an outcome. Given this description, Li's (2007) fourth dimension of trust, the trustfulness of an organization, becomes more significant. Li described this willingness to trust others as a cognitive, affective or even a dispositional attitude regarding trust. This study suggests that this capability to trust swiftly is a critical component of TNDC, and results in the second proposition.

Proposition 2: Relief organizations that possess the ability to swiftly trust others will be better able to quickly form temporary networks when responding to natural disasters.

3.1.3 Reputation and Legitimacy

In the same way that swift trust reflects an organization's ability to trust others, an organization's reputation and legitimacy influence other organizations to be more trusting of it. The two constructs have numerous similarities, including some shared antecedents and outcomes. However, Deephouse and Carter (2005) identify important distinctions. Legitimacy reflects the degree to which an organization "is meeting and adhering to the expectations of a social system's norms, values, rules, and meanings" (Deephouse and Carter, 2005: 331). Reputation, on the other hand, is a comparative term, in which one organization's performance is juxtaposed against the performance of other organizations. Business schools experience this comparison each year when popular publications like Businessweek rank their reputations nation-wide. In fact, Rindova, Williamson, Petkova, & Sever (2005) even utilized the rankings in their study of the impact of organizational reputation on the benefits that accrue to MBA graduates in terms of starting salary.

As has already been discussed in Chapter 2, legitimacy is an important dimension in institutional theory (DiMaggio & Powell, 1983; Meyer & Rowan, 1977) and resource dependency (Salancik & Pfeffer, 1977), as well as population ecology (Hannan & Freeman, 1977). From an institutional theory approach, organizations are shaped by isomorphic pressures to conform to regulatory or socially derived requirements. According to resource dependency and population ecology, legitimate organizations are better able to acquire needed resources and, therefore, survive while others do not. These three deterministic theories suggest that for organizations to survive in their niche, they must gain legitimacy among their stakeholders.

Four types of legitimacy are important for relief organizations (Ossewaarde, Nijhof and Heyse, 2008). First, normative legitimacy is attained when an organization's mission and its

activities are congruent. Second, regulatory legitimacy is gained when an organization operates within the framework of law. Third, cognitive legitimacy involves the alignment of an organization's knowledge and skills with the mission it has set for itself. Finally, output legitimacy requires that an organization demonstrate outcomes in keeping with their mission.

Relief organizations gain legitimacy through clear communication of their mission, appropriate legal status in all their areas of operation, transparent accounting practices, external audits of financial statements and annual reporting of its finances to donors and management of demands among all its stakeholders (Mueller, Rickman, & Wichman-Tou, 2006; Ossewaarde, Nijhof & Heyse, 2008). Ossewaarde et al. (2008) point out that INGOs often must deal with incidents in which maintaining one form of legitimacy can put another form at risk.

Unlike legitimacy, reputation involves comparing the status of organizations (Deephouse & Carter, 2005; Reuf & Scott, 1998). Reputation has been defined as "stakeholders' perceptions about an organization's ability to create value relative to competitors" (Rindova et al., 2005: 1033), and it has been shown to have a positive relationship to an organization's strategic advantage (Barney, 1991; Hall, 1992), as well as a firm's financial performance (Fombrun & Shanley, 1990; Roberts & Dowling, 2002).

Studies of reputation emphasize the role of perceived product or service quality, as well as organizational esteem or prominence as an indicator of reputation (Deephouse & Carter, 2005; Rindova et al., 2005). Accordingly, Bosshard (2004: 4) stated that "the reputation of these organizations depends…on the quality of their work…." Similarly, Deephouse and Carter (2005) measured reputation as financial performance among US commercial banks. From either perspective, reputation influences stakeholder trust because it reduces uncertainty caused by information asymmetries (Rindova et al., 2005). When an organization has strong reputation it makes the decision to collaborate easier for its potential network partners. Royer, Simmons and Waldersee (2003) found that the perceived reputation for cooperation among alters was positively related to willingness to cooperate. Further, association with well-known or prestigious

alters also signals the trustworthiness of an organization, as has been seen in studies of IPO firms (Carter & Dark, 1990; Daily, Certo, Dalton & Roengpitya, 2003).

Therefore, while legitimacy is more closely associated with compliance to regulatory or social norms, reputation results from the public perception of doing a job well. Both legitimacy and reputation signal the trustworthiness of a relief organization. Therefore, the third and fourth propositions are as follows.

Proposition 3: Relief organizations that are seen as legitimate will be better able to quickly form temporary networks when responding to natural disasters.

Proposition 4: Relief organizations that are seen as having a strong reputation will be better able to quickly form temporary networks when responding to natural disasters.

3.1.4 Prior Crisis Experience

In Chapter 2, an argument for interorganizational networks from a learning theory perspective was established. Organizations learn from interaction with alters (McEvily & Marcus, 2005). However, as also pointed out in Chapter 2, an organization's ability to learn is limited by its absorptive capacity. "The ability to evaluate and utilize outside knowledge is largely a function of the level of prior related knowledge…. Thus, prior related knowledge confers an ability to recognize the value of new information." (Cohen & Levinthal, 1990: 128). Similarly, Henard and McFayden (2006) suggest that knowledge that accrues through prior experience, when managed properly, is related to a firm's strategic advantage.

Therefore, it is suggested that a relief organization's prior relief experiences will better enable it to form temporary networks when responding to a natural disaster for at least two reasons. First, prior experience in crises makes a relief organization aware of the need for temporary networks. Crises are complex and multi-staged (Simo & Bies, 2007). Individual relief organizations do not have the resources to address all the needs that arise in these situations, thus, a network approach is more effective. However, traditional network configurations cannot

form quickly enough to efficiently provide assistance to victims. Further, traditional networks endure longer than is necessary in these situations. Therefore, temporary networks, those that arise and then dissipate quickly, are more appropriate. However, organizations with little experience in crises settings might not be aware of the need or even the existence of these types of networks.

Second, while knowledge of temporary networks is necessary, it is not sufficient. Experience in previous crisis situations provides organizations with the opportunity to observe and participate in temporary networks, even if they are not proactively forming these networks. Dynamic capabilities literature emphasizes the path-dependent nature of strategic capabilities (Helfat et al., 2007; Teece, 2007; Teece et al., 1997). Prior experience with natural disasters provides a path to the development of the ability to form temporary networks when responding to future crises. Further, the concept of entrainment helps describe the challenges that organizations responding to a disaster face as they seek to integrate operations with other organizations in a complex, dynamically-paced environment. “Entrainment is traditionally defined as the synchronization of the tempo and/or phase of two or more activities within a system” (Perez-Nordtvedt, Payne, Short & Kedia, 2008: 785). Crisis environments are dynamic in that some activities must be carried out as quickly as possible while other activities involve long waiting periods and delays. Managing the tempo as well as the phase of activities across multiple organizations can be challenging, especially for organization with little prior experience in crisis settings. Therefore, the fourth proposition is as follows.

Proposition 5: Relief organizations with prior experience in crisis response will be better able to form temporary networks quickly when responding to natural disasters.

3.1.5 Skill Specificity

Arguing from a resource dependency perspective, Skinner and Guiltinan (1986) suggest that when firms specialize, the need for external resources becomes more critical. The greater the dependence on these resources, the more likely the firm is to acquiesce to partner

firm decisions. However, from a strategic choice standpoint, Harned, Keay and Schrader (1996) suggest a contradictory view of diversification, suggesting that technology firms that seek to diversify have a better chance at success if they form network partnerships. The diversity of activities involved in these firms makes networking with external partners necessary to gain information and necessary resources. Further, from an agency perspective (Bardhan, 2006; Williamson, 1991), the greater the specificity of knowledge and activity, the more likely a firm is to internalize activity rather than seek a market-based solution. This study supports the latter view, suggesting that a relief organization that adopts a more diversified, generalist strategy, will be more likely to proactively form network alliances than one that takes a more narrow, specialist approach. Further support for this proposition comes from the evolutionary theory as well as from entrainment theory.

First, the evolutionary theory (Kogut & Zander, 1993) makes a distinction between explicit and tacit knowledge. Explicit knowledge can be codified and easily transferred. Tacit knowledge, on the other hand, develops over time, cannot easily be codified and is more difficult to transfer. Relief organizations that adopt a specialization strategy are more likely to develop tacit knowledge in the area of their specialty, and are more likely to go it alone in their relief efforts since transferring their specialized knowledge will be difficult in good circumstances, and almost impossible in the uncertain conditions surrounding a disaster.

A second argument is based on entrainment. Ancona, Goodman, Lawrence and Tushman (2001: 656) state that “(e)ntrainment entails adjusting the pace or cycle of one activity to synchronize with that of another.” Individuals, teams and organizations develop cycles of operations. When those cycles are in tune with environmental, technological, market or stakeholder cycles, the organization is more effective (Brown and Eisenhardt, 1997). However, in crisis environments, the pace and phase of activities changes drastically. Adaptation to these temporal changes to avoid misfit is important for organizational performance (Perez-Nordtvedt et al., 2008). Generalists have a greater number of internal routines as well as external

influences that must be synchronized than do specialist organizations. The prior experience of integrating a variety of activities with external forces and partners provides generalists with a greater ability to quickly form networks with a diverse array of potential partners. For these reasons, the fifth proposition is given.

Proposition 6: Relief organizations that take a generalist strategy will be better able to quickly form temporary networks when responding to natural disasters.

3.1.6 Organizational Humility

A part of the grounded theory approach to inductive research includes expanding the inquiry when new ideas arise. This is the case for the next to propositions. While conducting interviews with relief organizations operating in Indonesia after the Asian Tsunami and in the US Gulf Coast after Hurricane Katrina, two factors not identified in previous networking literature become evident. The first of these was the way humility facilitated network development and the second was the negative impact of organizational politics on network development. Organizational humility will be addressed first.

Vera and Rodriguez-Lopez (2004) propose that organizational humility is manifested not only in an organization's leaders and members, but also in firm-level processes and policies that foster, perpetuate, and communicate the value of humility. The authors use Robert Solomon's definition of humility as "a realistic assessment of one's own contribution and the recognition of the contribution of others, along with luck and good fortune that made one's own success possible." (Vera & Rodriguez-Lopez, 2004: 394-395)

These authors propose that leaders and members who exhibit humility are open to change, eager to learn from others, acknowledge their weaknesses and limitations, willingly ask for advice, respect others, accept failure as a learning opportunity, accept success with grace, and share success with others. Attributes of the organization that are proposed to reflect humility include the existence of and use of feedback mechanisms, an emphasis on listening skills among managers and members, the encouragement of collaboration with internal and

external constituents, the acknowledgement of firm strengths and weaknesses, sharing successes with internal and external collaborators, and an emphasis on continual learning.

Casper et al. (2009: 8) define organizational humility as

> the awareness of an organization's leaders and members of their own and their organization's strengths and weaknesses, derived through both the inner characteristics of leaders and members as well as organizational policies. Organizational humility manifests itself as openness to new ideas and contradictory information in an effort to learn, an ability to recognize the contributions of other individuals and organizations through sharing success and failure, and a focus on serving and facilitating the success of other individuals and organizations.

Organizations that demonstrate this characteristic are better able to form temporary networks as they are open to new ideas and contradictory information, able to recognize the contributions of others, more willing to share success and failure, and focused on serving and facilitating the success of other individuals and organizations. They are able to form these networks more quickly because they already know their strengths and weaknesses, do not shy away from proactively approaching other organizations for assistance, and have likely learned from previous experience how to refine their networking capabilities. Therefore, this study proposes the following.

Proposition 7: Relief organizations characterized by humility will be better able to quickly form temporary networks when responding to natural disasters.

3.1.7 Organizational Politics

Eisenhardt and Martin (1988: 737-738) define political behavior as "observable, but often covert, actions by which executives enhance their power to influence a decision. These actions include behind-the-scenes coalition formation, offline lobbying and cooptation attempts,

withholding information, and controlling agendas." Resource dependency theory (Pfeffer & Selancik, 1977) suggests that political power can be used to gain key resources, and Buchanan (2008) even proposes that some managers believe the use of political behavior is not only necessary but even ethical when an organization is dealing with change and competitive forces. Even so, in his analysis he found that most managers would prefer not to use political behavior and many have been hurt by its consequences.

