ABSTRACT

CHEN, XINTONG. How Fast and What Helps Recovery? Applying an Organizational Resilience Lens to Nonprofits in Disasters. (Under the direction of Dr. Amanda J Stewart).

Nonprofits have become embedded in an increasingly complex and turbulent environment. Intense competition, shrinking government funding and fewer growth opportunities increase difficulties for nonprofits to maintain their financial stability (Lester M. Salamon, 2004). Moreover, increased external shocks such as fluctuating market conditions and frequent disasters make nonprofits facing more risks (Vogus & Sutcliffe, 2007). External shocks, such as natural disasters, terrorist attacks, pandemic disease, economic recessions, and so on, are often unforeseen and unpredictable, and they may infringe upon a nonprofit's capacity to both generate resources and maintain mission-related operations. Achieving and maintaining sustainability is very challenging for nonprofits because they are highly dependent on external resources, such as external funding and volunteers (Hasenfeld, 2009; B. Never, 2014). This dependency makes nonprofits more vulnerable compared to corporations, that generate their own profits, and compared to public organizations, that rely on taxes (Lin & Wang, 2016; Tuckman & Chang, 1991). Therefore, the interest of this dissertation is to explore how nonprofits can be more resilient and more sustainable when operating in this ever-changing environment.

Organizational resilience has been widely studied in the for-profit sector. Research has focused on developing business models of organizational resilience, and organizational responses to external threats, intra-organizational strains, and inter-organizational disruptions. However, there is still a dearth of empirical work focused on organizational resilience in the nonprofit sector. To fulfill this literature gap, this dissertation explores the following two research questions: 1) whether and when nonprofits bounce back to their original financial

performance after significant natural disasters? and 2) What organizational capacities and abilities influence the rapidity of bouncing back?

This dissertation utilizes a mixed method to study nonprofit resilience. The quantitative analysis applies a discrete-time survival analysis model to explore the impact of nonprofits' financial capacities and strategies on organizational resilience. The qualitative analysis is parallel to the quantitative analysis and explores other organizational abilities and capacities that contribute to nonprofit resilience. The quantitative analysis uses Hurricane Katrina as a case and is based on secondary data obtained from the National Center for Charitable Statistics (NCCS) Core PC files. The qualitative analysis uses Hurricane Florence as a case, and the data is collected from ten phone interviews.

The quantitative analysis of this dissertation found more than half nonprofits took three years to bounce back to their total expanse level and five years to bounce back to their total net assets level. The pre-disaster equity helps nonprofits bouncing back to its pre-disaster total expense level. Nonprofits with less revenue diversification and commercial revenue are more likely to bounce back to their net asset level before the disaster. The qualitative analysis found that the disaster impacts on nonprofit are complex and nonprofits are different in size, age, resources, knowledge as well, thus, there is no single good recovery path for all types of impacts and nonprofits, and a different recovery path is associated with different efforts and efficiency. Slack of resources and insurance can help a nonprofit recover from property damages, Situation awareness, preparation, abilities to generate new resources, and organizational learning can help nonprofits recover from impacts on their services. Taken together, the findings elucidate how nonprofit can be resilient in a natural disaster context. Besides, this dissertation contributes to better understand organizational resilience in the nonprofit sector and bridges organizational resilience research between the business sector and the nonprofit sector.

How Fast and What Helps Recovery? Applying an Organizational Resilience Lens to Nonprofits in Disasters

by
Xintong Chen

A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Public Administration

Raleigh, North Carolina
2020

APPROVED BY:

Amanda J Stewart Committee Chair	Richard M Clerkin
Jeffrey C Diebold	Jerrell D Coggburn

DEDICATION

I dedicate this dissertation to my mom and dad. Your unwavering love makes me brave in the journey of pursuing this degree. Also, I dedicate this dissertation to my husband, Yang. You are my lover, best friend, and mentor.

BIOGRAPHY

Xintong received a Bachelor of Arts in Labor and Social Welfare from the Hebei University of Technology in China in 2012 and a Master of Social Work from Columbia University in 2014. She began the Ph.D. program at North Carolina State University in Fall 2016. Her research interests include nonprofit financial health, nonprofit resilience, and natural disaster response. In the future, Xintong wants to teach and conduct research in a university.

ACKNOWLEDGEMENTS

I would like to thank the following people, without whom I would not have been able to complete this dissertation, and without whom I would not have made it through my Ph.D. degree!

First and foremost, I would like to express my deepest gratitude and appreciation to my committee chair, Dr. Amanda Stewart. I will forever be grateful for her investment in me. Dr. Stewart is knowledgeable in nonprofit studies and very thoughtful as an advisor. She spent countless hours meeting with me and always provided helpful and timely feedback on my work. As an international student, I faced challenges in speaking, writing, and adapting to American academic culture, and she gave her constant guidance, encouragement, and support to me. Dr. Stewart is a great role model for me in showing her commitment to nonprofit research and endless passion and energy for work.

I would also like to gratefully acknowledge the help and support that I received from my committee advisors: Dr. Richard Clerkin, Dr. Jeffery Diebold, Dr. Jerrell Coggburn, and Dr. Traci Temple. They provided guidance and feedback throughout this dissertation project. I would like to thank Dr. Richard Clerkin for his commitment to nonprofit research and inspiring me to think outside the box from multiple perspectives to form comprehensive research, and to Dr. Jeffery Diebold for providing advice regarding analysis, and to Dr. Jerrell Coggburn for his support and encouragement throughout the process, and for Dr. Traci Temple for her willingness to assist in this dissertation study. I am also thankful to other faculty members of the Department of Public Administration at NC State, from whom I acquired knowledge and the way to conduct research. And thanks to all PA staff members, especially to Meggie Romick and Susan Leonard, for all the considerate assist and support.

I would like to express my gratitude to my fellow Ph.D. students, Jessica Berrett, Katy Schwaeble, Yuhao Ba, Bradley Holiday for providing support to me through the past four years and for being such great colleagues to go through the program with, and to Kate Albrecht, Honey Minkowitz, Akua Twumasi for working together on projects.

I also extend my appreciation to those who directly support this dissertation through their resources and time. To nonprofit managers participated in this study, they were so generous with their time in completing the phone interviews. To Matthew Leight, he helped me searched the contact information of nonprofits in my interviewed sample. To Julia Van Patter, she helped me checked codes of my qualitative analysis.

Finally, I cannot forget to thank my family and friends for all the unconditional support in these very intense academic years.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: PROBLEM STATEMENT

The nonprofit sector plays an important role in American economic life. According to McKeever (2018), there were 1.41 million nonprofit organizations in 2014 with $5.71 trillion in total assets. Nonprofits are important service providers in national and community life. Compared to private organizations and governments, nonprofits are mission-driven organizations. Their missions mainly include meeting social needs not served by the government or business sectors and providing high quality and innovative services (Lester M. Salamon, 2004). They deliver services such as health care, higher education, arts, and music activities, social welfare, community development, disaster relief, and so on (Lester M. Salamon, 2004). For instance, nonprofits include half of the nation's hospitals, nearly 70% of individual and family service agencies, nearly 80% of vocational rehabilitation facilities (Lester M. Salamon, 2004).

Nonprofits have become embedded in an increasingly complex and turbulent environment. Intense competition, shrinking government funding and fewer growth opportunities increase difficulties for nonprofits to maintain their financial stability (Lester M. Salamon, 2004). Moreover, increased external shocks such as fluctuating market conditions and frequent disasters make nonprofits facing more risks (Vogus & Sutcliffe, 2007). External shocks, such as natural disasters, terrorist attacks, pandemic disease, economic recessions, and so on, are often unforeseen and unpredictable, and they may infringe upon a nonprofit's capacity to both generate resources and maintain mission-related operations. Achieving and maintaining sustainability is very challenging for nonprofits because nonprofits are highly dependent on external resources, such as external funding and volunteers (Hasenfeld, 2009; B. Never, 2014). Dependency on the munificence of funders makes nonprofits more vulnerable compared to corporations that generate their own profits and compared to public organizations that rely on taxes (Lin & Wang, 2016; Tuckman & Chang, 1991). Therefore, the interest of this dissertation is to explore how nonprofit can be more resilient and more sustainable when operating in this ever-changing environment.

In the case of natural disasters, nonprofits in the affected regions may suffer by receiving damage to or altogether losing facilities necessary to the organization's mission; they could also experience negative impacts on staff. Moreover, nearly all nonprofits have limited flexibility in their budgets for emergency use or unforeseen expenses that a disaster response may require (Stys, 2011). In spite of this, the demand for nonprofits during disasters increases intensely in two important ways. First, some types of nonprofits (e.g. human services nonprofits) are the main service providers for vulnerable groups such as people with disabilities, elderly citizens, and low-income families (Lester M. Salamon, 2004). These vulnerable groups are also the ones who need extra assistance when an emergency occurs (Stys, 2011). For example, the homeless may need extra beds in shelters during storms, or the disabled may need extra help when power systems fail. Therefore, the demand for services of nonprofits that provide housing, shelter, mental health, and family services increases significantly in a disaster context (S. L. Smith, 2012). Second, some nonprofits, such as disaster relief nonprofits, are important contributors in disaster response efforts and collaborate closely with—even relied upon by—local, state, and federal governments according to disaster-related plans and policies (Hu, Knox, & Kapucu, 2014). Following Hurricane Sandy in 2012, for instance, 42% of nonprofits in New York and New Jersey provided assistance to areas affected by that disaster, indicating that disasters are not isolated to singular organizations but spur on community-wide responses (Eller, Gerber, & Branch, 2015).