Eisenhardt and Martin (1988) claim the opposite, that the use of political power by top management hinders organizational performance. The rationale for their proposition is that political behavior takes time, limits the efficient flow of information and distorts perceptions of those using those behaviors. Similarly, Piskorski and Casciaro (2006) suggest that uneven use of power hinders overall outcomes for networked organizations. They demonstrate that when actors in a dyadic relationship possess a greater relative proportion of power, their alters reduce the frequency of exchange. While the more powerful partner gains a greater proportion of the network outcomes, the overall effect is one that limits potential organizational outcomes. Finally, Shenkar and Yan (2002) argue that explanations of international cooperative venture (ICV) failures from TCE, bargaining power, partner selection and competitive learning perspectives do not tell a complete story. Rather, they argue for an inter-partner political perspective that follows the political imbalances throughout the relationship and the actions that partners take to restore balance.

In high velocity environments such as the aftermath of a natural disaster, organizations do not have time to position themselves for political gain. Information is already limited and organizations that leverage information power to gain a dominant position among network partners are likely, as Piskorski and Casciaro (2006) claim, to limit the amount of interaction among organizations. In addition, those organizations that use political behavior to form alliances at the outset of a response might, as Shenkar and Yan (2002) discovered, find those alliance partners using political behavior to regain a balance of power, potentially even

positioning them out of the network altogether. For this reason, this study suggests the following proposition.

Proposition 8: Relief organizations characterized by more political behavior will be less able to quickly form temporary networks when responding to natural disasters.

3.2 Study 2

Based upon the findings in study one and the reading of the extant literature, I developed the following hypotheses. Since the theoretical foundations for many of these hypotheses are the same as for those of the propositions listed above, theoretical arguments are brief. In addition, in the quantitative second study I also measured the relationship of TNDC to organizational performance outcomes. However, for two reasons, two propositions were dropped from the empirical study. These two propositions involved the “reputation” and “legitimacy” constructs. While these two constructs were interesting conceptually, the result of the qualitative analysis demonstrated the difficulty of distinguishing these to constructs in the minds of interview respondents. For this reason, and due to the need to limit the length of the survey in the quantitative study, I decided to drop these two constructs.

3.2.1 Network Experience

Based on the prior work of Gulati (1999) among others, this study suggests that there will be a direct, positive relationship between prior network participation and future network participation. This prior experience is predicted to lead organizations to develop an awareness of the benefits of network involvement as well as the necessary capability to form new network linkages in the crisis environments. Therefore,

Hypothesis 1: There is a positive relationship between a relief organization’s prior experience with interorganizational networks and its TNDC.

However, based on the arguments regarding weak- and strong-ties networks that have already been established (Burt, 1992; Powell & Smith-Doerr, 1994; Rowley et al., 2000), we

suggest that prior experience with weak-ties networks will moderate this hypothesized relationship.

Hypothesis 1a: The strength or prior network ties will moderate the relationship between prior network experience and TNDC such that experience with weak-ties networks will strengthen the relationship between prior network experience and TNDC.

3.2.2 Swift Trust

As Li (2007) suggests, when formal control mechanisms are not available, networked partners can rely on shared values and purpose as a basis of trust. While even relief organizations responding to a crisis can act opportunistically, most organizational actors in these situations assume that their alters at a minimum have good intentions. For this reason, they will be more willing to “wade in” as Meyersen et al., (1996) have suggested and trust others more swiftly than they might in less uncertain environments. Based on this reason and the theory development already outlined above:

Hypothesis 2: There is a positive relationship between a relief organization’s ability to trust swiftly and its TNDC.

3.2.3 Prior Crisis Experience

As has already been established, relief organizations that have experience in responding to natural disasters benefit from the learning that occurs in these situations. In fact, based on the path dependent nature of dynamic capabilities, there is no substitute for first hand experience in a crisis situation. Organizations with prior crisis experience are more likely to have experienced the benefits of network involvement as well as learned how to entrain their response actions with their network partners. Therefore:

Hypothesis 3: There is a positive relationship between a relief organization’s prior crisis experience and its TNDC.

3.2.4 Skill Specificity

Based on arguments already developed from the evolutionary theory of the firm (Kogut & Zander, 1993), this study suggests that relief organizations that take a specialist strategy will develop more tacit knowledge, and in response to a crisis situation will be less likely to partner due to the difficulties of transferring tacit knowledge. Further, based on entrainment theory, organizations that take a generalist strategy will have more experience with synchronizing their crisis response phases and timing to other organizations in their environment (Ancona et al., 2001; Perez-Nordtvedt et al., 2008). Therefore:

Hypothesis 4: There is a negative relationship between a relief organization's degree of skill specificity and its TNDC.

3.2.5 Organizational Humility

The characteristics of humble organizations and their members create an environment in which network partnerships can flourish and the benefits of these interorganizational arrangements can flow to all network members. This is evident from the following attributes of humility: the realization of organizational strengths and weaknesses, an openness to change, a willingness and ability to learn from others, respect for others, an acceptance of failure as a learning opportunity, and a willingness to share success with others (Casper et al., 2009). These attributes that develop over time are a source of competitive advantage within organizations, a reflection of their value as well as their rarity (Vera & Rodriguez-Lopez, 2004). Based on this and the theory developed earlier:

Hypothesis 5: There is a positive relationship between a relief organization's organizational humility and its TNDC.

3.2.6 Organizational Politics

TNDC, like all dynamic capabilities, is developed over time through various experiences and decisions. Organizations that possess a TNDC are more likely to proactively identify key partners and form temporary networks in response to a natural disaster (Perez-Nordtvedt et al.,

2006). Since it has been shown that increased political behavior hinders an organization's network involvement, the following is hypothesized:

Hypothesis 6: There is a negative relationship between a relief organization's level of internal political behavior and its TNDC.

3.2.7 Organizational Performance

According to the strategic choice perspective (Child, 1972), managers have the ability and opportunity to make decisions that shape the outcomes for their organizations. The dynamic capabilities literature supports this contention as managers determine appropriate strategies and then extend, modify or acquire the necessary resources to implement and execute those strategies (Helfat et al., 2007; Teece, 2008; Teece et al., 1997). As was described in Chapter 2, organizations develop dynamic capabilities to better extend and utilize their resource base to face the challenges of changing environments. Establishing the right evolutionary fit with these environmental forces is critical. Evolutionary fitness involves the means by which a firm uses its dynamic capabilities to establish a profitable position within the firm's chosen competitive environment (Helfat et al., 2007). Meznar and Nigh (1995) demonstrated a specific example of the impact of managerial choice in their study of public relations strategies and environmental uncertainty. The authors found that organizations whose top management developed a philosophy of collaboration were more likely to pursue a bridging strategy in uncertain environments.

The environment in which relief organizations operate when responding to a natural disaster can be described as one involving disruptive and discontinuous change, ambiguous, incorrect or insufficient information, dynamism and high uncertainty. In this environment, the ability to form collaborative networks is of utmost importance (Lester & Krejci, 2007; Moynihan, 2008). Relief organizations that are able to form these interorganizational networks are marked by leadership who recognize the importance of TNDC and emphasize collaboration and learning routines that build the capability into the nature of the organization (Lester & Krejci,

2007). In other words, the dynamic capability to form temporary networks when responding to a natural disaster is one that is developed over time with the buy-in of top managers within these organizations. Further, this capability is linked to organizational performance. Therefore,

Hypothesis 7: The TNDC of a relief organization involved in responding to natural disasters will be positively related to the achievement of its goals and objectives.

3.2.8 Moderating Relationships

While the above hypothesis reflects the expected direct relationship between a relief organization's TNDC and its performance, there are several factors that could moderate this relationship. Effective use of a dynamic capability requires a good evolutionary fit with the external environment (Helfat et al., 2007). As has already been established, the use of temporary networks is more costly than forming long term relationships with other organizations and opens the door for more risk of opportunism on the part of alters. Therefore, this capability should only be used when the circumstances do not allow longer periods of time to form more traditional networks.

Measures of the external environment have been used as moderating variables in many strategy studies (Bierly & Daly, 2007; Goll, Johnson & Rasheed, 2007; Ngah-Kiing Lim, Das & Das, 2009). In keeping with this contingency perspective, I suggest that in certain conditions, specifically in high velocity environments, the use of a relieforganization's TNDC will more likely lead to effective organizational performance. Inversely, when environments are stable and less complex, the use of an organization's TNDC will be out of place and an unnecessary use of the organization's resources, resulting in poor organizational performance.

High velocity environments are marked by "rapid and discontinuous change in demand, competition, technology, or regulation, so that information is often inaccurate, unavailable, or obsolete" (Eisenhardt & Bourgeouis, 1988: 738). HVEs are complex and uncertain environments. Dess and Beard (1984: 56) state that "managers facing a more complex (i.e., heterogeneous) environment will perceive greater uncertainty and have greater information-

processing requirements than managers facing a simple environment." Increased complexity in an environment creates gaps in information. Aldrich (1979) suggested that organizations facing these settings are more likely to utilize strategic actions to gain control over their environment. One such strategic action available to managers is the formation of interorganizational networks, especially in complex environments in which organizations are interdependent (Starbuck, 1983).

Inversely, in simple environments, organizations do not require as many inputs nor do they require as much information. In these settings, they can more easily carry out their activities without the need for external partnerships. Therefore:

Hypothesis 8: The relationship between a relief organization's TNDC and its organizational performance will be moderated by the external environment such that in high velocity environments the relationship between TNDC and performance will be stronger.

The above measures are reflective of the external environment. However, it is important, also, to examine the impact that firm-level resource availability might have. The availability of key resources to relief organizations responding to natural disasters will naturally impact the attainment of organizational objectives. Provan and Milward (1995) suggest that at low levels of resource availability, organizations find it difficult at best to carry out their operations. However, the authors also suggest that a sufficient amount of resources does not guarantee strong organizational performance. Rather, while resources are necessary, strong outcomes will be dependent on other characteristics of the networks in which organizations are involved.

Based on a resource dependency argument (Salancik & Pfeffer, 1977), organizations that possess greater amounts of necessary resources will be less likely to participate in interorganizational networks. This was evidenced in Mezner and Nigh's (1995) study that demonstrated that an organization's size and resource base led to a buffering strategy rather

than a bridging strategy. Evidence of this was seen in interviews conducted in study 1 both in the US Gulf Coast as well as in Indonesia. Therefore:

Hypothesis 9: The relationship between TNDC and organizational performance will be moderated by the amount of resources available to the relief organization such that at very low levels and very high levels of resources available to the organization, fewer network linkages will be formed and relief organizations' objectives will be attained to a lesser degree.

CHAPTER 4

RESEARCH METHODS

4.1 Overview

This study involves a mixed methods approach to analyzing organization-level factors that relate to the ability to form temporary networks in a crisis environment. This chapter discusses the methods used in this study, including a qualitative investigation, scale development and pilot study, and a quantitative analysis of the proposed model and hypotheses. More specifically, the chapter begins with information about the background of and rationale for mixed methods studies. Next, a discussion follows regarding elements of the qualitative study including development of the semi-structured interview and execution of the interviews, subjects interviewed and their representative organizations, methods used for analyzing qualitative data, and the resulting themes. A description of the survey development follows with discussion of the steps taken to ensure validity and reliability of the instrument, including two rounds of feedback from expert panels and a pilot study of the instrument. Finally, the chapter concludes with a discussion of the final study, including the use of online surveys, subjects of final study, variables measured in the survey and methodology used to analyze responses.

The study received approval by the UTA Office of Research Integrity and Compliance in April, 2007. The study is listed as Protocol 07.196s, Inquiry Into Temporary Network Development Capability.

4.2 Mixed Method Studies

Research methodology follows three general formats: monomethod, mixed methods and mixed model studies (Tashakkori & Teddlie, 1998). The differences in these formats includes the nature of the logic involved in the research, and decisions made regarding the type

of information being sought, the means by which that information is collected and the techniques available for analyzing the information collected. Selection of the method or methods used is driven by the research question primarily, as well as by resource availability including time, access to information and financial resources (Kulka, 1981). This study involves a mixed model approach.

The logic behind the research project is either inductive or deductive. Inductive research takes place when the researcher seeks to establish general theories or principles from specific cases or phenomenon. Inductive research typically involves collection and analysis of open-ended, qualitative information. Qualitative research usually take place when current theory does not sufficiently explain a phenomenon being studied. Research using qualitative methods include interviews, oral histories, biographical research, focus groups, grounded theory and ethnographies (Creswell & Plano Clark, 2007; Seale, Gobo, Gubrium & Silverman, 2004).

Deductive research, on the other hand, begins with a theory and tests its applicability in a particular setting with the goal of using the theory for explanation and, perhaps, to generalize the theory in a new context. Deductive research usually involves collection and analysis of closed-ended, quantitative information. Quantitative research is based in existing theory. Research using quantitative methods include experiments, quasi-experiments, surveys, and use of archival data (Creswell & Plano Clark, 2007; Seale et al., 2004).

Consideration must be given to the research design based on the type of data to be collected (qualitative or quantitative) and the research logic (inductive or deductive). The research question drives this and future decisions about the project (Tashakkori & Teddlie, 1998). A broad, general research question cannot be answered by the specific methods of deduction in a quantitative study. Similarly, a research question focused on testing an existing theory in a specific context or examining the relationship between specific variables in a given context cannot be addressed through qualitative research (Creswell, 2003).

Each of these approaches has its strengths, but each also has its weaknesses. Qualitative research is beneficial when existing theory is insufficiently developed, inaccurate or inappropriate and new theory is needed to describe a particular phenomenon (Creswell, 2003). For example, Brown and Eisenhardt (1997) utilized grounded theory in their research regarding continual change processes in high velocity environments since extant theory did not provide accurate insight into the realities of business practices in these environments. However, qualitative analysis cannot test theory or show cause and effect among variables within the emerging model with any degree of certainty. On the other hand, quantitative analysis can effectively test the relationships between variables in a given context, but do not effectively develop new theories. When only one method of analysis is used, researchers are at risk of falling into the trap of the weakness of the chosen method. As quoted in Tashakkori and Teddlie (1998), Brewer and Hunter aptly describe the unique advantage of a mixed method study.

> Social science methods should not be treated as mutually exclusive alternatives among which we must choose….Our individual methods may be flawed, but fortunately the flaws are not identical. A diversity of imperfection allows us to combine methods…to compensate for their particular faults and imperfections. (1989: pp.16-17)

Therefore, to build a stronger foundation on which to study a phenomenon, researchers are encouraged to use triangulation. Denzin (1978) used the nautical practice of triangulation to illustrate the use of the technique in scientific research. Sailors use triangulation to find the distance to an unknown point by using the location of two known points. Similarly, Denzin suggested that social scientists use triangulation by using different data sources, investigators, theories or methodologies to study social phenomenon. Triangulation allows the researcher to utilize complementary information to get a more complete and accurate picture of the phenomenon under investigation. Further, when multiple methods are used (quantitative and qualitative) it provides a way to utilize the strengths of each approach while avoiding some of the weaknesses (Creswell & Plano Clark, 2007).

Monomethod research involves purely qualitative or purely quantitative research. As criticized by Ghoshal (2005), most management-related research uses purely quantitative analysis based on deductive logic. Mixed method studies, on the other hand, use both quantitative and qualitative forms of analysis at different stages in the research. One method might be dominant in a study or they both can play an equivalent role in the research. A third form, used in this research, is a mixed model study. Mixed model studies combine qualitative and quantitative methods at various stages of the research process (Creswell, 2003; Tashakkori & Teddlie, 1998). Whereas mixed methods usually entail a sequential use of methods, such as beginning with qualitative researched followed by quantitative, mixed model studies might use both methods together at different phases. For instance, this study utilized inductive methods in the first phase through semi-structured interviews. However, the information obtained through these interviews was coded and analyzed statistically, which reflects more of a quantitative analysis of the qualitative data. Further, the resulting instrument that was developed had questions that sought primarily quantitative answers, but also included questions that allow the respondent to provide qualitative information, as well. Based on these descriptions, this study utilized a mixed model method.

4.3 Qualitative Study

Since the research questions outlined in Chapter 1 address issues and phenomenon new to the existing literature, a simple empirical study was deemed insufficient to address the questions. Given this limitation, the following research plan was developed.

4.3.1 Semi-structured Interviews

Based on a reading of the extant literature, I developed a semi-structured interview in collaboration with a supervising faculty member and input from other management faculty. The transcript of the interview can be found in Appendix A. I conducted interviews with personnel in relief organizations in Banda Aceh, Indonesia as well as in the Gulf Coast of the USA. Interview questions were open-ended and included probes to follow-up for additional information (Miles &

Huberman, 1994). Initial participants were recruited through personal contacts. These contacts included the director of a large, public health organization involved in the Hurricane Katrina response and the director of a small, strategically connected NGO responding to the Asian Tsunami. In addition to providing information through interviews, leaders of these two organizations provided key contacts at other relief organizations who volunteered to participate. A snowball technique was then followed with individuals interviewed providing names and contact information for possible future interviews.

I spent approximately three weeks in Aceh Province, Indonesia, and one week in the Gulf Coast conducting interviews. One interview was conducted by phone and the rest were conducted face to face. Where possible, interviews took place in the offices of those being interviewed. In Aceh, Indonesia, one interview was conducted in a hotel restaurant, one in a hotel lobby, and one at a university campus. All interviews were conducted in English and digitally recorded. The interviews were professionally transcribed and 228 single-spaced pages of written transcripts were coded by trained coders.

Interviews were conducted with individuals from eleven organizations involved in relief efforts for the Asian Tsunami or Hurricane Katrina. Eight interviews were conducted in Banda Aceh, Indonesia with representatives from two small NGOs, two international NGOs, and four government and quasi-government organizations. In Alabama and Louisiana, interviews were conducted with representatives of two health departments and one security office. In both the US and Indonesia, informal interviews were conducted with other members of government and non-government organizations to provide background information on the crises, but these informal interviews were not transcribed and coded.

Interviews were conducted with eleven men and two women. In the case of local NGOs, the individuals interviewed were the directors and often founders of their organizations. In the INGOs and government and quasi-government organizations, participants were high-ranking leaders of their organizations, such as country directors, area directors, or project directors.

Representatives of local NGOs were Indonesian, Australian, and American. Representatives of INGOs were predominantly American, but included one Australian and one German. The representative of the Indonesian government offices included an Indonesian woman and an American man. Representatives of all U.S. government offices were American men.

4.3.2 Interview Coding and Analysis

Working with a faculty member from the University of Texas at Arlington, we used a combination of deductive and inductive approaches to generate separate coding schemes to characterize themes in the interviews. Each of us reviewed interview transcripts independently. Then, using both past literature and actual interview transcripts, we independently created a coding scheme to be used for content analysis using guidelines from Weber (1990). Similarities among the independently generated categories were noted, and after several iterations, we reached consensus on final coding categories. The final coding scheme had nine meta-themes denoting eight antecedents and one outcome of TNDC. The coding scheme is provided below in Table 4.1.

Table 4.1 Final Coding Scheme of Interview Manuscripts

Trust	
T1	Based on imminent need to
T2	Based on faith/intuition
T3	Based on trustee reputation (learned through others, not personal expereince)
A	Ability
I	Intention
B	Based on trustee's well-known associates
T4	Based on personal observation of their past performance
C	Capability
I	Intention
T5	Based on ability to communicate/interpersonal skills
T6	Based on trustee legitimacy

Table 4.1 - continued

Humility	
HL1	Acknowlegement of one's abilities (+/-)
HL2	Acknowlegement of one's mistakes, imperfections, gaps in knowledge, limitations
HL3	Openness to new ideas, contradictory information, and advice (not being bound to preconceived ideas)
HL4	Sharing success and failure
HL5	Servant leadership (e.g., Focusing on overarching needs/priorities more than self or organizational glorification)
HM1	Acknowledgement of one's abilities
HM2	Ability to acknowledge one's mistakes, imperfections, gaps in knowledge, limitations (e.g., Not pretending to have all the answers, realizing you can't do everything)
HM3	Openness to new ideas, contradictory information, and advice (e.g., Recognizing value in other's idas, activities and selves, involving other organizations, listening to others)
HM4	Sharing success and failure
HO1	Acknowledgement of organization's strengths
HO2	Acknowledgement of organization's limitations
HO3	Mechanisms that encourage openness to new ideas such as feedback seeking, new knowledge acquisition, etc.
HO4	Learning from failure and success/Institutionalization of key lessons learned (e.g., at the organizational level: appreciative inquirey and socialization process as processes for listening, learning prior to developing a plan or taking action, reflecting)
HO5	Facilitation of other organization's successes (e.g., Shared ownership, no turn battles, don't do what someone else can do better, partnering, providing funding, assistance, etc.)
Organizational characteristics	
OC1	Mechanistic vs. organic organizations
OC2	Turnover mentioned as obstacle to network formation
OC3	Mentioned connectedness to overarching mission of crisis, esprit de corps
OC4	Development of new services in the crisis situation
Prior Crisis Experience	
PC1	If prior crisis experience, network formation in past crisis discussed
PC2	If prior crisis experience, use of post-crisis analysis for learning
Network Experience	
N0	Network tie but unknown length
N1	Existing network member mentioned
N2	New network member mentioned
Politics	
PO1	Role of donors mentioned
PO2	Organizational members self-serving behavior

Table 4.1 - continued

Reputation and Legitimacy	
ROO	Reputation/organizational/overall organization
ROL	Reputation/organizational/local organization
RI	Reputation/individual
LOO	Legitimacy/organizational/overall organization
LOL	Legitimacy/organizational/local organization
LI	Legitimacy/individual
Performance	
P1	Initiating partnerships
P2	Recognition for performance

Next, two separate researchers, who were not involved in interviews or coding scheme development, coded the interview data. When a researcher identified a passage to code, he/she chose a theme that best characterized the comment. Discrepancies were resolved through discussion, and agreement was established. Overall agreement between the coders was 80%. The qualitative analysis software NVivo was used to support analyses.

4.3.3 Interview Results

Frequencies of meta-themes are shown in Table 4.2. These frequencies identify several points of interest. Results are discussed in the order of the outcome frequencies with an interpretation of each finding.

4.3.3.1 Organizational Humility

Surprisingly, the newly developed measure of organizational humility ranked the highest frequency of all the constructs measured. Humility of organizational leaders, members and structural factors were mentioned a total of two hundred forty seven times by all eleven interviewed organizations.

Table 4.2 Themes and Frequencies of Coded Responses

Construct Label	Construct Description	Number of Organizations	Number of Times Mentioned
Humility	Humble leaders, members and organizational structures	11	247
Trust	Trusting the ability and/or intentions of an alter	11	144
Network Experience	Network tie of unknown tenure mentioned	11	64
New Network Ties	New network member mentioned	9	61
Prior Network Ties	New network includes alter from prior network	11	50
Initiating Partnerships	Performance measure: proactive network formation	10	38
Reputation	Reputation of a network member mentioned	10	37
Politics	Political behavior of interviewee or alter	10	33
Legitimacy	Legitimacy of a network member mentioned	9	28
Prior Crisis	Experience from prior disaster relief response	5	22

4.3.3.2 Trust

Trust was identified as being based on different factors (ability, intention, faith, need, and reputation). All organizations mentioned trust in at least one of these dimensions. The total number of times trust was discussed across all interviews was one hundred forty four, signaling the importance of this characteristic.

4.3.3.3 Network Experience

Not surprisingly, network experience ranked the third highest frequency, and when combined with new networks and prior networks had the second highest overall frequency. In many cases, the discussion of network involvement in a crisis did not clearly indicate whether

the network linkage was with prior network partners or with organizations with which the focal organization had never before partnered. In these cases, the incident was coded simply as network experience. All eleven organizations interviewed discussed various network linkages as a part of their response to the crisis. A total of one hundred seventy five network relationships were mentioned. This number includes sixty four network relationships with unspecified tenure. When the length of time the linkages had been in existence was mentioned, they were most often related to new relationships (sixty one times) rather than linkages to familiar organizations (fifty times). This would seem to indicate that weak-ties networks are more often utilized than strong-ties networks, as was predicted.

4.3.3.4 TNDC (Initiating partnerships)

Ten of the eleven organizations mentioned proactively initiating partnerships with other organizations a total of thirty eight times. While this is an outcome rather than a direct measure of TNDC, it does reflect the importance of being able to take the initiative to form network partnerships.

4.3.3.5 Reputation

Reputation was mentioned to a greater degree than legitimacy. While most people interviewed claimed that reputation and legitimacy were of equal importance, they tended to put more emphasis on the reputation of their network partners. It was mentioned by ten of the organizations a total of thirty seven times.

4.3.3.6 Organizational Politics

The self-serving or political behavior on the part of organizations was mentioned in both positive and negative ways. The presence of this behavior tended to result in limited network interaction while the absence increased the chances of network involvement. In total, political behavior was discussed by ten of the organizations a total of thirty three times.