Maintaining organizational operations and satisfying heightened demands for services are key to nonprofits' survival and achieving their missions following a disaster. Therefore, it is important for nonprofits to equip themselves with capacities and abilities to quickly recover after being affected by natural disasters; in other words, they must be resilient. To that end, this dissertation explores how to improve nonprofit resilience in an ever-changing environment.

1.1 Objectives of the Study

Organizational resilience has been widely studied in the for-profit sector. Some research focused on developing business models of organizational resilience. Some explored organizational responses to external threats, and others focused on organizational responses to intra-organizational strains. Others still studied organizational responses to inter-organizational disruptions. However, there is still a dearth of empirical work focused on organizational resilience in the nonprofit sector. Nearly all nonprofit resilience-related research has been conducted within the context of economic downturns. Moreover, though some nonprofit literature explored organizational resilience, the concept of organizational resilience is never brought up by the researchers in their articles. For example, Searing (2018) studied factors that enable nonprofits to recover to their original performance level after they experience financial distress, but she did not use the term 'nonprofit resilience' in her article. How organizations can reduce damages and recover from a natural disaster from an organizational perspective using a mixed method is less explored. To fulfill those literature gaps, this dissertation studies the following two research questions:

1. Whether and when nonprofits bounce back to their original financial performance after significant natural disasters?

2. What organizational capacities and abilities influence the rapidity of bouncing back?

1.2 Approach of the Study

Current research on nonprofit organizational resilience has used multiple research approaches, including normative and empirical approaches (Shea & Hamilton, 2015). Normative approaches focus on a building business model of organizational resilience, while most empirical approaches are case studies and explore factors contributing to organizational resilience. This dissertation uses empirical methods to explore how organizational capacities and abilities influence the rapidity of "bounce back" as a reflection of organizational resilience. Nonprofit resilience research can also be conducted using different levels of analysis, such as individual, organization, and network (Linnenluecke, 2017). This study focuses on the organization level of analysis.

As organizational resilience is defined as the ability or capacity of an organization to bounce back to at least its original performance level after being affected by a disruptive event, performance measures are used to explore nonprofit resilience. Organizational performance can be measured in multiple ways. Using financial indicators is prevalent in nonprofit literature: total revenue, total expense, and net assets are usually employed to indicate the performance of the nonprofits (D. A. Carroll & Stater, 2008; Greenlee & Trussel, 2000; Keating, Fischer, Gordon, & Greenlee, 2005; Never, 2011). This dissertation uses both total expense and net assets of nonprofits as the indicators to measure nonprofit performance. To understand organizational resilience, the dissertation compares the financial performance of nonprofits before and after a disaster. Thus, if a nonprofit has total expense or net assets that are the same or greater than prior to the shock, it is treated to be fully resilient. "Bounce back" is measured as the time duration in years for an organization to fully reflect resilience. Some organizations, of course, were not fully resilient by the end of the time period studied, but their experiences are analyzed as well. Moreover, this dissertation also studies factors that contribute to organizational resilience. A mixed-method approach is adopted because multiple studies showed that a nonprofit's financial capacity is associated with its performance. Therefore, this dissertation uses a confirmative quantitative study to test whether financial capacity related to nonprofit performances in a different context: natural disaster context. Less empirical studies explore how factors except financial capacity contribute to nonprofit resilience. So, an inductive qualitative analysis is added to this study.

1.3 Overview of Research Methods

This dissertation utilizes a mixed method to study nonprofit resilience. The quantitative analysis applies a discrete-time hazard model to explore the impact of nonprofits' financial capacities and abilities on organizational resilience. The qualitative analysis is parallel to the quantitative analysis and explores other organizational abilities and capacities that contribute to nonprofit resilience.

The quantitative analysis of this dissertation is based on secondary data obtained from the National Center for Charitable Statistics (NCCS) Core PC files, which are assembled and managed directly by the NCCS. The quantitative analysis uses Hurricane Katrina (occurs in 2005) as the case. The dataset is paneled and ranges from 2001 to 2013 because resilience is a process, and so cannot be captured accurately in a snapshot. Specifically, the nonprofits that were affected by Hurricane Katrina are selected to be the quantitative sample of this dissertation.

The qualitative analysis of this dissertation is complementary to the quantitative analysis and seeks to understand organizational capacities and abilities that contribute to organizational resilience but are not captured by the quantitative analysis and provide interpretations of some results of quantitative analysis. Phone interviews are adopted to collect data for this purpose. The qualitative analysis uses the same sample selection criterion with quantitative analysis but uses a different natural disaster as its case. Hurricane Florence has been selected as the case to conduct qualitative analysis because, compared to Hurricane Katrina, Hurricane Florence is more recent, and most nonprofits are still in recovery. Thus, the research can obtain more recent and accurate information on nonprofit resilience.

1.4 Contributions of this Research

This dissertation contributes to nonprofits' research in several ways. First, the present research explores how quickly nonprofits on the average bounce back from disasters and what organizational abilities and capacities help nonprofits to do so. This dissertation helps to develop a general nonprofit resilience model that can be used in an ever-changing environment. After all, turbulent events, such as the economic downturn, natural disasters, terrorism, regulatory actions, and changing community needs, are a high impact even with low probability; because of this, it is necessary to develop resilience models for the nonprofit sector. It is impossible for organizations to make plans for all different turbulent events, but it is necessary for organizations to reduce vulnerabilities and quickly bounce back from major disruptions. Therefore, developing a resilience model that can be used to cope with most turbulent events benefits the nonprofit sector.

Second, this dissertation contributes to resilience research in both sectors by bridging organizational resilience research in both sectors together. Unlike business management literature that has frequently discussed the meaning, operationalization, and model of organizational resilience, the concept of organizational resilience, though reflected in many studies, was seldom explicitly used by nonprofit scholars. This dissertation introduces the concept of organizational resilience to the nonprofit literature and explores factors influencing organizational resilience based on previous resilience research in both sectors.

Third, this dissertation enriches the financial management literature on nonprofits. Most existing nonprofit finance literature examined factors (financial, organizational, contextual) that make nonprofits vulnerable to external shocks. In contrast, the current research explores whether factors that make nonprofits vulnerable also reduce the nonprofit's ability or capacity to bounce back to their previous performance level after being affected by external shocks.

Fourth, this dissertation explores nonprofit resilience in a new context: natural disasters. Most existing literature has explored how strategies and organizational characteristics impact the recovery of nonprofits during economic downturns, but natural disasters as typical external shocks to nonprofits have not been analyzed to date. Finally, this dissertation contributes to disaster response literature by including local nonprofits that are affected by disasters but do not view disaster relief as their primary service area. This stands in contrast to most existing literature, which has focused just on disaster relief organizations and has emphasized their role in disaster response. This dissertation, thus, also focuses on how local nonprofits, as victims of disasters, bounce back to their original performance level.

Beyond its research contribution, this research offers to nonprofit practitioners some new insights on organizational resilience after natural disasters. Disasters pose a practical management challenge to nonprofits that have been affected by disasters or that may experience natural disasters in the future. Being able to understand the average time required to bounce back under different conditions should aid in strategic planning by nonprofits. Nonprofit managers can, from the present analysis, not only have a clearer expectation of the rapidity of bouncing back but also use this information to make post-disaster plans. In other words, nonprofit managers can gain insights useful for developing strategies to make better preparations before disasters and navigating resources to recover from disasters. Moreover, this dissertation informs funders, donors, policymakers, and other outside stakeholders about nonprofits' needs, especially locally, in recovery stages. Thus, they can provide better support to nonprofits and help them quickly recover from the impact of natural disasters.

1.5 Structure of this Dissertation

This dissertation takes a book format and includes seven chapters. This dissertation starts with this introductory chapter, which is an overview of the entire dissertation. Objectives and approach of this study, an overview of the research method, contributions of the study are highlighted in the introduction chapter of this dissertation. Chapter 2 is a literature review of existing organizational resilience research. It reviews organizational resilience literature in the business sector, nonprofit financial management literature, nonprofit disaster management literature, and organizational theories that inform research questions and hypotheses of this dissertation. Chapter 3 details why a mixed method is chosen for this dissertation, how the research sample is selected for both quantitative and qualitative methods, and what analysis approaches are used in quantitative and qualitative analysis. Chapters 4 and 5 report the results of quantitative and qualitative analysis respectively. Chapter 6 discusses the results of previous analyses, potential limitations, and contributions of this dissertation.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This dissertation explores the following two research questions: 1) Whether and when nonprofits bounce back to their original financial performance after external shocks, and 2) What organizational capacity and activities influence the rapidity of bouncing back. This research draws upon 1) organizational resilience research in both business and nonprofit sector, 2) nonprofit financial capacity and disaster response research, and 3) organizational theories to form hypotheses and inform research methods. Organizational resilience research in the public sector is not reviewed because most public sector resilience research focused on improving efficiency and effectiveness rather than recovery (bouncing back to organizational performance level). This chapter will provide an overview of relevant literature, and a literature map of the relationship among different streams of organizational resilience research is shown in Figure 2.1.