4.3.3.7 Legitimacy

Nine organizations mentioned legitimacy a total of twenty eight times. Like reputation and political behavior, legitimacy was mentioned in both positive and negative ways. The presence of legitimacy was favored while organizations limited interaction with other organizations that did not have legitimacy.

4.3.3.8 Prior Crisis Experience

Only five organizations mentioned prior crisis experience in the interviews and this for a total of twenty two times. Only three of the organizations interviewed were newly created and of the remaining eight organizations seven had experience in previous crises. Even so, little was said about previous experience in the interviews.

4.3.3.9 Skill Specificity

Six of the organizations mentioned developing new services to respond to the crisis situation. This reflects a more generalist strategy. In fact, of the organizations interviewed, nine of the eleven organizations provided a wide variety of relief services to the communities involved in the crisis.

These frequencies and the underlying theory support the hypotheses that are developed for the empirical study that occurred later. The second study as outlined below begins with initial development of a survey instrument to measure these characteristics and behaviors in relief organizations, the validation of the survey, and finally pilot testing the survey in a sample group.

4.4. Instrument Development

Based on the results of this qualitative analysis as well as a reading of the extant literature on dynamic capabilities and interorganizational networks, I developed a survey instrument to measure organizational characteristics, temporary network development capability and measures of organizational performance. The survey items are provided in Appendix B. Where possible, items from existing, validated surveys were utilized. In some cases, such as

TNDC, organizational humility and high velocity environments, existing scales had not yet been developed to measure the latent construct. Further, given the unique population of interest and the fact that most, if not all, of these latent variables had not been measured among this population, all items were validated through a rigorous, multi-step process.

4.4.1 Survey Validation Step 1

All items in the survey were first sent to experts for an assessment of face validity. Respondents received a list of the latent variables with a definition of each. They also received a table with each item in the survey in one column and a place to write the name of the latent variable to which they believed the item corresponded. Seven strategy faculty from four universities responded to this first round of feedback. The results of this first round of feedback identified potential problems with some of the items and resulted in a revision of the survey instrument. Upon completion of the revision, the survey along with names and definitions of the latent variables was submitted to a second set of faculty involving the same feedback process. Sufficient consensus existed among the remaining, edited items to provide a high level of confidence as the study moved into a pilot phase. Table 4.3 highlights the number of items per construct in each round of validation, the results for each and the outcomes.

Table 4.3 Responses From Face Validity Questionnaire

Round	Latent Construct	Number of Items	Responses	Outcomes
1	Prior Network Experience	3	3 strong	Dropped one item to reduce total number in survey
1	Tie Strength	2	2 strong	Kept as worded
1	Prior Crisis Experience	2	2 strong	Kept as worded
1	Organizational Humility	8	4 strong, 3 moderate, 1 weak	Dropped one item, sought to clarify others
1	Organizational Politics	4	4 strong, 3 moderate, 1 weak	Kept as worded
1	Swift Trust	13	6 strong, 6 moderate, 1 weak	Dropped two items, merged two items
1	Skill Specificity	11	11 moderate	Kept due to sample group's identification with list
1	TNDC	8	7 moderate, 1 weak	Dropped one item, sought to clarify others
1	High Velocity Environment	7	6 strong, 1, moderate	Dropped moderate item
1	Organizational Resources	4	3 strong, 1 moderate	Kept all items
1	Performance	11	7 strong, 4 weak	Reduced items to five
2	Organizational Humility	7	4 strong, 3 moderate	Kept all items, sought to clarify in the instructions
2	Organizational Politics	4	4 strong	Kept as worded
2	Swift Trust	11	9 strong, 1 moderate, 1 weak	Dropped weak item
2	TNDC	7	3 strong, 1 moderate, 2 weak	Deleted two items
2	High Velocity Environment	6	5 strong, 1 moderate	Kept all items
2	Organizational Resources	4	3 strong, 1 moderate	Kept all items, sought to clarify in the instructions

4.4.2 Survey Validation Step 2

A pilot study was developed to continue the validation process of the items used to measure the latent variables of interest. The survey was developed on-line for easy access for pilot study participants. Support for online survey formats is provided below in section 4.4.3. Initially, the pilot study was to be conducted among a network of both government and non-government organizations involved in disaster relief activities based in Alabama. A county health department that had provided beneficial assistance in earlier phases of the study agreed to submit the survey invitation through their email distribution list. However, for reasons not clearly identified, very few organizations volunteered to participate in this pilot project. After several months of interaction with the organization, a second attempt was begun with a different target population. In this second attempt, pilot study participants included organizational members from two populations. The first was a network of Baptist relief organizations across the USA. Forty-two state or regional level organizations coordinate efforts through the North American Mission Board of the Southern Baptist Convention. These organizations cooperate with each other, but also with other religious, secular and government relief organizations in times of disaster responses. Members of eighteen of these organizations participated in the pilot study resulting in fifteen usable surveys. The second population involved participants at a state-wide conference on emergency preparation held in Dallas, Texas, sponsored by the Texas Citizen Corps and the Texas Voluntary Organizations Active in Disaster. The researcher sponsored a table at this three day event and asked participants who were employed (not volunteers) by one of the participating relief organizations to complete a hard copy of the survey while at the conference. Of the three hundred organizations represented at the conference, forty-two participants submitted surveys either in person or on-line resulting in twenty-eight usable surveys. In some of these cases, respondents were volunteers rather than employees of the organization. Others were not sufficiently completed to be usable. Total response rate for the pilot study, therefore, was 17.5% responded and 12.5% usable responses.

Results of the pilot study can be seen in Table 4.4. I conducted an exploratory factor analysis on items for each expected latent variable. Next, I tested the reliability of selected items loading on a single factor or where cross-loading was minimal and a theoretical rationale existed to keep the item. Selected items were then combined into a measure for each latent variable.

Using these combined measures, a correlation analysis was developed to examine the degree to which latent variables correlated. Where correlations were higher than .500, another exploratory factor analysis was used with all the selected items from both variables. This process further refined the selection of items for each variable. Where items were deleted, another alpha was generated to measure the reliability of the new measure. Each latent variable is listed in Table 4.4 along with the total number of items to be used in the study along with its measure of reliability. In cases where items cross-loaded or where the Cronbach alpha was below .700, decisions were made regarding the problem items. In some cases items were simply dropped from the study, as was the case with five of the swift trust items. However, where a sound theoretical basis existed and a latent variable had only two items measuring the variable, as in the case of prior network experience and tie strength, problem items were retained. The hope and expectation was that a larger sample size might result in a different outcome in the full study.

Table 4.4 Pilot Study Results

Latent Variable	**Number of Items Retained**	**Reliability**
Prior Networks	2	.687
Tie Strength	2	.432
Prior Crisis	2	.744
Humility	5	.892
Organizational Politics	4	.870
Swift Trust	4	.829
TNDC	5	.901
High Velocity Environment	4	.833
Organizational Resources	4	.938
Performance	4	.819

4.4.3 Online Survey Format

I developed the survey for an Internet-based delivery through online tools provided by SurveyMonkey.com. A brief scan of EBSCO database of academic publications resulted in numerous research articles that utilized online surveys, including Academy of Management Learning and Education, Journal of Applied Psychology, Journal of Management Studies and many others. Next, a scan of dissertations was performed through ProQuest resulting in 83 dissertations and theses that utilized Survey Monkey for online survey distribution and collection. Universities represented include Florida State University, The University of Ohio, Georgia State University, the University of Texas at Austin, the University of North Carolina at Chapel Hill, and two from the University of Texas at Arlington.

An email invitation was written and submitted to potential study participants. The email include an introduction to the study and invitation to participate, as well as a link to the Internet address. Once linked to the survey, the respondent was provided a description of the research

along with a voluntary consent form. Clicking “accept” and moving on to the next page of the survey was accepted as informed consent. In the case of the surveys completed in person at the conference, I manually entered the data into the Survey Monkey database. Appendix C provides the formatted survey as it appeared online.

4.5. Empirical Study

Upon completing the analysis of the pilot study and revising the survey accordingly, the next phase of the study began. I enlisted the assistance of regional chapters of the Voluntary Organizations Active in Disaster (VOAD) along with the state VOAD chapter to participate in the study. Doing so required traveling to two cities to present the research and to request assistance as well as multiple phone calls and email requests to leadership within each of the Eight local VOAD associations with a total membership of 237 organizations took part in the study along with the Texas State VOAD with a membership of 20. The overall response rate was 22.4% (77 surveys submitted) and 19.8% usable surveys (47 surveys).

Due to the small number of study participants, I determined to combine the respondents from the pilot and follow-up surveys. Each item in the surveys were examined to ensure that the responses were sufficiently similar across the two samples. I conducted T-tests for the sample means of each survey item. I determined that the two samples were sufficiently similar to justify combining them. The result increased the sample size to a total of ninety survey responses.

4.5.1 Variables and Measures

The dependent and independent variables of interest are described below.

4.5.1.1 Dependent Variables

In the first regression analysis, organizational characteristics were regressed on the dependent variable Temporary Network Development Capability (TNDC). Five items reflect the definition of a temporary network development capability as described by Perez-Nordvedt & O’Brien (2006). In the second regression analysis, TNDC was regressed on the dependent variable Organizational Performance. Performance for these relief organizations was measured

in two different ways. First, three items involve the satisfaction levels of the organization's clients regarding the type, availability and quality of services rendered. Second, two items examine the financial development abilities of the organization.

4.5.1.2 Independent Variables

Table 4.5 provides the independent variables used in the the first regression analysis,

Table 4.5 Independent Variables

Variable	Associated Items
Prior Network Experience	1. Prior to this most recent crisis, with approximately how many partnering organizations had your organization worked in crisis responses? 2. Also prior to this most recent crisis, for how many years has your organization partnered with other organizations specifically in crisis response?
Prior Crisis Experience	1. My organization's members had little experience in crisis relief. 2. My organization was composed of people experienced in crisis relief.
Organizational Humility	1. My organization's leadership acknowledged limitations and/or mistakes. 2. My organization's leadership accepted failure as a learning experience. 3. My organization had feedback mechanisms in place for suggestions or other forms of feedback. 4. Listening was encouraged in my workplace. 5. My organization acknowledged its strengths and weaknesses when we worked with each other internally or with external partners.
Organizational Politics	1. Favoritism rather than merit determined who got ahead in my organization. 2. There was an influential group in our organization that no one ever crossed. 3. My co-workers helped themselves, not others. 4. I have seen people deliberately distort information requested by others for purposes of personal gain, either by withholding it or by selectively reporting it.
Skill Specificity	Percentage of the organization's budget allotted to the following services: 1. Preparedness and/or mitigation 2. Mass care 3. Emergency assistance and casework 4. Emotional and/or spiritual care 5. Supporting services to state and local VOAD member agencies 6. Recovery 7. Donations management 8. Volunteer management 9. Outreach and/or information

Table 4.5 Continued

Swift Trust	1. Our organization knew it had to work with other organizations to accomplish its objectives in a timely manner. 2. Our organization was willing and able to work with other organizations even though we knew our reputation could have been damaged by poor outcomes. 3. Our organization was willing and able to work with other organizations even though we understood that the consequences were severe if all organizations did not work well together. 4. Our organization was willing and able to work with other organizations even though we understood that the consequences of not meeting our objectives were severe. 5. Our organization was willing and able to work with other organizations even though we recognized the importance of this activity for the livelihood of our organization. 6. Our organization was willing and able to work with other organizations even though we recognized that success depended on effective coordination among all organizations. 7. Our organization was willing and able to work with other organizations even though we knew that immediate action was needed for the success of our activities. 8. Our organization was willing and able to work with other organizations even though we knew we had to rely on other organizations to achieve our objectives. 9. Our organization was willing and able to work with other organizations even though there was the chance of a poor outcome.

4.5.1.3 Moderating and Control Variables

Table 4.6 provides the moderating and control variables uses in both the first and second regression analyses.

Table 4.6 Moderating and Control Variables

Moderating Variable	Associated Items
Tie Strength	1. On average over the past two years, how frequently did people in your organization interact with this “typical” partner? 2. On average over the past two years, how close was the working relationship between your organization and this “typical” partner?