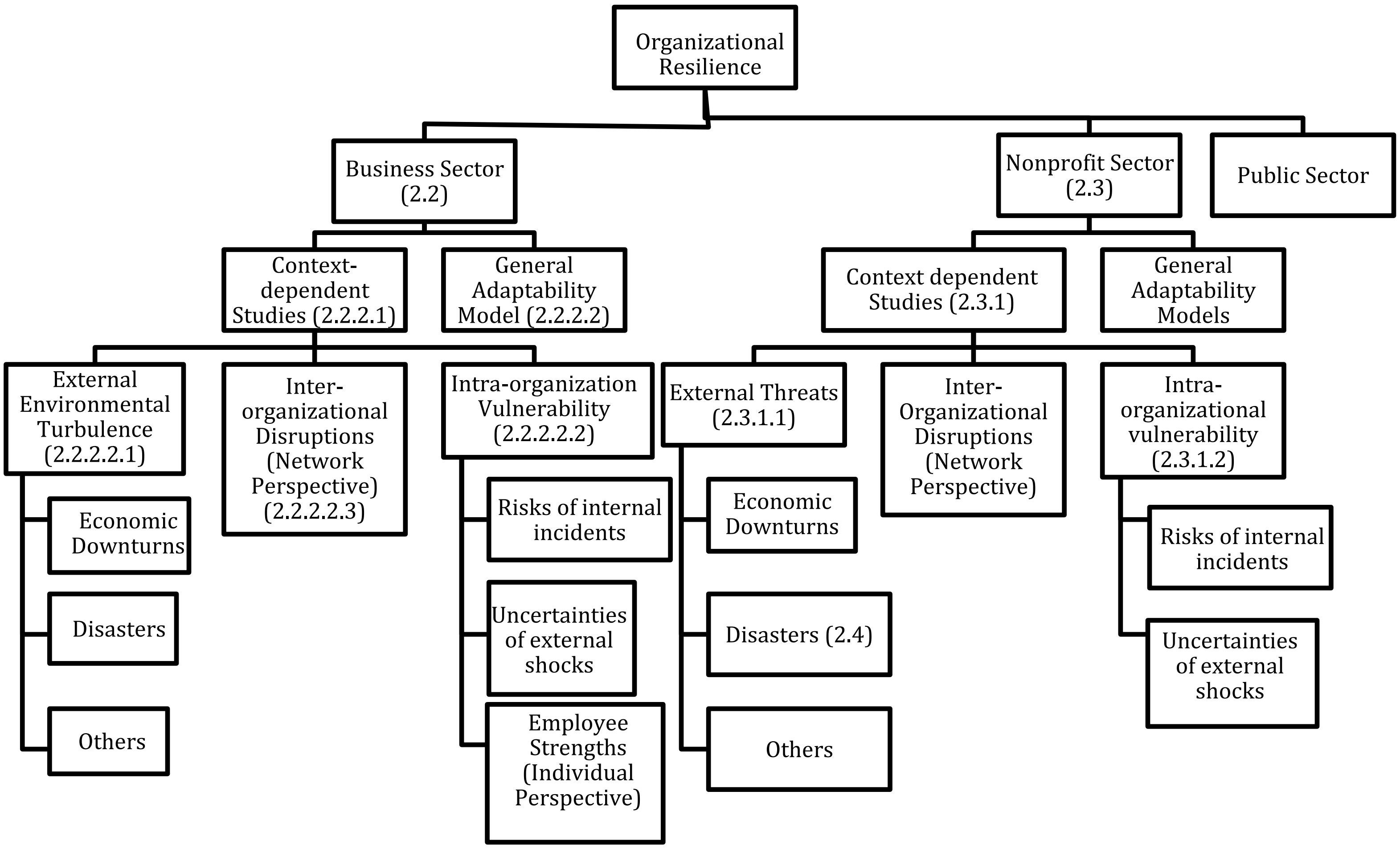

Figure 2.1. Research of Organizational Resilience in Three Sectors.

In the following sections, I first review the concept of organizational resilience as treated in general management literature. Then, I cover several intersecting streams of organizational resilience research: response to external threats, strengthen intra-organizational reliability, response to inter-organizational disruptions, and building organizational resilience models.

Next, I reviewed studies on organizational resilience in the nonprofit sector reviewed, which include two different research streams – nonprofit response to external shocks and nonprofit vulnerability. Factors that contribute to nonprofit resilience and metrics to evaluate nonprofit performance are also identified in this literature.

Finally, I narrow down the context to disaster response literature and draw upon literature discussing the importance of studying nonprofit resilience in a disaster context. I provided an overview of resource dependence theory, modern portfolio theory, and organizational learning theory, which inform the hypotheses guiding this dissertation study.

2.2 Organizational Resilience

2.2.1 The Definition of Organizational Resilience

Resilience is studied in a variety of disciplines such as environmental research, material science, engineering, psychology, sociology, economics, and management; as a result, it has a diverse literature base (Burnard & Bhamra, 2011). The concept of resilience was first developed by ecologist Holling in 1973 within his seminal work "Resilience and Stability of Ecological Systems." According to Holling (1973), ecological resilience is related to the persistence of systems and systems' ability to absorb disturbance. In other words, resilient systems remain stable or can bounce back to the equilibrium point quickly (D. Smith & Fischbacher, 2009). According to (Home III & Orr, 1997), resilience refers to "the ability of a system to withstand stresses of ‘environmental loadings’ … a vital quality found in individuals, groups, organizations, and systems as a whole” (p.31).

The definition of organizational resilience is similar to the definition of ecological resilience. The concept of organizational resilience was first discussed by Staw, Sandelands, and Dutton (1981) and Meyer (1982) in business and management literature. Both works of literature explored the organizational response to external threats. Recently, some scholars evolved the concept of organizational resilience in the following two ways. First, a group of scholars pointed out that a resilient organization not only needs to remain viable after being affected by external disrupted events; it also needs to maintain positive adjustment to ongoing internal strains(Rudolph & Repenning, 2002; Vogus & Sutcliffe, 2007). Another group of researchers has defined resilience more broadly and claiming that resilience means that an organization not only has the ability to rebound but can also develop new capacities and create new opportunities after recovering from an adverse event. In other words, to be considered as resilient, organizations need to recover to a new and better position, not just to the previous “equilibrium point”(D. Smith & Fischbacher, 2009). For example, Vogus and Sutcliffe (2007) defined “resilience as the maintenance of positive adjustment under challenging conditions such that the organization emerges from those conditions strengthened and more resourceful and by ‘challenging conditions,’ we include discrete errors, scandals, crises, and shocks, and disruptions” (p.3418). To conclude, although multiple studies have explored the concept of organizational resilience, the definition of organizational resilience remains ambiguous among scholars. The resilience is hard to be clearly defined because some literature intermingles the definition of resilience with other concepts (such as reliability or adaptability).

This study defines organization resilience as the ability or capacity of an organization to bounce back to at least its original performance level after being affected by a disruptive event. This definition, unlike those described in the previous literature, does not include elements such as adjusting to internal strains and developing the capacity to cope with future disruptions. In this study, I consider adjusting to internal strains to be within the scope of reliability, and I consider developing the capacity to cope with future disruptions is to be within the scope of adaptability.

Vulnerability, reliability, adaptability, and resilience are used interchangeably in some pieces of literature, but they are different concepts with different scopes, and should be operationalized distinctly, and are associated with different organizational strategies and characteristics. As those terms are easily confused with organization resilience, clarifying the definition of those terms helps to better understand and study organization resilience. According to (Turner et al., 2003), “vulnerability is the degree to which a system, subsystem, or system component is likely to experience harm due to exposure to a hazard, either a perturbation or stress/stressor”. Vulnerability contains three elements sensitivity, capacity of response, and exposure (Turner et al., 2003). Resilience is associated with the capacity of response and considered a subunit of vulnerability (Gallopín, 2006). Reliability is also regarded as a broader concept than organizational resilience. To be more specific, reliability is organizational processes and includes two elements: avoidance of potential risks through coping with internal strains and small failures, and resilience as a capacity to bounce back after being affected by an unknown or unexpected disruption (Wildavsky, 1988). Thus, resilience is an aspect of reliability. Adaptability is linked to an organization's ability of evolution, and through evolution, an organization can better accommodate environmental changes including crises and disasters (Gallopín, 2006). Resilience and adaptability have some overlap, but they have different emphases. To be more specific, adaptability means an organization actively detects environmental changes and then develops new strategies and knowledge to adjust to these changes (Carpenter, Walker, Anderies, & Abel, 2001). Adaptability reflects the learning aspect of organizational behavior in response to a disruption. Thus, an organization's adaptability can be considered as a mechanism for resilience.

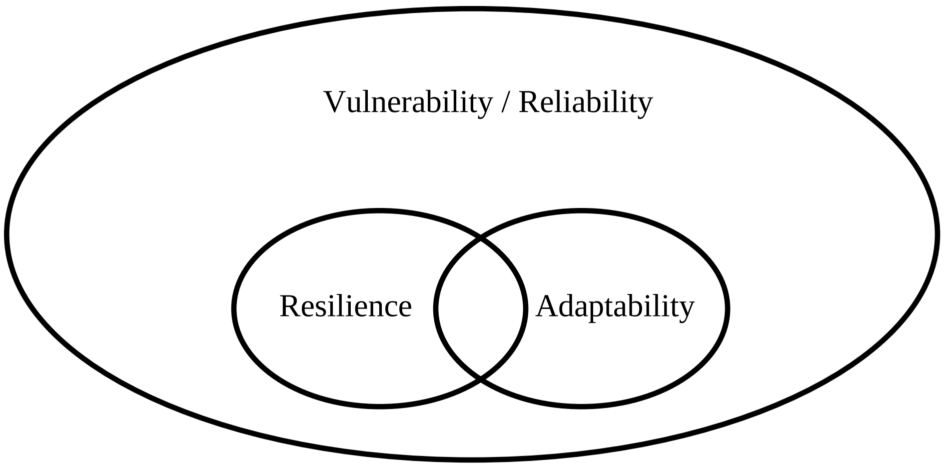

Figure 2.2. Relationship between Key Terms.