Table 4.6 Continued

Organizational Resources	1. In the most recent crisis response to a natural disaster our organization had sufficient personnel to manage our work. 2. In the most recent crisis response to a natural disaster our organization had sufficient funding to manage our work. 3. In the most recent crisis response to a natural disaster our organization had sufficient equipment to manage our work. 4. In the most recent crisis response to a natural disaster our organization had sufficient resources to manage our work.
High Velocity Environments	1. In the most recent crisis response to a natural disaster the needs of victims and respondents changed often. 2. In the most recent crisis response to a natural disaster the number of responding organizations changed regularly. 3. In the most recent crisis response to a natural disaster the availability and/or use of technology changed regularly. 4. In the most recent crisis response to a natural disaster government regulations and/or policies changed regularly. 5. In the most recent crisis response to a natural disaster accurate information was hard to find. 6. In the most recent crisis response to a natural disaster information was often obsolete by the time it was obtained.
Control Variables	Associated Items
Organizational Controls	1. Organizations age 2. Size (budget and number of employees) 3. Type of organization: non-government, government, other
Respondent controls	1. Respondent's tenure in the organization 2. Respondent's position within the organization 3. Respondent's overall experience with crisis relief work

4.5.2. Analysis

The responses to the survey were used to test the model and the hypothesized relationships within the model. Exploratory factor analysis was used to examine if the expected relationship among items in the survey, based on the pilot study findings, were consistent in the combined sample responses. Items that loaded together with little or no cross-loadings were then combined to form latent variables and Cronbach alphas were developed to measure the reliability of the items in each variable. Once the variables were established, hierarchical regression was used to measure the relationship between the organizational characteristics

listed as the independent variables above and the organization's TNDC. A test for moderation was conducted on the potential impact of prior tie strength on the relationship between prior network experience and TNDC. A second regression analysis was conducted measuring the relationship between TNDC and organizational performance. As before, a test for moderation was conducted on the potential impact of resource availability and environmental factors on organizational performance. Results of these tests are given in Chapter 5.

CHAPTER 5

RESULTS

5.1 Introduction

In this dissertation I have used a mixed methods approach to suggest first that a dynamic capability exists that, in turbulent environments, can improve organizational performance through the development of temporary inter-organizational networks. Further, the study has sought to examine the organizational characteristics that foster or hinder this dynamic capability, and the influence of moderating variables that might affect the relationship between these variables. The first phase of the study involved qualitative interviews among government and nonprofit relief organizations operating in Aceh Province, Indonesia after the Asian Tsunami as well as organizations operating in the Gulf Coast of the USA after Hurricane Katrina. The results of this qualitative study, along with the development and pilot testing of a survey instrument were discussed in Chapter 4.

In this chapter, I will discuss the results of the empirical testing of the hypotheses and model developed in Chapter 3. The chapter begins with descriptive details of the subjects taking the survey and the organizations they represent. The results of a factor analysis are presented next along with measures of reliability of the resulting latent variables and then correlations of these variables. Following this, I will present the results of the two regression analyses and the outcomes of each of the hypothesized relationships.

5.2 Descriptive Statistics

Information about the respondents themselves can give insight into the validity of responses to the survey. People with little experience in crisis relief or with short tenure in an organization might not provide accurate responses, even if they intend to do so. Further, if all responses are from one level of the represented organizations one might believe that the

answers are skewed based on the perspectives from that one level within the organization. To address these concerns, the survey asked respondents about their tenure at the organization for which they currently work, their years of experience in crisis relief work and the level within the organization in which they work. Organizational level was determined by asking their job title and the job title of the person to whom they respond. By knowing these two data points, I could make reasonable estimations of the respondents' position within the organization without the personal bias that might come from their own estimation of their position within the organization.

Tables 5.1 and 5.2 show the descriptive statistics of the respondents. As can be seen, the respondents represent a significant level of experience both within their representative organizations (mean of 8.45 years working in the organization) as well as in their years of experience in responding to crises (mean of 12.19 years of crisis response experience). Further, while the largest representative group was mid-level managers (63.3%), the survey also reflected the insights from those at the top levels of their organizations (15.6%) and the lower ranks of their organizations (21.1%).

Table 5.1 Tenure and Work Experience of Respondents

	Mean	Mode	Median	Standard Deviation	Variance
Tenure	8.45	5	6	7.14	51.04
Experience	12.19	5	10	9.16	83.86

Table 5.2 Level Within the Organization

	Number Represented	% of Total
Top-level Management	14	15.6%
Mid-level Management	57	63.3%
Lower-level Management	19	21.1%

Beyond the individual level descriptors, it is important to examine characteristics of the organizations themselves that were represented in the study. The average age of these organizations was 35.47 with a range of 146 years, from newly formed to 146 years in existence. Table 5.3 provides the number of government, non-profit and “other” organizations represented in the study. Further, the table provides the number of the responding organizations considered “first responders” to crises. Table 5.4 reports the size of the organizations in terms of budget size while Table 5.5 reports the size of the organizations in terms of number of personnel. To protect the privacy of these organizations and to encourage responses, the question of budget and number of employees was asked in set ranges.

Table 5.3 Types of Responding Organizations

	Government	Non-profit	Other	First Responder
Number	15	78	4	28
Percentage	16.7%	78.9%	4.4%	31.1%

Table 5.4 Size of Responding Organizations By Budget

Budget Categories	< $250,000	$250,000 - 500,000	$500,000 – 1,000,000	$1,000,000 – 10 mill	> $10 mill
Number/percent of organizations in budget category	31 organizations or 34.4% or respondents	12 organizations or 13.3% of respondents	10 organizations or 11.1% of respondents	19 organizations or 20.9% of	18 organizations or 20.0% of respondents

Table 5.5 Size of Responding Organizations By Number of Employees

Employees	< 10	10 - 25	26 - 50	51 - 75	> 75
Number/percent of organizations in employee category	36 organizations or 40% of respondents	8 organizations or 8.9% of respondents	12 organizations or 13.3% of respondents	5 organizations or 5.6% of respondents	29 organizations or 32.3% of respondents

Table 5.6 Factor Analysis Pattern Matrix

	1	2	3	4	5	6	7	8	9	10	11
PN1						**-0.414**					
PN2						**-0.659**					
TS1							**0.509**				
TS2			-0.319				**0.823**				
PC1						-0.716					
PC2						-0.398					
H1	0.328							0.631			
H2								0.35			
H3								0.311			0.444
H4	0.428										0.4
H5	0.482										0.453
OP1	**-0.753**										
OP2	**-0.822**										
OP3	**-0.547**		0.316								
OP4	**-0.651**										
ST2								**0.764**			
ST4								**0.868**			
ST5								**0.633**			
ST9								**0.533**			
TNDC1			**-0.636**								
TNDC2			**-0.702**								
TNDC3			**-0.879**								
TNDC4			**-0.73**								-0.3
TNDC5			**-0.93**								
TNDC6										0.642	
HVE1				0.528							
HVE2				0.921							
HVE3				0.695					**0.312**		
HVE4				0.355					**0.521**		
HVE5									**0.772**		
HVE6									**0.752**		
OR1		**-0.739**									
OR2		**-0.897**									
OR3		**-0.804**									
OR4		**-0.91**									
Sstot											**0.518**
P1					**-0.911**						
P2					**-0.882**						
P3					**-0.837**						
P4									-0.352		
P5					-0.356						-0.338

5.3 Factor Analysis

After collecting responses to the survey, I performed a factor analysis to examine the clustering of survey items based on latent constructs as shown in Table 5.5. A Principle Axis Factoring using Direct Oblimin rotation was used.

The following items loaded together, with little or no cross-loadings: tie strength, organizational politics, swift trust, TNDC, organizational resources and skill specificity. Prior network experience and prior crisis experience loaded together on the same factor. Perhaps given the unique nature of the sample population, organizations that have been involved in crisis have also participated in interorganizational network. That seemed to be consistent with the findings of the qualitative study in an earlier phase of the study. An examination of the reliability of these measures showed that the measures for prior network experience were stronger than those for prior crisis experience.

The items for two variables, organizational humility and high velocity environments, each loaded on two distinct factors. In the case of humility, items 1 – 3 loaded on one factor and items 3 – 5 loaded on a second with item 3 cross loading on both. Further, items 1 – 3 loaded on the same factor as all the swift trust items. Items 1, 4 and 5 cross loaded with organizational politics. This outcome was troubling, but I determined to keep the construct in the study due to the strong findings related to humility in the qualitative study. Organizational humility is a new construct in management research that has yet to be empirically measured. Perhaps the variable was poorly defined and/or the items were insufficient to measure it. Alternatively, the fact that subjects responding to the survey came from both nonprofit and government organizations could have affected the results of the factor analysis.

Items 1 – 4 of high velocity environments loaded on one factor and items 3 – 6 loaded on a second factor, with items 3 and 4 cross loading. However, there was no cross loading with other variables in the study. Perhaps these two factors represent two sub-dimensions of the high velocity environments construct. High velocity environments have, in previous

management research, been measured by industry measures, not descriptors of the external environment. Therefore, like organizational humility it has yet to be measured through survey research. I determined to use items 3 – 6 as the measures for this variable.

Finally, items 1 – 3 of organizational performance loaded together. Item 5 cross loaded on this factor but also on the skill specificity factor while item 4 did not load on the factor at all. I selected items 1 – 3 for this variable.

Based on the results of the factor analysis, Table 5.6 gives the latent variables, their associated items and the measure of reliability for each.

Table 5.7 Latent Variables, Items and Reliability Measures

Latent Variable	**Items**	**Alpha**
Prior Network Experience	PN1, PN2	.602
Tie Strength	TS1, TS2	.624
Prior Crisis Experience	PC1, PC2	.504
Organizational Humility	H1, H2, H3, H4, H5	.880
Organizational Politics	OP1, OP2, OP3, OP4	.863
Swift Trust	ST2, ST3, ST5, ST9	.809
Temporary Network Development Capability	TNDC1, TNDC2, TNDC3, TNDC4, TNDC5	.904
High Velocity Environment	HVE3, HVE4, HVE5, HVE6	.816
Organizational Resources	OR1, OR2, OR3, OR4	.915
Performance	P1, P2, P3	.832

5.4 Results

I next analyzed each variable to ensure multivariate normality. Four variables, TNDC, skill specificity, organizational politics and organizational performance were not normally distributed. I performed a log transformation on the organizational politics variable and a reflexive square root transformation on the organizational performance variable that resulted in

normal distributions of the new, transformed variables. However, transformations did not alleviate the violations of normality in the cases of skill specificity or TNDC. This proves to be especially problematic for TNDC since it is a dependent variable, and the focal variable in this study. Perhaps the organizations in the population in which this study was conducted are uniquely conditioned to forming partnerships in the conduct of their work. The mean response for this variable was 6.15 out of a possible 7. No organizations responded with a rating as low as 1 and only two organizations responded with a rating of 2.

Correlations of the variables were next measured. The results are provided in Table 5.7. The highest measure of correlation exists between TNDC and organizational politics (-.387). The correlations do not seem to be problematic. Where they do exist, the correlations were expected from a theoretical basis.

Table 5.8 Analysis of Correlation of Variables

	Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Type	1.88	0.445																	
2	Size	2.81	1.741	-0.161																
3	Age	35.47	32.784	-0.018	0.236*															
4	Budget	2.79	1.583	-0.085	0.585**	0.362**														
5	Skill Spec	5.13	1.99	-0.032	0.030	-0.012	-0.144													
6	Tenure	8.45	7.144	-0.180	0.324**	0.364**	0.306**	-0.002												
7	Rank	2.06	0.606	-0.141	0.244*	0.135	0.211*	-0.016	-0.143											
8	Experience	12.19	9.158	-0.077	0.143	0.163	-0.150	0.144	0.272**	-0.126										
9	Prior Networks	6.63	2.452	0.103	0.142	0.402**	0.142	-0.036	0.198	0.203	0.113									
10	Tie Strength	7.91	3.1	-0.114	0.055	-0.070	-0.031	0.266**	0.106	0.009	0.094	0.327**								
11	Prior Crisis	10.27	3.183	0.142	0.007	0.075	-0.160	0.072	0.066	-0.060	0.263**	0.394**	0.025							
12	Humility	26.48	7.243	0.140	-0.063	-0.019	-0.119	0.200	-0.105	0.053	-0.118	0.088	0.213*	0.009						
13	Politics	9.61	8.461	-0.231*	0.048	-0.032	0.095	-0.110	-0.067	-0.052	0.012	-0.145	-0.173	-0.183	-0.644**					
14	Swift Trust	18.88	5.615	-0.024	-0.051	-0.090	-0.048	0.012	0.014	-0.028	-0.094	0.144	0.312**	0.007	0.584**	-0.299**				
15	TNDC	30.69	6.02	0.053	-0.019	-0.015	-0.086	-0.070	0.127	-0.103	-0.077	0.150	0.297**	0.187	0.289**	-0.387**	0.342**			
16	High Vel. Env.	15.68	6.162	0.223*	-0.076	-0.099	-0.029	0.078	-0.124	-0.121	-0.097	-0.186	-0.126	-0.087	-0.002	0.205*	-0.020	-0.117		
17	Resources	18.09	7.024	0.122	0.179	0.095	0.029	0.049	-0.137	0.220*	0.118	0.368**	0.161	0.229*	0.303**	-0.199	0.074	-0.029	-0.190	
18	Performance	22.42	5.485	0.228*	0.230*	0.182	0.291**	-0.091	0.092	-0.105	-0.101	0.187	0.001	0.041	0.116	-0.241*	0.012	0.161	-0.219*	0.361**

** Correlation is significant at the 0.05 level (2-tailed)*

*** Correlation is significant at the 0.01 level (2-tailed)*

5.4.1 Regression Results

I conducted two regression analyses using the variables identified above. The first regression sought to measure the relationship between organizational characteristics as independent variables and an organization's temporary network development capability (TNDC) as the dependent variable. Organizational characteristics included prior crisis experience, prior network experience, tie strength, skill specificity, organizational humility, swift trust and organizational politics. I sought to control for issues related to the organization and the individual responding to the survey. These control variables are listed in Table 5.8.