2.2.2 Previous Research on Organizational Resilience

The research on organizational resilience is highly context-dependent and develops into several streams (Linnenluecke, 2017). This dissertation classifies organizational resilience research into two major streams: the context-dependent research and model developing research. Context-dependent research literature was divided into three streams -- organizational responses to external threats, organizational responses to intra-organizational strains, organizational responses to inter-organizational disruptions--based on the characteristics of the risks and uncertainties since different preparations and strategies were adopted by organizations when responding to different types of risks or uncertainties. Though this dissertation is focused on the organizational responses to external threats, all aspects of organizational resilience are reviewed because they are not entirely separated from each other: many concepts and factors of resilience are overlapped and intertwined in these streams, and pieces of literature in different streams influence each other.

2.2.2.1 Context-dependent research on organizational resilience

The organization resilience research has often been conducted under a particular set of circumstances and moved on quickly from one current event to the next (Linnenluecke, 2017). For example, organizational resilience research focused on improving internal reliability to avoid major industrial incidents during the 1980s to 1990s as a series of industrial incidents, such as Chernobyl, Exxon Valdez, and the Space Shuttle Challenger accidents occurred during that period. After the events of 9/11 in 2001, the organizational resilience research interests shifted to cope with unexpected crises. A large number of organizational resilience research after the events of 9/11 explored how organizations can quickly recover from unexpected crises and disasters (Linnenluecke, 2017). The empirical works on organizational resilience can be divided into three streams based on the different risks and uncertainties. The first stream of literature studies on how organizations respond to external threats. The second stream explores how organizations respond to internal strains through increasing organizational reliability and strengthening the psychological capacity of employees under enormous stress. The final stream is a group of network level studies focusing on reducing supply chain (inter-organizational networks) vulnerabilities and disruptions.

2.2.2.2.1 Organizational responses to external threats

The notion of organizational response to external threats was introduced by Staw et al. (1981) and (Meyer, 1982). However, these two studies developed very different propositions. Staw et al. (1981) explored how external threats affected organizational adaptabilities. Their findings showed that "threat-rigidity effects" did not always lead to organizational failure, and, in some conditions, it contributed to organizational survival, but it is not clear in what conditions "threat-rigidity effects" lead to function or dysfunction. Meyer (1982) investigated how hospitals adapted to a sudden doctors' strike and found that organizational resilience is associated with organizational strategies and slack resources of organizations. Though these two research studies were the first to discuss the concept of organizational resilience in business and management literature, they had little impact on the research of organizational resilience for about two decades because the interest of organizational resilience research shifted to industrial accidents caused by internal failures in the mid-1980s (Linnenluecke, 2017).

The organizational resilience research reemphasized organizational responses to external threats after the terrorist attacks of September 11, 2001. Kendra and Wachtendorf (2003) conducted a qualitative and inductive study using data collected within their fieldwork; and found the organizational adaptive response to an emerging situation is dependent on organizational culture and staff capacity rather than structure and technology. Gittell, Cameron, Lim, and Rivas (2006) studied organizational resilience and found that both financial reserves and adequate staff were crucial for airlines to recover from the terrorist attacks of September 11, 2001. S. E. Chang and Falit-Baiamonte (2002) explored how the February 2001 Nisqually earthquake influenced businesses by conducting interviews among owners and managers of 107 businesses in two hard-hit business districts of Seattle. Their findings showed that the business sector, size, building occupancy tenure, and physical damage predicted the failure of businesses, and both characteristics of the business and conditions in its neighborhood are associated with recovery. According to those studies, organizational characteristics, slack resources, organizational strategies, organizational culture, capacities of staff and contextual factors influence organizational resilience responses to external threats.

Table 2.1. Summaries of Factors Influencing Resilience in Organizational Responses to External Threats Research.

Factors Influencing Organizational Resilience	Selected Reference
Organizational characteristics (size, type)	Kroll, Landis, Shen, & Stryker, 1991; Chang & Falit-Baiamonte, 2002)
Slack of Resources	Meyer,1982; Gittell, Cameron, Lim, & Rivas, 2006;
Organizational Strategies	Meyer,1982;
Organizational Culture	Kendra & Wachtendorf, 2003;
Staff Capacity	Kendra & Wachtendorf, 2003;
Contextual factors (exposure/neighborhood characteristics)	Kroll, Landis, Shen, & Stryker, 1991; Chang & Falit-Baiamonte, 2002)

2.2.2.2.2 Strengthen intra-organizational reliability

Multiple large-scale events that occurred around the 1980s led to an increasing interest in exploring internal organizational reliability (Linnenluecke, 2017). Organizational resilience is viewed as an aspect of reliability (Wildavsky, 1988) or a process variable that leads to reliability (Weick, Sutcliffe, & Obstfeld, 2008) in the literature of this stream. Thus, these findings of the literature in this stream are the interest of this dissertation. This stream of resilience literature studied how organizations avoid high-consequence events caused by the accumulation of small failures, deviations, and other malfunctions (Linnenluecke, 2017). Case studies are the most frequently used methods in this stream of resilience literature (Linnenluecke, 2017). Two major theories are developed: Normal Accident Theory (Perrow, 2011) and High-Reliability Organizing (Sutcliffe, 2011). Normal Accident Theory viewed that high-risk technological organizations have a higher risk of failure because major accidents cannot be avoided for technological reasons especially when organizations developed complex and tightly coupled systems (Perrow, 2011). In contrast, High-Reliability Organizing claimed that major accidents can be avoided through learning from small failures by organizations, and this theory became the dominant theory of this stream (Sutcliffe, 2011). This stream of organizational resilience studies provided the management field with a wealth of knowledge on safety and reliability (Linnenluecke, 2017). The findings of these studies are particularly useful for high-risk technological organizations such as aircraft carriers or nuclear plants.

Resilience in this stream of literature is defined as “capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back” and is associated with adaptive learning (Weick et al., 2008). Weick (1993) elucidated how adaptive learning associated with organizational resilience using a case study of the Mann Gulch fire disaster. He identified four sources that promote organizational resilience. First, resilience is related to improvisation and bricolage. A significant disruption may break the normal operation of organizations and lead to organizational order collapses. In this situation, a substitute order needs to be established as soon as possible. To invent the substitute order, organizations must relatively use their existing information and resources. Second, resilience is related to a virtual role system. An organization is compelled to cease function after major disruptions due to losing its important employees. In this situation, if each employee is clear about the roles of other employees in the group, the remaining employees can either take roles of absent employees to do activities or imagine that the organization can still function and use the role system to guide their activities. Third, resilience is associated with wisdom. Wisdom means awareness of information limitation and the ability to search for new information (S. T. McManus, 2008). To be more specific, when crises occur, an unwise employee is more likely to stay in abnormal situations and does not fully understand what is going on; meanwhile wise employees actively search for information to adapt to the new situation. Wisdom requires employees to be curious about the change and open to new solutions (Weick, 1993). Fourth, respectful interaction promotes organizational resilience. A major disruption can destroy a formal structure of organizations. Employees of an organization stay in an environment without leaders, roles, routines, and sense. Trust, honesty, and self-respect play an important role in this situation. An organization is more likely to be resilient if employees can respect their own perceptions and decisions, are willing to share them with other employees honestly, and openly discuss each other's reports and make decisions based on trust and respect.

Table 2.2. Summaries of Factors Influencing Resilience in Strengthen Intra-Organizational Reliability Research.

Factors Influencing Organizational Resilience	Selected Reference
Improvisation and bricolage	Weick 1993; McManus 1998
A virtual role system	Weick 1993; McManus 1998
Wisdom	Weick 1993; McManus 1998
Respectful interaction	Weick 1993; McManus 1998

Another group of research focusing on coping with internal strains explores the relationship between employee strengths and organizational resilience. Unlike other research streams that have origins in organization studies, this research has theoretical origins in clinical and developmental psychology (Linnenluecke, 2017). This stream of literature viewed that organizational resilience is associated with employee strength and is conceptualized and measured as psychological capital (Luthans, 2002). Psychological capital can be indicated by factors such as self-efficacy, optimism, hope, and resilience (Luthans, 2002). This stream suggested that resilience, as a factor of psychological capital, is a "learnable capacity" that can be developed within employees of organizations (Luthans & Youssef, 2007, p. 12). Both conceptual work and empirical work exist to a large degree in this research stream (Linnenluecke, 2017). However, to what extent employee strength is associated with organizational resilience remains unclear (Linnenluecke, 2017). Employee strength is not a research focus of this dissertation because the level of analysis of this dissertation is organizations while the level of analysis of research in this stream is individual. However, it is important to note that employee strength contributes to organizational resilience as well.