Table 5.9 Control Variables

Organizational Control Variables	Individual Respondent Control Variables
Size, measured as budget and number of employees	Tenure in the current organization
Age	Position level within the organization
Type (government, non-profit, other)	Total years experience in crisis relief work

I used hierarchical linear regression to measure the hypothesized relationships. Table 5.9 provides results of the first regression. In the first two models, control variables were regressed on TNDC. Neither model was significant. Model 3 in which the independent variables of interested were introduced, the change in R^2 was significant. R^2 for this model was .328 and adjusted R^2 was .200. However, while the model itself was significant, only two independent variables, organizational politics and tie strength, were significant at the .05 level.

Next in Model 4, I tested to see if an interactive effect could be found between prior network experience and the strength of ties in these networks. The change in R^2 of this model was not significant.

Table 5.10 Regression of Organizational Characteristics on TNDC

Variable	Model 1 β	Model 2 β	Model 3 β	Model 4 β
Control Variables				
Org Type	0.052	0.065	-0.011	-0.047
Size	0.056	0.088	0.101	0.092
Age	0.016	0.002	0.049	0.018
Budget	-0.12	-0.213	-0.142	-0.118
Tenure		0.215†	0.101	0.100
Position		-0.063	-0.101	-0.097
Experience		-0.184	-0.190	-0.190
Independent Variables				
Skill Spec			-0.174	-0.164
Prior Networks			-0.062	0.183
Tie Strength			0.241*	0.446
Org Politics			-0.260*	-0.263*
Swift Trust			0.170	0.122
Org Humility			-0.035	-0.059
Crisis Experience			0.178	0.176
Interaction				
Prior Net x Tie Strength				-0.365
Model F	0.253	0.856	2.586**	2.442**
Adjusted R^2	-0.035	-0.011	0.200	0.196
Sig. of Change	0.907	0.184	0.001	0.437

Dependent variable: TNDC
n = 90
† p < 0.10
* p < 0.05
** p < 0.01
*** p < 0.001

In the second analysis, I regressed TNDC, high velocity environment and organizational resources on organizational performance. Table 5.10 provides the results of this regression analysis. As before, in models 1 and 2 control variables were regressed on organizational performance. In Model 3 in which the TNDC, organizational resources and high velocity environment were introduced, the change in R^2 was significant. R^2 for this model was .396 and adjusted R^2 was .320. However, while the model itself was significant, the only variables that

were found to be significant were organizational resources and high velocity environments, neither of which were hypothesized as main effects. Models 4 and 5 introduce interactive effects. In the fourth model, I added the squared term of organizational resources, since the hypothesis suggested a curvilinear effect of organizational resources as a moderator. Next, the interaction of TNDC and organizational resources was introduced. In the final model, I introduced the interaction of the squared organizational resources term and TNDC. The change in R^2 for each of these three models was not significant.

Table 5.11 Regression on Performance With OR Moderation

	Model 1 **β**	Model 2 **β**	Model 3 **β**	Model 4 **β**	Model 5 **β**
Control Variables					
Org Type	.269**	.236*	.218*	.245*	.237*
Org Size	.132	.212	.125	.130	.143
Org Age	.080	.131	.084	.055	.040
Org Budget	.208	.172	.234†	.234†	.212
Respond Tenure		-.029	-.001	.005	.039
Respond Level		-.198†	-.267**	-.264*	-.264*
Respond Experience		-.125	-.167	-.161	-.169
Independent Variables					
TNDC			.116	.025	.953
HVE			-.215*	-.251*	-.188†
Organizational Resources			.340**	.665	5.580*
Interactive Variables					
Org Resources^2				-.565	-5.808*
TNDCxOR				.239	-5.265†
TNDCxOR^2					5.585†
Model F	4.252**	3.062**	5.180**	4.436**	4.532**
R^2	.167	.207	.396	.409	.437
Adjusted R^2	.128	.140	.320	.317	.340
Sig. of Change	.003	.250	.000	.441	.056

Dependent variable: Performance
n = 90
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Similarly, I tested the interactive effect of TNDC and high velocity environments. The results of this analysis can be found in Table 5.11. While a significant moderating relationship was found, it was in the opposite direction of what I had hypothesized. It appears that the relationship between TNDC and performance is not strengthened in the presence of a high velocity environment.

Table 5.12 Regression on Performance With HVE Moderation

	Model 1 **β**	Model 2 **β**	Model 3 **β**	Model 4 **β**
Control Variables				
Org Type	.236**	.236*	.218*	.228*
Org Size	.132	.212	.125	.130
Org Age	.080	.131	.084	.085
Org Budget	.208	.172	.234	.208
Respond Tenure		-.029	-.001	.024
Respond Level		-.198†	-.276	-.291**
Respond Experience		-.125	-.167	-.190
Independent Variables				
TNDC			.116	.586
HVE			-.215*	.733†
Organizational Resources			-.340**	.341**
Interactive Variables				
TNDCxHVE				-1.033*
Model F	4.252**	3.062**	5.180**	5.420**
R^2	.167	.207	.396	.433
Adjusted R^2	.128	.140	.320	.353
Sig. of Change	.003	.250	.000	.026

Dependent variable: Performance
n = 90
† p < 0.10
* p < 0.05
** p < 0.01
*** p < 0.001

In Table 5.13 I report the findings of the hypothesized relationships.

Table 5.13 Outcomes of Research Hypotheses

	Hypothesized Relationship	Finding
H1	There is a positive relationship between a relief organization's prior experience with interorganizational networks and its TNDC.	Not supported
H1a	The strength or prior network ties will moderate the relationship between prior network experience and TNDC such that experience with weak-ties networks will strengthen the relationship between prior network experience and TNCD.	Not supported
H2	There is a positive relationship between a relief organization's ability to trust swiftly and its TNDC.	Not supported
H3	There is a positive relationship between a relief organization's prior crisis experience and its TNDC.	Not supported
H4	There is a negative relationship between a relief organization's degree of skill specificity and its TNDC.	Not supported
H5	There is a positive relationship between a relief organization's organizational humility and its TNDC.	Not supported
H6	There is a negative relationship between a relief organization's level of internal political behavior and its TNDC.	Supported at the .05 level of significance
H7	A relief organization's TNDC will be positively related to the achievement of its goals and objectives.	Not supported
H8	The relationship between a relief organization's TNDC and its organizational performance will be moderated by the external environment such that in high velocity environments the relationship between TNDC and performance will be stronger.	Not supported
H9	The relationship between TNDC and organizational performance will be moderated by the amount of resources available to the relief organization such that at very low levels and very high levels of resources available to the organization, fewer network linkages will be formed and the organizations' objectives will be attained to a lesser degree.	Not supported

CHAPTER 6

DISCUSSION

6.1 Introduction

The results of the analyses outlined in Chapter 5 provide some support for the relationships hypothesized in the study. However, the findings also fail to support many of the hypotheses, including some relationships that have strong evidence in previous research. In this chapter, I will review the research questions posed in the first chapter and discuss how these questions were addressed in the study. Next, I will discuss the major findings of the study and the implications of these findings for relief organizations and for research purposes. The chapter concludes with a discussion of the limitations as well as suggestions for future research.

6.2 Review of the Research Questions

In the first chapter, I addressed this study's contribution to the field of strategic management by posing the following research questions.

1. Can a dynamic capability for forming temporary networks (TNDC) be identified among relief organizations, and can this capability be linked to organizational characteristics that either facilitate or hinder the development of the capability?
2. Do organizations that possess a dynamic capability for forming and utilizing temporary networks perform better than do organizations that do not possess this capability?
3. Does an organization's external environment influence the efficacy of its TNDC in the context of large-scale, natural disasters? Specifically, does a high velocity environment strengthen the relationship between an organization' TNDC and its performance? More generally, I hoped to lay a

foundation for a configurational view of network formation suggesting that the environment in which an organization operates influences the nature and governance structure of its interorganizational relationship.

6.3 Major Findings

To address these questions, I began the study with open ended interviews with relief organizations operating in the aftermath of two natural disasters. All eleven organizations in this phase of the study reported significant use of interorganizational networks in response to the two disasters. Ten of the eleven organizations reported initiating those relationships in a proactive way. Further, while all eleven organizations stated that their interorganizational networks included organizations from prior networks, at least nine also claimed that their networks included organizations with which they had never before interacted. Therefore, this study suggests that at least some relief organizations have the ability to form short term partnerships with new network actors, an important component of temporary network development capability.

That having been established in the qualitative phase of the study, the next step was to determine what organizational characteristics might be associated with this TNDC. Prior reading of interorganizational network theory along with the results of the qualitative interviews identified at least six characteristics: prior experience with interorganizational networks, prior experience with crises, the ability to trust quickly with little to no knowledge of the alter (swift trust), limited or an absence of organizational politics, a generalist approach to service delivery, and organizational humility. In addition, given the uniqueness of these short term networks and the nature of swift trust, it was suggested that prior experience with weak-ties forms of networks could be beneficial to forming a TNDC. Only one of these relationships was supported in the study, the negative relationship between organizational politics and TNDC.

Finally, in an examination of the factors related to organizational outcomes, the study did not find the predicted relationship between possession of a TNDC and performance. The

results also did not support the moderating effect of a high velocity environment in the relationship between TNDC and performance, nor did they suggest that the availability of organizational resources moderated the relationship between TNDC and performance.

6.4 Implications of the Findings

The findings of this study hold implications for relief organizations as well as for academic researchers. Each is discussed below.

6.4.1 Implications for Relief Organizations

The literature on crisis response and interviews with relief organizations all suggest the importance of working in collaboration with other organizations. Further, both literature and experience demonstrate the importance of diverse network partners including government, quasi-government, nonprofit and for profit organizations. While the empirical study did not provide the anticipated findings, the qualitative study does demonstrate the importance of several factors for relief organization responding to a natural disaster. First, these organizations need to foster a capacity to form partnerships with diverse types of organizations. While most of the organizations interviewed had experience with existing partners, most also communicated experience forming new partnerships. To this end, the ability to trust swiftly appears to be an important characteristic, as well. To form a new partnership with an unknown partner in the midst of responding to a disaster requires a willingness to jump into the relationship before a full assessment of the other's capability or trustworthiness can be assessed.

In addition, all of the organizations interviewed communicated the importance of operating with a measure of humility. This characteristic was expressed in different ways, but typically involved a willingness to listen, to acknowledge strengths and weaknesses, and to work towards shared successes.

Finally, in both the qualitative and empirical studies, organizational politics seemed to reduce an organization's ability to form interorganizational partnerships in the midst of a crisis response. Politics within organizations focus the attention of personnel on subordinate goals

and objectives rather than superordinate goals. Political behavior within organizations includes actions that seek individual benefit through the use of power, influence and information. It is understandable, therefore, that this kind of behavior within an organization might limit the organizations' ability or interest in forming partnership outside the organization. Introducing external actors into the activities of an organization could shed light on the hidden intensions and behaviors of those enacting self-serving behaviors.

6.4.2 Implications for Academic Research

The implications for researchers are different than those for practitioners. First, and most critically, is the problem of measuring temporary network development capability. Ambrosini & Bowman (2009) claim that little empirical work has been conducted in the field of dynamic capabilities due to the challenge of measuring these constructs. This seems to be the case in this study. The measures of TNDC that clustered together in the pilot study and final study factor analyses did not include important dimensions of the definition of a TNDC; namely the ability to utilize network resources to achieve organizational goals. Further, the construct significantly violated assumptions of multivariate normality, rendering the use of the construct in the study questionable.

Similarly, problems exist with the items used to measure organizational humility. Vera and Rodriguez-Lopez (2004) suggest that humility is an organizational resource that can lead to a competitive advantage for organizations. However, the authors do not try to measure the construct nor do they give suggestions for how to measure it. In a previous study, the items developed to measure organizational humility load together and distinctively from items measuring job satisfaction and organizational commitment (Casper, et al, 2009). However, in this study, the items cross loaded with the measures used for organizational politics and swift trust to a degree that they no longer appeared to be a unique latent construct. Perhaps the difference in findings relates to the level of analysis, where the previous study examined individual-level constructs and this study measured organizational-level constructs. While this

does not nullify the potential usefulness or viability of the construct itself, it does appear that the construct has yet to be sufficiently defined in a measurable way.

Measures of performance among nonprofit organizations need further attention from academic researchers, as well. Interviews with experts in nonprofit organizations reflected that challenges of measuring performance in these organizations. Literature in nonprofit management also points out the challenge of balancing performance in terms of funding and survival as apposed to performance related to service delivery. The measures that clustered together without cross loading in this study involved perceptions of client satisfaction with the number, availability and quality of services provided by the organization. Other measures that did not load well and, therefore were not used, include development factors such as the donations of highly visible donors and the sufficiency of donations to the operations of the organization.

6.5 Limitations and Recommendations for Future Research

One of the strengths of this study was its scope, beginning with a qualitative assessment of relief organizations' collaborative efforts, progressing on to an instrument development to measure proposed constructs and then finally to use of the instrument to empirically measure the hypothesized relationships. However, this strength was also a weakness of the study. It's objectives were, perhaps, a bit too far reaching. The model itself was too large, resulting in dropping the variables of legitimacy and reputation early on in the development of the pilot study. Even with these deletions, the survey instrument designed to test the model was too long, resulting in a small number of completed surveys.

A second limitation to the study involved the development of a survey instrument to measure new constructs. Three of these were either new to the literature or had never been measured through survey instruments. These include organizational humility, high velocity environments and temporary network development capability. In addition, while the study

utilized existing, validated measures where possible, the use of those measures in the area of relief organizations had not previously been tested.

Future research should break up the scope of the study, examining particular relationships in the model. For example, research could examine if an organization's legitimacy or its reputation are more likely to lead to critical performance outcomes and how the nature of the external environment might impact that relationship. Another study could seek to differentiate organizational humility from organizational politics. These two constructs loaded in negative direction on the same factor in this study. Are they two extremes of the same continuum or two distinct constructs?

An important next step in the study will be to develop an instrument to measure an organization's TNDC. As Ambrosini & Bowman (2007) have claimed, measuring dynamic capabilities is a difficult challenge, and one that is worthy of future research.

A third limitation of the study was the small sample size in both the pilot study and the final study. By nature of the work of relief organizations, people at these organizations have little time to fill out surveys, especially those of the length of this study. Further, where as studies of for-profit businesses have very large populations from which to draw, the total number of relief organizations involved in response to natural disasters is much smaller, thereby making it difficult to attract a sufficient number of organizations.

Another limitation of the sample population is the similarity in the characteristics of this population. This was evidenced in the highly skewed distribution of measures such as network experience, crisis experience and even the dependent variable, TNDC. Future research can address these two limitations by broadening the population of interest from relief organizations to any type of social service organization.

6.6 Conclusions

Dyer, et al (2001) introduced the idea of an alliance capability that enables some firms to more effectively utilize alliances as a dynamic capability in evolving environments. Further,

Gulati (1999) suggests that organizational attributes might exist that lead to an ability to form interorganizational networks. While conceptually interesting, neither study identifies what measurable firm characteristics lead to this ability to form network partnerships. This study has attempted to identify such characteristics and to propose a model inclusive of the antecedent characteristics and performance outcomes of such a temporary network development capability.

In doing so, the study advances theory in two distinct areas: interorganizational networks and dynamic capabilities. In the area of interorganizational networks, this study proposes a contingency view of network formation that takes into consideration a temporal dimension to networks and an environmental influence on the type of network formed. Most network literature assumes that interorganizational networks form over time and even label the end of such networks as a failure (Park and Ungson, 2001). However, the objectives of some networks are accomplished quickly and the need for collaboration itself can change suddenly with changes in the external environment. Therefore, this study introduces a temporal dimension to both the purpose as well as the structure of an interorganizational network by suggesting a temporary network. Further, the study proposes a moderating effect of the external environment on the use and outcomes of network collaborations.

In the area of dynamic capabilities, the study articulates a clearer definition of such capabilities and seeks to measure a capability for developing temporary interorganizational networks. In doing so, the study has attempted to lay a foundation for future research in the specific area of temporary network development capability, as well as more generally in the definition and measure of dynamic capabilities.

The study results give evidence that the research is moving in the right direction, and provides suggestions for future research that will advance theory development and testing in these areas.

APPENDIX A

INTERVIEW TRANSCRIPT

Thank you for the opportunity to visit with you about _____ (name of the organization) and the services that _____ provides. My colleague and I are conducting research on organizations that work in crisis relief efforts, especially in large crises like Katrina and Rita. I understand that _____ has had some experience in events like these, is that correct?

(At this point provide the subject with a consent form for their approval. If the interview is by phone, read the consent form to them and ask for a verbal consent. Insure that the subject understands each of the elements of the form and gives a clear affirmation of their consent to participate. Also insure that this verbal consent is recorded.)

We can handle the information in one of three ways: a) we can keep you and the name of your organization anonymous; b) we can use the name of your organization, but not link the organization or you to the specific information you share; or, c) upon your approval, we might use certain descriptions, stories or experiences you share with us as points of illustration in the paper(s) we develop. Which ever way you want us to handle your organization's identity, we will need to record the interview so that we can accurately reflect upon your answers. Is that okay with you? (Wait for consent. Make sure the subject responds clearly and understands what is being asked.)

The information you provide will be combined with information from other interviews to see if a variety of organizations share similar traits and experiences. Our hope is that our findings will provide organizations like _____ with information that can benefit the work that you do, and, as a result, lives can be saved in future crisis events.

1. Introductory questions
    a. Please tell me a little about _____ (name of organization). (Look for things like age, size, type of work, locations. If not a part of the answer, prompt further responses.)
    b. What is your role in the organization? How long have you worked in this role? What about before that?

2. TNDC questions
    a. Does _____ tend to work in isolation or with other organizations in crisis response?
    b. What factors do you think facilitate the ability of your organization to work with other organizations in response to crisis events?
    c. In the past, when you have come across a need that has not fit within the services you provide, how has your organization responded?
    d. In the past, what percentage of you organization's relationships have been initiated by your organization, and what percentage were initiated by other organizations?

3. Crisis experience
    a. Tell me a little about _____'s (name of organization) response to and work after a recent, large, crisis event, such as Katrina or Rita. (Look for things like services provided, # of locations, # personnel involved, variety of activities, partnerships with non-government and government entities, resources available, quickness of response, duration of response. If not part of the answer, prompt further responses.)

   b. Was this activity pretty normal for your organization or was this a new experience or a larger response that your organization is used to?

4. Reputation and legitimacy
   a. How is your organization seen through the eyes of other people? (Look for: within industry, community in general, supporters, government, those you serve. If not a part of the answer, prompt further responses.)
   b. Is it more important to your organization to be seen as one who follows all the rules and regulations or as one who gets the job done? Please explain?

5. Skill specificity
   a. How many different kinds of services does your organization provide?
   b. How long have you provided these different services?
   c. Do you see your strength as a service provider in being able to focus on one or a few services, or is your strength the ability to provide for many various needs?

6. Network experience
   a. How have your past experiences with interorganizational relationships shaped the likelihood of being involved in future relationships?
   b. When responding to crises, does your organization tend to work more with non-government organizations or with the government? How are these working relationships different from each other?
   c. On a similar topic, what percentage of your organization's interaction with other organizations (network experience) is with organizations similar to yours, and what percentage is with organizations different from yours?

7. Swift trust
   a. How do you go about deciding what organizations you will work with?
   b. What role does trust play in this decision?
   c. How do you decide if you can trust another organization or not?
   d. In a recent crisis response effort, did you have to put your trust in another organization with which you had never worked before? If so, how much trust did you invest in them, and how did you decide to do this?

8. Role of individuals
   a. We've talked about initiating relationships with other organizations, about trust and reputation, about skills that your organization has and services that you provide. In all of this, are there key individuals that really make much of this work possible for your organization?
   b. If so, what role do they play inside the organization?
   c. What role do they play outside the organization?
   d. Can you see your organization functioning as effectively either with your own services or in its relationships with outside entities without this key individual?

9. Wrapping up
   a. Is there any further information that you think would be helpful as we try to uncover what organizational factors facilitate the ability of your organization to initiate working relationships with other organizations in response to crisis events?

Thank you so much for your time and the very helpful information you have provided. Once we have conducted about 8-10 interviews like this one, we will begin trying to identify certain themes that emerge across all the various organizations, if they exist. If we discover some similar themes, would you like to see our findings? (If yes, where should we send these results?)

Thanks, once again, for your time.

APPENDIX B

INSTRUMENT DEVELOPMENT: FACE VALIDITY

Thank you very much for your help on this. I truly appreciate it.

Please use the following definitions as you try to match each item (provided in the table below) to each construct.

Definitions

High Velocity Environment (HVE)
A **HVE** involves rapid and discontinuous change in demand, competition, technology, or regulation, so that information is often inaccurate, unavailable, or obsolete.

Organizational Humility (OH)
OH is the awareness of an organization's leaders and members of their own and their organization's strengths and weaknesses, derived through both the inner characteristics of leaders and members as well as organizational policies. **OH** manifests itself as openness to new ideas and contradictory information in an effort to learn, an ability to recognize the contributions of other individuals and organizations through sharing success and failure, and a focus on serving and facilitating the success of other individuals and organizations.

Organizational Politics (POL)
POL is defined as observable, but often covert, actions by which executives enhance their power to influence a decision. These actions include behind-the-scenes coalition formation, offline lobbying and cooptation attempts, withholding information, and controlling agendas.

Organizational Resource Availability (ORA)
ORA reflects an organization's control (not necessarily ownership) of key resources.

Swift Trust (ST)
ST describes the ability and willingness to collaborate when outcomes and trustworthiness are uncertain. **ST** involves recognition that failure is a possibility when collaborating, but almost a certainty when choosing not to collaborate. **ST** develops in temporary systems and forms to manage conditions of situational vulnerability, uncertainty, and risk.

Temporary Network Development Capability (TNDC)
TNDC is a *dynamic capability to form temporary networks and renew, reconfigure, create, align and direct the temporary network partners' resources.

*Dynamic capability – While the general idea of DCs is not a construct in this study, a specific DC, namely TNDC, is. For this reason, I provide my definition of a dynamic capability: second-order capabilities that provide an organization the capacity to purposefully create, extend, or modify its ordinary capabilities in the manner envisioned and deemed appropriate by the firm's principal decision-maker(s).

Using the definitions of constructs, please write the name of the construct that you believe each item is measuring in the box that appears beside each item. Some items might be reverse coded. For simplicity, feel free to use the acronym provided.

Some of the constructs might be new to you or outside your primary field of research. Therefore, please strictly use the definitions provided to match each item to each construct. Responses will be based on a 7 point Likert scale.

Items	**Construct**
Our organization knew it had to work with other organizations to accomplish its objectives in a timely manner	
We realized our activities required the coordination of multiple organizations	
My organization's leadership acknowledges limitations and/or mistakes	
My organization is not capable of forming temporary partnerships	
Our organization was willing and able to work with other organizations even though we knew our reputation could have been damaged by poor outcomes	
Our organization was willing and able to work with other organizations even though we understood that the consequences were severe if all organizations did not work well together	
My organization's leadership accepts failure as a learning experience	
My organization does not initiate temporary partnerships	
In the most recent crisis response to a natural disaster the needs of victims and respondents changed often	
Our organization was willing and able to work with other organizations even though we understood that time was of the essence regarding completion of our activities	
Our organization was willing and able to work with other organizations even though we understood that the consequences of not meeting our objectives were severe	
My organization's leadership asks for the opinions of others	
My organization requires too many formal procedures to effectively form temporary partnerships.	