2.2.2.2.3 Organizational responses to inter-organizational disruptions

The research on organizational responses to inter-organizational disruptions is focused on reducing supply chain (inter-organizational networks) vulnerabilities and disruptions. This research stream is relatively new and emerged because the 9/11 attacks revealed that the supply chain could easily be destroyed following external disruptions due to its high interdependent nature. The design of the supply network is essential to promote resilience within them. The organizational resilience not only depends on but also contributes to the security and resilience of the whole supply network. Flexibility and redundancy are the most commonly mentioned factors that are associated with supply chain resilience. For example, Jüttner and Maklan (2011) explored the relationship between supply chain resilience (flexibility, reaction speed, access to timely information, and collaboration among supply chain members) and supply chain vulnerabilities in a global financial crisis context using a longitudinal case study and found that all these four supply chain capabilities helped to reduce supply chain vulnerabilities. According to Linnenluecke (2017), this area of reducing supply chain vulnerabilities has been less understood than it should be. However, this dissertation does not discuss it because the focus is an organizational response to external threats. This dissertation does not fill the research gap of organizational responses to inter-organizational disruptions. However, the reliability of inter-organizational networks is explored as one factor that influences organizational recovery from external threats.

2.2.2.2.4 Critiques of Context-dependent research on organizational resilience

Organizational resilience research is fragmented and highly context-dependent (Linnenluecke, 2017). The concept of resilience has been defined and operationalized very differently across different streams. For example, studies in the stream of organizational responses to external threats viewed resilience as a capacity for organizations to bounce back while studies in the stream of organizational reliability treat resilience as an outcome of organizational learning. In addition to that, organizational resilience research is usually made up of case studies and is conducted in a specific context. For example, Weick (1993) studied organizational resilience in the context of the Mann Gulch fire disaster while Gittell et al. (2006) studied organizational resilience in a context of events of 9/11. Whether findings of those context-dependence studies can be generated to different contexts still needed in more research.

Resilience can also be operationalized in multi-levels. For example, the stream that focused on employee strengths saw organizational resilience from an individual psychological perspective while the stream focused on the design principles of supply chains explored organizational resilience from a supply chain perspective. Though this dissertation explores organizational resilience from the organizational level, it is important to note that organizational resilience occurs in a multi-level context.

Researchers develop definitions, theories, and understanding of organizational resilience in their own contexts and do not compare their results with results in other contexts. Thus, each stream has developed different theories to understand organizational resilience (Linnenluecke, 2017). There was no universally accepted theory or general principles of organizational resilience that can be used to interpret resilience in any context (Vogus & Sutcliffe, 2007). It is still unclear whether there is a possibility to generalize the results of organizational resilience from different research streams. This hypothesis and approach of this dissertation develop based on the insights of multiple resilient research streams and, it tests findings of multiple resilient research streams in a new context.

As organizations face an ever-changing environment, it is hard for organizations to work on reducing vulnerability for each context and design recovery plans for any risks or uncertainties forced by their external circumstances. Especially, the event of 9/11 showed that some external crises and disasters are out of organizational anticipation and cannot be predicted. Thus, a group of scholars began to make efforts in developing a general business adaptability model that helps organizations to adapt and adjust to their ever-changing environment. The following section reviews the research on building an organizational resilience model.

2.2.2.2 The conceptual research on building organizational resilience models

The conceptual research of organizational resilience focused on developing concepts and generating general business models that cope with both external threats and internal strains. Several business models were developed, among which Sutcliffe and Vogus (2003) and S. T. McManus (2008)'s models received widespread attention.

Sutcliffe and Vogus (2003) combined insights from the two research streams of organizational response to external threats and organizational reliability and concluded that organizational resilience depended on processes, structures, and practices that create and retain resources (cognitive, emotional, relational or structural). Vogus and Sutcliffe (2007) further explained that high levels of slack resources enable organizations to continue operating after being affected by external shocks, which leads to organizational resilience. The level of slack resources can be indicated by whether an organization has sufficient financial margins, vast financial reserves and adequate human resources to cope with crises (Vogus & Sutcliffe, 2007; Woods, 2006). Moreover, Sutcliffe and Vogus (2003) emphasized that organizational resilience is not only determined by how many resources an organization possesses but also related to how organizations deploy those existing resources. Vogus and Sutcliffe (2007) claimed that organizational learning is another important factor that led to organizational resilience. However, Vogus and Sutcliffe (2007) did not provide a clear definition of organizational learning or explain how organizational learning could contribute to resilience. They believed that more research needed to focus on exploring the relationship between organizational learning and organizational resilience.

Another group of scholars from New Zealand also developed a business model for studying organizational resilience. Dalziell and McManus (2004) stated that resilience is a function of the vulnerabilities of organizations and their adaptive capacity. S. T. McManus (2008) explored organizational resilience using grounded theory by investigating 10 organizations with different industry sectors, sizes, localities, and types within the New Zealand context. She found that situation awareness was also associated with organizational resilience in addition to vulnerabilities of organizations and abilities of adaptation; she proposed a model called relative overall resilience (ROR). The new adding factor "situation awareness" means "being aware of what is happening around you and understanding what that information means to you now and in the future" (Endsley, 2016, p. 13). Situation awareness can be indicated by whether an organization has recovery priorities, insurance, and employees who are clear about their roles and responsibilities in emergencies. The keystone vulnerability is defined as "components in the organizational system, which by their loss or impairment have the potential to cause exceptional effects throughout the system" (S. McManus, Seville, Vargo, & Brunsdon, 2008, p. 83). In other words, a vulnerable organization is less likely to show resistance to adverse events (Bruneau et al., 2003). According to this ROR model, keystone vulnerabilities can be managed through developing and exercising emergency plans and increasing the capacity to obtain external resources. Unlike keystone vulnerability, which emphasized the impact of specific physical facilities and specific technology systems on organizational resilience, the adaptive capacity is referred to the flexibility of an organization to adjust to environmental threats or changes(Bruneau et al., 2003). Drawing on Weick (1993)'s research on four sources of resilience, S. T. McManus (2008) further explained that the adaptive capacity of an organization is influenced by the organizations' communication and relationships with other organizations, their soli mentality (whether employees can replace each other when needed), ability of leaders and governance structures.

Compared to other organizational resilience models that focused on the conceptualization of organizational resilience, one significant advantage of the ROR model is that it proposes how each of the three factors can be operationalized. For example, situation awareness is indicated by 1) whether people in organizations are clear about their roles and responsibilities 2) whether people actively understand and analyze the hazards, 3) whether managers realize that the success of the organizations depends on certain other organizations, 4) whether organizations have insurance, 5) whether organizations have recovery priorities, 6) whether organizations are proactively monitoring monitor their environments and, 7) whether organizations make decisions based on updated information.

The two business models of resilience reviewed in this section started from a different perspective.Sutcliffe and Vogus (2003) start from tangible assets of organization-resources and explore how to create and retain resources while S. T. McManus (2008) starts from intangible assets of organization-organizational culture and explores how adaptive learning behaviors of organizations contribute to resilience with existing resources. These two models have some overlaps and complement each other. No single model has been widely tested by empirical studies or received better attention from organizational resilience scholars. Different terms were chosen by the two groups of scholars to indicate similar factors that influence organizational resilience, partially because they studied organizational resilience from different perspectives. For example, the term "slack resources" mentioned by Vogus and Sutcliffe (2007) is phrased as a factor of "organizational vulnerability" by S. T. McManus (2008). According to S. T. McManus (2008), the capacity of external resources is one indicator of organizational vulnerabilities. Moreover, organizational learning mentioned by Vogus and Sutcliffe (2007) is also associated with the ability of adaptation mentioned by S. T. McManus (2008), for a learning organization is more likely to adapt to new situations. Therefore, there is a possibility to converge factors adopted by multiple studies. Moreover, neither of these models have been tested empirically.

Though organizational resilience in business management developed into several research streams, it is less explored in the nonprofit sector. However, it is essential to study organizational resilience in the nonprofit sector due to its distinct nature compared to the business sector. Unlike the business sector, the nonprofit sector has a non-distribution constraint, is supported by donations, and is accountable to the public (Lester M. Salamon, 2004). These characteristics lead to different priorities and strategies when responding to similar risks or uncertainties. The following section reviews the current research on organizational resilience in a nonprofit context.

Table 2.3. Summaries of Factors Influencing Resilience in building organizational resilience models Research.

Factors Influencing Organizational Resilience	Selected References
Slack resources	Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007
Organizational learning	Vogus and Sutcliffe, 2007
Situation awareness	McManus, 2008
Manage Keystone vulnerabilities	McManus, 2008
Adaptive Capacity	McManus, 2008

2.3 The Nonprofit Context

As public service demands became more diverse and the government ran as a hollow state by contracting with nonprofits to provide public services, the number of nonprofits grew exponentially starting in the 1990s. According to the National Center for Charitable Statistics (NCCS), the number of nonprofit organizations registered with the IRS rose from 1.32 million to 1.44 million, with an increase of 8.6 percent, from 2002 to 2012 (McKeever & Pettijohn, 2014). In addition to that, both revenue and assets of the sector grew faster than the GDP, and in 2013 nonprofit asset and revenue arrived at $5.17 trillion and $2.26 trillion, respectively (McKeever & Pettijohn, 2014), demonstrating the established role the nonprofit sector plays in the American economy. Moreover, the sector plays a vital role in American's social life by addressing unmet needs, encouraging innovation, and fostering pluralism, diversity, and freedom (Lester M Salamon, 1999).

Though the nonprofit sector growth has been fast in the past few decades, the sector faces long-lasting and intensified challenges. Lester M. Salamon (2004) elucidated five challenges facing the sector in his book *The State of Nonprofit America*. The nonprofit sector has been confronting fiscal challenges for a long time. This challenge has waxed and waned from the 1960s to the present. Private philanthropy cannot offset the cutbacks of government funds; as a result, the fiscal pressure of nonprofits increases. In addition to a fiscal challenge, nonprofit organizations also face a competitive challenge due to the increasing involvement of for-profit organizations in the traditional field of nonprofit organizations. Third, the nonprofit sector faces technological challenges. The massive fixed cost of new technology not only places the nonprofit organizations at a disadvantage compared to for-profit organizations but also allows larger nonprofit organizations to gain competitive advantages over smaller ones. The fourth challenge of the nonprofit sector is effectiveness. Nonprofit organizations are forced by their government contractors to focus on measurable performance rather than their mission and community needs. Finally, nonprofit organizations face legitimacy challenges. For example, conservatives and commentators have argued that nonprofit organizations are focused on their interests rather than the public interest. As nonprofits face increasingly intense competition (Lester M. Salamon, 2004) and turbulent external environments (Tuckman & Chang, 1991), how nonprofits can be more reliable and how they can recover quickly after being affected by internal or external shocks has drawn more and more research attention. Facing those challenges, being resilient becomes essential to the nonprofit sector. However, unlike the study of organizational resilience in business management, this is a relatively new concept in the nonprofit sector. The following section reviews research on the nonprofit sector that is associated with organizational resilience.

2.3.1 Previous Research of Organizational Resilience in the Nonprofit Sector

Similar to organizational resilience research in the business sector, nonprofit resilience research also develops into several streams: nonprofit response to external shocks, strong intra-organizational reliability, and response to inter-organizational disruptions (Chart 2.1). Though some studies in the business sector focused on developing conceptual models of organizational resilience, less literature in the nonprofit field focused on developing conceptual models of resilience. More detailed reviews on nonprofit response to external shocks and strong intra-organizational reliability were demonstrated in Section 2.3.1.1 and 2.3.1.2. How nonprofits respond to inter-organizational disruption was not reviewed in detail as it does not relate to my research interest.

2.3.1.1 Nonprofit response to external shocks

Nearly all nonprofit resilience research on response to external threats has been conducted within the context of economic downturns. Those pieces of literature obtained data from different sources including surveys (Geller, Salamon, & Mengel, 2010; Lester M Salamon, Geller, & Spence, 2009), interviews (Park & Mosley, 2017)and IRS Form 990 data (Joseph, 2011; Lin & Wang, 2016; Searing, 2018). All qualitative, quantitative, and mixed-method research designs have been used in studies of organizational resilience. The revenue growth is used most frequently to measure an organization's resilience by studies conducted within the context of economic downturns (Joseph, 2011; Lin & Wang, 2016; Park & Mosley, 2017; Searing, 2018) because economic downturns mainly impact the revenue of nonprofits.

Most of those studies focused on factors that contribute to the success or failure of nonprofits after they are affected by economic downturns. To be more specific, they explored the impact of fundraising efforts or other financial factors on organizational resilience within the context of an economic downturn (Geller et al., 2010; Joseph, 2011; Lin & Wang, 2016; Park & Mosley, 2017; Searing, 2018). Some studies first grouped organizations according to their success in coping with fiscal distress and then explored their group differences to understand the factors that contribute to organizational resilience. Lester M Salamon et al. (2009) studied how the economic recession impacted the nonprofit sector, based on a nationwide survey conducted by the Center for Civil Society Studies at the Johns Hopkins Institute for Policy Studies. Their results showed that though 83% of organizations reported some level of stress during the recession, nonprofits display tremendous resilience. Geller et al. (2010) found that museums compared with other nonprofit organizations showed enormous resilience based on the same survey used by Lester M Salamon et al. (2009). In further investigation, they explored the difference between museums and other nonprofits and found that, on the one hand, museums' fundraising strategies are more likely to target donations from individuals and corporations rather than governments. On the other hand, museums used many entrepreneurial strategies, such as expanding market efforts, organizing special events, and joining advocacy coalitions, which are less adopted by other types of nonprofits.

Joseph (2011) studied how the Great Recession impacted nonprofits' ability to raise funds and remain financially viable in the greater New York metropolitan region using IRS 990 Forms. The study grouped organizations in quartiles based on the percentage change in revenue of organizations and then studied how organizational characters differed across quantiles and obtained three findings. First, they found that organizations relying heavily on government funding were more stable and organizations that rely on service programs were more resilient than those relying on contributions. Second, there are apparent differences in the impact of the sectors studied; for instance, hospitals, healthcare institutions, higher education, and human services fared much better in maintaining their revenue flow during the Great Recession than those in other industries. Third, the size (based on the number of employees and assets) of the organization matters as does its primary source of revenue. The larger organizations (based on the number of employees) performed better in generating revenues while larger organizations (based on total assets) performed worse in raising funds.

Park and Mosley (2017) studied factors that contributed to the revenue change of human services nonprofit organizations during the Great Recession using a mixed method. They first used revenue changes to group organizations based on whether there was a successful growth in revenue by 10% and then interviewed directors in different groups. Their results showed that 1) organizations that provide politically well-protected services were able to increase their revenue through increasing their dependency on government funds and 2) organizations that provide service to not well-protected populations increase their revenue through expanding their services to a wider range of population and increase their investment in political advocacy.

Some other studies used a regression model to explore the causal relationships between organizational resilience and its contributing factors. For example, (Lin & Wang, 2016) examined how fundraising-related financial strategies and organizational characteristics influenced the growth of revenue and expense in the Great Recession using a logistic regression model and found that 1) efforts on fundraising are not helpful, 2) higher operating margins and equity ratio helps to generate revenue and maintain expenses, and expenses, 3) higher debt ratio and diversified revenue streams might aggravate fiscal stress.

Table 2.4. Factors influencing Nonprofit Performance in Economic Downturns.

Factors influencing Nonprofit Performance	Select References
Fundraising strategies	Lin and Wang 2016, Geller, Salamon, and Mengel, 2010; Joseph, 2011; Park and Mosley, 2017
Financial Capacity	Lin and Wang 2016,
Size	Lin and Wang 2016,
Subsector	Lin and Wang 2016, Geller, Salamon, and Mengel; Joseph, 2011

2.3.1.2 Strengthen intra-organizational reliability

High reliability organizing theory is developed within the research stream of intra-organizational reliability in the business sector to understand the avoidance of industrial risks. A corresponding research stream in the nonprofit sector is financial vulnerability research. This research stream focused on exploring factors that promote organizational reliability and enable nonprofits to be less vulnerable to external shocks. The first seminal work in this research stream was conducted by Tuckman and Chang (1991). They defined a charitable nonprofit organization as financially vulnerable if it is likely to cut service offerings immediately when a financial shock occurs. Their study developed four criteria to identify vulnerable nonprofits: equity ratio, revenue concentration, administrative expense, and operating margin. This vulnerability model of Tuckman and Chang (1991) has been widely tested in nonprofit fields (Greenlee & Trussel, 2000; M. A. Hager, 2001; Keating et al., 2005; J. Trussel & Greenlee, 2004; J. M. Trussel, 2002). For example, M. A. Hager (2001) tested Tuckman and Chang's model using logistic regression among a population of nonprofit arts organizations and confirmed all four measures are significantly predicated organizational survival. Tuckman and Chang (1991)'s model has been expanded by adding in variables of organizational characteristics including size and subsector (J. Trussel & Greenlee, 2004). B. Never (2014) and Prentice (2016) further expanded this model by adding environmental factors such as macroeconomic factors and neighborhood characteristics. The reviews on this research stream of nonprofit financial vulnerability showed that organizational internal financial conditions, organizational characteristics, and environmental factors reduce nonprofit vulnerability to external shocks. However, whether those factors contribute to "bouncing back" after external shocks is less explored. Only one piece of literature exploring whether factors that lead to financial vulnerability can predict organizational resilience was found. Searing (2018) used insolvency and financial disruption to identify financially distressed nonprofits and studied whether organizational characteristics and financial ratios that were used to diagnose nonprofit financial vulnerability can predict the recovery of financially distressed organizations by using a logistic regression model. She found that nonprofits require different financial ratios to recover depending on the different types of financial distress. Besides, she did not find evidence to show whether organizational age or size contributed to organizational recovery.

Table 2.5. Factors Influencing Nonprofit Vulnerability.

Factors influencing Nonprofit Vulnerability	Select References
Equity Ratio	Tuckman and Chang,1991
Administration Cost	Tuckman and Chang,1991
Operating Margins	Tuckman and Chang,1991
Revenue diversification	Greenlee & Trussel, 2000; Hager, 2001; Keating, Fischer, Gordon, & Greenlee, 2005; Trussel & Greenlee, 2004; J. M. Trussel, 2002; Tuckman and Chang ,1991
Size	Trussel & Greenlee, 2004
Age	Searing, 2018
Subsector	Trussel & Greenlee, 2004
Contextual Factors	Never 2014; Prentice 2016

2.3.1.3 Critique on previous existing nonprofit resilient research

Based on the review, most of the literature about nonprofit organizational resilience were empirical studies and explored factors that contributed to organizational resilience. In contrast, an important stream of general management literature consists of conceptual studies that classified resilience strategies and developed models to interpret organizational resilience. It is necessary to develop resilience models for the nonprofit sector as turbulent events such as the economic downturn, natural disasters, terrorism, regulatory actions, and changing community needs are high impact but low probability. It is impossible for organizations to prepare for all different turbulent events, but it is necessary for organizations to reduce the vulnerability of high-impact events and quickly bounce back from major disruptions. Therefore, developing a resilience model that can be used to cope with most turbulent events benefits the nonprofit sector. This dissertation seeks to help develop a general nonprofit resilience model that can be used in an ever-changing environment.