In the most recent crisis response to a natural disaster the number of responding organizations changed regularly	
Our organization was willing and able to work with other organizations even though we recognized the importance of this activity for the livelihood of our organization	
Our organization was willing and able to work with other organizations even though we recognized that success depended on effective coordination among all organizations	
My organization has feedback mechanisms in place for suggestions or other forms of feedback	
My organization does not commit resources to temporary partnerships	
In the most recent crisis response to a natural disaster the availability and/or use of technology changed regularly	
Favoritism rather than merit determines who gets ahead in my organization	
In the most recent crisis response to a natural disaster our organization had sufficient personnel to manage our work	
Our organization was willing and able to work with other organizations even though we knew that immediate action was needed for the success of our activities	
Listening is encouraged in my workplace	
There are too many barriers in my organization to form temporary partnerships.	
In the most recent crisis response to a natural disaster government regulations and/or policies changed regularly	
There is an influential group in our organization that no one ever crosses	
In the most recent crisis response to a natural disaster our organization had sufficient funding to manage our work	
Our organization was willing and able to work with other organizations even though we knew we had to rely on other organizations to achieve our objectives	
My organization acknowledges its strengths and weaknesses when we work with each other internally or with external partners	

We have to go through a specific office/person before we can form any type of partnership.	
In the most recent crisis response to a natural disaster accurate information was hard to find	
My co-workers help themselves, not others	
In the most recent crisis response to a natural disaster our organization had sufficient equipment to manage our work	
Our organization was willing and able to work with other organizations even though there was the chance of a poor outcome	
My organization shares credit for success with others when we worked with each other internally or with external partners.	
Forming partnerships requires prior approval.	
In the most recent crisis response to a natural disaster information was often obsolete by the time it was obtained	
I have seen people deliberately distort information requested by others for purposes of personal gain, either by withholding it or by selectively reporting it	
In the most recent crisis response to a natural disaster our organization had sufficient resources to manage our work	

APPENDIX C

ONLINE SURVEY

TNDC Study

Consent: By clicking the "consent" link below, you confirm that you have read or had this document read to you. You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. For questions, please contact the researcher at (817) 675-3547 or by email at ross@uta.edu.

You voluntarily agree to participate in this study. By clicking below, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

- Consent
- Do Not Consent

TNDC Study

Principal Investigator Name: William Ross O'Brien

Title of Project: Temporary Network Development Capability in High Velocity Environments

Introduction: You are being asked to participate in a research study. Your participation is voluntary. Please ask questions if there is anything you do not understand.

Purpose: I am conducting this study to provide information about how relief organizations can better collaborate to provide life-saving services and resources to victims of disasters.

Duration: Approximately one half hour.

Procedures: Participation involves answering questions about the relief organization for which you work.

Possible Benefits: The results of this study will be meaningful not only for organizations like yours, but also for the victims of natural disasters whose lives depend on collaboration among organizations. I will be happy to share the findings of this survey in aggregated form with you.

Compensation: None

Possible Risks: Minimal discomfort or risk associated with any general survey.

Alternative Procedures, Withdrawal and Confidentiality: Participation in the study is voluntary, the information you provide will be used only in aggregated form, answers will be stored securely and accessed only by the lead researcher and his dissertation committee, and you will not personally be linked to any of the information you provide. Further, you may discontinue participation at any time with no penalty to you or the organization for which you work.

If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, then The University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law. Your research records will not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with it, or with your participation in any study.

If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.

Contact for Questions: Questions about this research or your rights as a research subject may be directed to Ross O'Brien at (817) 675-3547. You may contact Chairperson of UT Arlington Institution Review Board at (817)-272-3723 in the event of a research-related injury to the subject.

TNDC Study

Thank you for your valuable contribution to this study.

What is the name of your LOCAL organization? For example, the Dallas Area Chapter of the American Red Cross.

Where is your LOCAL organization based? (city, state)

Please indicate the type of organization for which you work.

- Government
- Non-profit/private
- Other

How many people are employed by your LOCAL organization?

- fewer than 10 people
- 11 – 25
- 26 – 50
- 51 – 75
- more than 75

In what year was your LOCAL organization established?

Approximately what is your LOCAL organization's annual budget?

- Less than $250,000
- $250,000 - 500,000
- $500,000 - 1,000,000
- $1,000,000 - 10,000,000
- Greater than $10,000,000

Is your LOCAL organization primarily a first responder?

- Yes
- No
- Uncertain

TNDC Study

What was the type of disaster to which your LOCAL organization most recently responded?

- Hurricane
- Fire
- Earthquake
- Flood
- Tornado
- Other

In what location did this most recent disaster response take place? (city, state, country)

Approximately when did this most recent disaster take place? (month, year)

Prior to this most recent disaster, with approximately how many partnering organizations had your organization worked in disaster responses?

- 0 – 5
- 6 – 10
- 11 – 15
- 16 – 20
- more than 20

Also prior to this most recent disaster, for how many years has your organization partnered with other organizations specifically in disaster response?

- less than 1 year
- 1-3 years
- 4-6 years
- 7-9 years
- 10 or more years

TNDC Study

Realizing that each of your partnerships is unique, please establish in your mind a "typical" partnership in terms of frequency and closeness of interaction as you answer the following questions.

Over the past two years prior to the most recent disaster response, on average how frequently did people in your organization interact with this "typical" partner? (1= once a day, 2=twice a week, 3=once a week, 4=twice a month, 5=once a month, 6=once every 2 months, 7=less often than every 2 months)

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7

Over the past two years prior to the most recent disaster response, on average how close was the working relationship between your organization and this "typical" partner? (1=very close, practically like being in the same organization, 4=somewhat close, like discussing and solving issues together, 7=distant, like an arm's-length interaction)

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7

TNDC Study

Please indicate your level of agreement with the following statements about your organization in the context of all the crises to which your organization responded over the most recent two year time period.
(scale: 1=strongly disagree, 4 = neither disagree nor agree, 7=strongly agree)

	1	2	3	4	5	6	7
My organization's members had little experience in crisis relief.	○	○	○	○	○	○	○
My organization was composed of people experienced in crisis relief.	○	○	○	○	○	○	○
My organization's leadership acknowledged limitations and/or mistakes.	○	○	○	○	○	○	○
My organization's leadership accepted failure as a learning experience.	○	○	○	○	○	○	○
My organization had feedback mechanisms in place for suggestions or other forms of feedback.	○	○	○	○	○	○	○
Listening was encouraged in my workplace.	○	○	○	○	○	○	○
My organization acknowledged its strengths and weaknesses when we worked with each other internally or with external partners.	○	○	○	○	○	○	○
My organization shared credit for success with others when we worked with each other internally or with external partners.	○	○	○	○	○	○	○
Favoritism rather than merit determined who got ahead in my organization.	○	○	○	○	○	○	○
There was an influential group in our organization that no one ever crossed.	○	○	○	○	○	○	○
My co-workers helped themselves, not others.	○	○	○	○	○	○	○
I have seen people deliberately distort information requested by others for purposes of personal gain, either by withholding it or by selectively reporting it.	○	○	○	○	○	○	○
Our organization knew it had to work with other organizations to accomplish its objectives in a timely manner.	○	○	○	○	○	○	○

TNDC Study

Our organization was willing and able to work with other organizations even though...

	1	2	3	4	5	6	7
...we knew our reputation could have been damaged by poor outcomes.	○	○	○	○	○	○	○
...we understood that the consequences were severe if all organizations did not work well together.	○	○	○	○	○	○	○
...we understood that the consequences of not meeting our objectives were severe.	○	○	○	○	○	○	○
...we recognized the importance of this activity for the livelihood of our organization.	○	○	○	○	○	○	○
...we recognized that success depended on effective coordination among all organizations.	○	○	○	○	○	○	○
...we knew that immediate action was needed for the success of our activities.	○	○	○	○	○	○	○
...we knew we had to rely on other organizations to achieve our objectives.	○	○	○	○	○	○	○
...there was the chance of a poor outcome.	○	○	○	○	○	○	○

TNDC Study

Sometimes organizations need to form "temporary partnerships." Temporary partnerships are those collaborative relationships that are quickly formed for the purpose of accomplishing a specific project and that are disbanded shortly thereafter. Please indicate your level of agreement with the following statements. (scale: 1=strongly disagree, 4=neither disagree nor agree, 7=strongly agree)

	1	2	3	4	5	6	7
My organization is not capable of forming temporary partnerships.	○	○	○	○	○	○	○
My organization does not initiate temporary partnerships.	○	○	○	○	○	○	○
My organization requires too many formal procedures to effectively form temporary partnerships.	○	○	○	○	○	○	○
My organization does not commit resources to temporary partnerships.	○	○	○	○	○	○	○
There are too many barriers in my organization to form temporary partnerships.	○	○	○	○	○	○	○
When my organization works in temporary partnerships, we effectively direct the resources of the network to meet the goals of the partnership.	○	○	○	○	○	○	○

Please indicate your level of agreement with the following statements. These statements reflect the general environment in which your organization worked. (scale: 1=strongly disagree, 4=neither disagree nor agree, 7=strongly agree)

In the most recent crisis response to a natural disaster...

	1	2	3	4	5	6	7
...the needs of victims and respondents changed often	○	○	○	○	○	○	○
...the number of responding organizations changed regularly	○	○	○	○	○	○	○
...the availability and/or use of technology changed regularly	○	○	○	○	○	○	○
...government regulations and/or policies changed regularly	○	○	○	○	○	○	○
...accurate information was hard to find	○	○	○	○	○	○	○
...information was often obsolete by the time it was obtained	○	○	○	○	○	○	○

TNDC Study

Please indicate your level of agreement with the following statements. These statements reflect the needs of your specific organization. (scale: 1=strongly disagree, 4=neither disagree nor agree, 7=strongly agree)

In the most recent crisis response to a natural disaster...

	1	2	3	4	5	6	7
...our organization had sufficient personnel to manage our work.	○	○	○	○	○	○	○
...our organization had sufficient funding to manage our work.	○	○	○	○	○	○	○
...our organization had sufficient equipment to manage our work.	○	○	○	○	○	○	○
...our organization had sufficient resources to manage our work.	○	○	○	○	○	○	○

TNDC Study

The following are service designations by Voluntary Organizations Active in Disaster. Please enter the approximate percentage of your budget that is allotted to each of the following types of work. If the category does not apply to your LOCAL organization, enter zero.

Preparedness and/or mitigation	
Mass Care	
Emergency assistance and casework	
Emotional and/or spiritual care	
Supporting services to state and local VOAD member agencies	
Recovery	
Donations Management	
Volunteer Management	
Outreach and/or information and referral	
Animals and Pets Services	

In the following statements, please compare your organization to others within your local network of organizations on a scale of 1 – 7. (1 = well below others, 4 = comparable to others, 7 = well above others)

	1	2	3	4	5	6	7
Level of client satisfaction with the type of programs, activities or services your organization provides	○	○	○	○	○	○	○
Level of client satisfaction with the quality of programs, activities or services your organization provides	○	○	○	○	○	○	○
Level of client satisfaction with the availability of the programs, activities or services your organization provides	○	○	○	○	○	○	○
Percent of funding provided by prestigious or influential donors	○	○	○	○	○	○	○
Sufficiency of funding to carry out my organization's annual plans	○	○	○	○	○	○	○

TNDC Study

Please tell me a little about yourself.

How long have you worked for this local organizations?

What is your job title and level within the organization?

To whom (job title) do you report?

How many years have you worked in relief organizations?

Now that you have completed this survey, would you consider either forwarding the invitation email you received to an associate or submitting your associate's email address in the text box below so I can send them an invitation?

Thank you so much for your help!

TNDC Study

Thank you for your interest in this study. This concludes the survey.

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BIOGRAPHICAL INFORMATION

William Ross O'Brien is an assistant professor of management at Dallas Baptist University. His research interests during doctoral studies have been diverse, including the roles of social capital and dynamic capabilities in organizations facing high velocity environments; the effects of firm internationalization on IPO performance; the influence of national culture on entrepreneurial intentions; and organizational humility. He has utilized both qualitative and quantitative analysis in his research, seeking both to develop as well as test theory.

After graduation, Ross plans to focus greater attention on research in developmental entrepreneurship and the role of international business in developing economies. His desire is to research and publish in these fields to lay solid academic foundations on which practical applications can be built resulting in poverty alleviation and holistic human development. He also plans to continue to teach, hoping to positively influence the lives of his students.