Moreover, unlike general management literature that frequently discussed the meaning, operationalization, and model of organizational resilience, the concept of organizational resilience, reflected in many studies, was seldom explicitly used by nonprofit scholars. For example, Searing (2018) studied what factors contributed to the recovery of nonprofits from financially distressed situations. She applied whether a nonprofit returned to its original performance level two years after financial distress to measure recovery. This definition of recovery is very similar to the definition of organizational resilience in general management literature. However, the concept of resilience did not occur in her article. This dissertation introduces the concept of organizational resilience to the nonprofit literature and explores factors influencing organizational resilience based on previous resilience research in both sectors. This dissertation contributes to resilience research in both sectors by bridging organizational resilience research in both sectors together.

2.3.2 Nonprofit Performance

This dissertation studies nonprofit organizational resilience by exploring how quickly nonprofits bounce back to their pre-event performance level after being affected by significant disruptions and factors contributing to the rebound. Organizational performance is an indicator to evaluate whether a nonprofit has the capacity or ability for resilience. Measuring organizational performance is more complicated in the nonprofit sector when compared to the business sector as the primary goal of the business sector is profit generation while the main purpose of nonprofits is mission fulfillment. Measuring organizational performance in the nonprofit sector is measuring how well nonprofits carry out their missions. Missions are based on intangible criteria and unique to each nonprofit, so measuring these missions' success requires a more subjective evaluation (Kanter, 1986). Thus, nonprofits often use their developed performance measurements to do performance evaluations such as service outputs, client satisfaction, external audits, financial indicators, and benchmarks (Carman, 2007; Fine & Snyder, 1999). However, it is hard to compare mission versus mission across organizations. Thus, in nonprofit literature, the financial performance of a nonprofit is commonly used as a proxy for a nonprofit's performance because nonprofits rely heavily on their financial resources to fulfill their mission and their mission performance can be reflected by their financial performance to some extent. Though financial performance cannot capture nuances of mission performance, it is available for many years and organizations and easier for the public to access (M. Hager & Greenlee, 2004). Therefore, this dissertation following other nonprofit literature uses financial performance as a proxy for nonprofit performance.

Nonprofit research uses different financial indicators to measure the financial performance of nonprofits based on their research interest and context. Table 2.2 shows performance measures are used in nonprofit literature. Program expense is commonly used. Tuckman and Chang (1991) stated that the nonprofit financial failure could be measured by "financial vulnerability." According to these authors, a nonprofit organization can be defined as financially vulnerable "if it is likely to cut back its service offerings immediately when it experiences a financial shock" (Tuckman & Chang, 1991). Never (2014) followed by arguing that "an organization's expenses are a more contemporaneous measure of its presence in a community" (p.70). Therefore, he suggested using the cut in expenses over three years to measure nonprofits' financial distress. Trussell and Greenlee (2004) developed the financial vulnerability framework of Tuckman and Chang (1991), but they used net assets to measure the potential failure of nonprofits instead of an expense. Another group of scholars is particularly interested in revenue of nonprofits and uses revenue-related measures such as total revenue, revenue change, and ratios between revenue sources to indicate nonprofit financial performance (Callen, Klein, & Tinkelman, 2003; D. A. Carroll & Stater, 2008; Park & Mosley, 2017).

Some scholars, in order to increase the validity of their study, chose to use more than one measure of performance. Keating et al. (2005) used four different measures (insolvency risk, financial disruptions, funding disruptions, and program disruptions) of performance because the four different measures are associated with nonprofits' ability to carry out their mission. Lin and Wang (2015) used the change of revenue and expense to measure financial resilience. Searing (2018) used the change of net assets to measure the financial recovery of nonprofits.

In this dissertation, rebound from financial disruption and rebound from program disruption are chosen to measure nonprofit performance. Rebound from revenue disruption is not chosen, though it is frequently used in nonprofit research in response to economic downturns, because economic downturns and natural disasters have different impacts on nonprofits. To be more specific, economic downturns mainly attack nonprofit revenues and lead to revenue decrease while natural disasters cause physical damages and intensify service demands of nonprofits. Thus, it is more valuable to rebound from financial disruption and rebound from program disruption to evaluate nonprofit performance in a disaster context.

Table 2.6. Nonprofit Financial Performance Measurement.

Measurement of Financial Performance	Referencing Literature
Net Assets related measures	Keating, Fischer, Gordon, and Greenlee, 2005; Searing 2018;
Revenue related measures	Callen et al., 2003; Carroll & Stater, 2008; Keating, Fischer, Gordon, and Greenlee, 2005; Lin and Wang 2015; Park & Mosley, 2017
Program related measures	Keating, Fischer, Gordon, and Greenlee, 2005; Lin and Wang 2015; Never, 2014; Tuckman and Chang, 1991

2.4 The Disaster Context

Nowadays, organizations operate in an ever-changing environment. According to the report from the Center for Research on the Epidemiology of Disasters, there were 342 disasters reported worldwide (Guha-Sapir, Hoyois, Wallemacq, & Below, 2017). The catastrophic impact of a disaster on communities and economics increases dramatically. 564.4 million people were affected by disasters (Guha-Sapir et al., 2017). This is the highest since 2006 (Guha-Sapir et al., 2017). The estimated disaster damage is approaching $154 billion, which is 12% higher than the 2006-2015 annual average (Guha-Sapir et al., 2017). Disasters, regardless of magnitude and severity, can overwhelm an organization’s capabilities to survive and thrive (Jung & Song, 2015). According to the Federal Emergency Management Agency (FEMA), nearly 40% of businesses that were closed after being affected by a natural or human-made disaster will be closed forever (Stoneking, 2011). In order to survive and succeed, organizations must adapt to the environment around them. Therefore, it is crucial for organizations to understand how to prepare for and build capacity to quickly recover from disasters. Studying organizational resilience provides insight into how organizations can survive and achieve their desired outcomes after being affected by disasters.

The resilience of organizations not only relates to organizations' capability of performing post-disaster recovery, but it is also essential for the well-being of the whole community in the aftermath of disasters (Bruneau et al., 2003; Jung & Song, 2015). Organizational resilience contributes to the stability of communities, as communities depend on organizations to provide services and employment (Lee, Vargo, & Seville, 2013). Bruneau et al. (2003) claimed that organizations are “backbones” of community resilience and community resilience cannot be complete without functional organizations after disasters (p.736). For example, organizations such as water and power lifelines and acute-care hospitals are crucial to community functioning after being affected by earthquakes (Burnard & Bhamra, 2011). A. V. Lee et al. (2013) also emphasized the importance of organizational resilience to the resilience of communities and stated that “organizational and community resilience are two sides of the same coin; if organizations are not prepared to respond to emergencies and crises, communities also are not prepared” (p.29). S. McManus, Seville, Vargo, and Brunsdon (2008) found that the resilience of organizations directly influences the rapidity and quality of community recovery from disasters. Therefore, studying organizational resilience also helps communities to prepare and respond to disasters.

After large scale human-made or natural disasters, the government has limited capacity to satisfy all community needs all by itself (Lester M Salamon, 1999). Justified by the government failure theory, nonprofits, as significant community service providers, must step in and collaborate with the government by providing supplementary and complementary work for the government when the government fails to provide sufficient public services. For example, when the government failed to respond to Hurricane Katrina effectively, a large number of international non-governmental organizations were compelled to provide disaster relief services (Eikenberry, Arroyave, & Cooper, 2007).

The nonprofit sector plays both proactive and reactive roles following disasters. In their proactive roles, nonprofits complement the service gaps left by governmental agencies and supplement governments' work in providing public services. Governments have limited capacity and resources to respond to a large-scale disaster all by themselves. The disaster response also needs efforts from the nonprofit sector. In their reactive roles, nonprofit organizations as the primary service providers of communities get involved in disaster response naturally. Clients served by nonprofits before the disaster, if they remained in the area, have the same needs and sometimes even have more significant needs after the disaster (Pipa, 2006). Moreover, there might be new clients looking for services too. After being affected by large-scale hurricanes, the needs of the most mentioned service included shelters and financial assistance, mental health services, and, children and family services (Auer, 2006; S. L. Smith, 2012).

To meet the existing and new demands of communities, nonprofits need extra funding and human resources. However, nonprofits have difficulties in satisfying heightened service demand, for many nonprofits themselves were in worse situations after being affected by natural disasters. Auer (2006) surveyed nonprofits in Hurricane Katrina and Rita affected areas in Louisiana, and he found that about 95% of nonprofits reported that they are negatively affected by the storms. The same survey showed that more than half of the nonprofits were not providing services and 27% were providing only limited services in some of the areas hardest hit by Hurricane Katrina. Nonprofits were negatively affected by disasters in many ways. First, some nonprofits lost human and physical capital necessary to maintain operation and serve the organizational mission. Auer (2006)' s survey also showed that about 30% of nonprofits reported that their facilities were damaged to various degrees and their office suppliers were destroyed or lost. Another survey from the Mississippi Center for Nonprofits showed that 77% indicated their significant building was damaged. Moreover, staff and volunteers of nonprofits in the disaster-affected areas might have been victims of the disaster. Also, their offices might have been damaged as well. According to a survey from the Mississippi Center for Nonprofits, 67% said that they lost paid staff members and volunteer staff after being affected by Hurricane Katrina (Pipa, 2006).

After these types of disasters, nonprofits face pressure to maintain their original operation and service supply, and they are supposed to meet new demands of services in the meantime. Providing those community services is challenging work for nonprofits in a disaster context because not only the government but also nonprofits can be limited in their capacity to meet disaster-related needs. According to voluntary failure theory, nonprofits fail due to insufficiency, particularism, paternalism, and amateurism (Lester M Salamon, 1999), which are also the four reasons why nonprofits fail in a disaster context (Eikenberry et al., 2007). More specifically, in terms of insufficiency, nonprofits may lack adequate resources to cope with the increased needs caused by disasters. Nonprofits may lack sufficient financial resources to provide services. First, as many nonprofits rely on donations, they have limited unrestricted funds that can be used in disasters (S. L. Smith, 2012). Moreover, private donations raised in response to the natural disaster are not sufficient and unevenly distributed among nonprofits. Taking Hurricane Katrina as an example, $3.3 billion in donations has brought no response to the storm because the actual cost of rebuilding is above $200 billion. Among the $3.3 billion in private donations, a large proportion of it flowed to large national nonprofits with high reputation, and those nonprofits were lucky publicized by the media during the aftermath. Most of this donation (2.1 million) was received by the Red Cross (Boris, 2006). However, the Red Cross has limited capacity in response to the storm, as they have few chapters compared to the other states. To be more specific, they only have six chapters in Louisiana, 5 in Alabama, and 15 in Texas while they have 29 chapters in North Carolina (Eikenberry et al., 2007). In contrast to large national nonprofits like the Red Cross, small local nonprofits lacked funds immediately after the storm and had limited capacity to search and secure funding resources (S. L. Smith, 2012). However, these small local nonprofits had a strong client base in local communities. The service needs of small local nonprofits increased dramatically after the storm. In addition to that, public assistance also cannot satisfy the needs of all nonprofit applicants. Second, nonprofits may suffer from particularism. They may provide services to particular subgroups of a community and leave some subgroups lacking access to services. Services such as job training, mental health counselling, child care and abuse treatment were insufficiently provided after Katrina (S. R. Smith, 2006).

Third, nonprofits may satisfy donors' interests and ignore some needs of communities, which is often defined as paternalism. For example, many donors donate to satisfy the instant needs of victims and ignore the long-term needs of the community. Many donations raised in response to Hurricane Katrina were so limited that they could barely provide services to victims without meeting basic organizational needs after being affected by the disaster, increasing the difficulties for nonprofits (Boris, 2006). Nonprofits need funds and time to recover from these adverse situations. What makes it worse is that in the meantime, nonprofits must cope with heightened service demand. This heightened service demand will create pressure for nonprofits even when they are in sound performance statues before being affected by disasters. Fourth, they may take an amateur approach in responding to and addressing problems caused by disasters because most nonprofits except that focused-on disaster relief are less likely to be equipped with disaster response expertise.

Due to the above reasons, nonprofits often fail to provide services and disaster response. Therefore, it is essential to learn the challenges of nonprofits in post-disaster recovery and study the factors which enable nonprofits to bounce back quickly after those disasters. Therefore, being resilient is vital for nonprofits to survive and be sustainable in a disaster context. Thus, it is essential to study how quickly nonprofits can bounce back to previous performance levels and what factors lead to a quick recovery. However, most resilience literature in the field of disaster management is mainly composed of conceptual pieces or case-based research, which were studied from an individual or community resilience perspective (Jung & Song, 2015). For example, Bruneau et al. (2003)'s article provided a framework to quantitatively assess and enhance the resilience of communities, which is a seminal work of community resilience in earthquake context. Though their study focused on developing a conceptual framework and quantitatively measured for community resilience, they identified that organizational resilience is one of the four dimensions (the other three dimensions are technical, social, and economic) of community resilience. According to them, organizational resilience can also be quantitatively measured from four dimensions: robustness, redundancy, resourcefulness, and rapidity. Most nonprofit literature in disaster management focused on the impacts of disasters on nonprofits or the role of nonprofits in disaster response (Simo & Bies, 2007; Sylves, 2008). How organizations can reduce damages and recover from a natural disaster from an organizational perspective using a mixed method is less explored. This dissertation aims to fill this gap by exploring nonprofits' resilience in a natural disaster context.

2.5 Theories and Hypotheses

The following parts of this chapter explore theories that provide explanations on what organizational factors may contribute to organizational resilience and help inform hypotheses that are used in this dissertation study. Although some hypotheses are informed by multiple theories, the hypotheses are categorized with the theory that provides the most reasonable rationale. The first two theories, resource dependence theory, and modern portfolio theory, are frequently used in the nonprofit context to explain how some nonprofit financial conditions or characteristics contribute to quick recovery following a disaster. The resource dependence theory originated from sociology and explains the relationship between organizations' behaviors and their external environments. By contrast, modern portfolio theory is an economic theory that is commonly used to justify how a rational human makes decisions in the markets. The third theory informing this study on organizational resilience following a disaster is an organizational learning theory, frequently mentioned in organizational resilience research in the business sector but less used in nonprofit literature. This dissertation applies organizational learning theory to the nonprofit context and explores how organizational learning associates with nonprofit resilience. Specifically, as seen here, organizational learning theory discusses how nonprofit acquire knowledge and insights and adapt to environmental changes. In this dissertation, resources dependence theory and modern portfolio are used to explain why certain nonprofit financial strategies contribute to organizational resilience following a disaster and why certain nonprofit organizational learning behaviors lead to a quick recovery.

2.5.1 Resources Dependence Theory

The resource dependence theory (RDT) was formalized by Pfeffer and Salancik in 1978 through their book The *External Control of Organizations: A Resource Dependence Perspective*.

It explains the relationship between organizations and their external resource environments (Hodge & Piccolo, 2005). As Hillman, Withers, & Collins (2009) say, “Resource dependence theory recognizes the influence of external factors on organizational behavior and, although constrained by their context, managers can act to reduce environmental uncertainty and dependence” (p. 1404). The external environments of organizations include all contextual factors that influence the operations and performances of organizations, but not every contextual factor confronting an organization has an impact on that organization. Organizations depend on resources to maintain their operation, and they cannot be completely self-contained, so they have to obtain those resources from other organizations that control critical resources (Pfeffer & Salancik, 2003). Therefore, organizations are embedded in a network of interdependencies with other organizations. However, the interdependencies are not always stable, and resource supplies can become more or less scarce with changing environments; this leads to uncertainties of survival and success for organizations. In order to survive, organizations need to cope with not only their internal tasks but also their interdependence with other organizations. Therefore, controlling interdependence with other organizations and stabilizing external resource environments are important factors for organizations to survive and succeed.

Though organizations are constrained by their external environments and depend on other organizations that possess vital resources, the RDT also argues that organizations can take actions to reduce the uncertainty of external environments and dependency on other organizations (Hodge & Piccolo, 2005). Pfeffer and Salancik (2003, P.2) argued that “the key to organizational survival is the ability to acquire and maintain resources”. Coping with resources environments, to a large extent, means managing relationships with other organizations. Organizations attempt to make their own environments more stable and more munificent through reducing dependency on other organizations and maintaining autonomies of their own organizations (Hillman, Withers, & Collins, 2009). Managers can recognize the constraints of external environments and create favorable resource environments through strategic decision-making (Hillman et al., 2009).

Compared to government agencies and for-profit organizations, nonprofits highly depend on the external environment to obtain resources (Tuckman & Chang, 1991). Therefore, the success of nonprofits highly depends on whether they can acquire resources from their external environment and maintain their resources by managing their relationship with external agencies (Pfeffer & Salancik, 2003). Financial resources are important resources for nonprofits because without financial resources nonprofit organizations could not maintain their operations and provide mission-related services (B. Never, 2014). In order to obtain resources, nonprofits tend to depend on the organizations that provide funds to them. This dependency creates environmental uncertainty and reduces the financial stability of nonprofits. For example, if the funders abruptly stop providing funds to a nonprofit, the nonprofit needs to offset this funding loss quickly, or their survival will be threatened. Those who provide funds to nonprofits have already set restrictions on where funds can be used based on their preferences and needs. Nonprofits cannot use those restricted funds in other activities or circumstances, including spending on disasters. In the disaster context particularly, nonprofits need financial resources to provide increased services and offset the organizational loss of staff, offices, and supplies (Sylves, 2008). Nonprofits without enough funds must generate revenue for the new needs specifically and wait for other organizations to help. For example, a homeless shelter may need extra funds to build new shelters for people who lost their living places after being affected by a disaster. If the homeless shelter does not have funds that can be used to build new shelters, it needs to search and apply new resources in order to build new shelters. Similarly, an art museum may need funds to repair their facilities or transfer artistic work to other places after a disaster. If it does not have enough funds to do so, they must wait for donations to support their reparations and transference.

According to the RDT, a nonprofit manager can act intentionally to manage their environmental uncertainties and reduce dependency on other organizations (D. A. Carroll & Stater, 2008; Karen A Froelich, 1999). Nonprofit managers realized that uncertainties of their funding environments can reduce uncertainties and increase their financial autonomy through strategies such as increasing financial reserves and reducing debts. For example, financial reserves enable nonprofits to be more flexible in disasters because nonprofits with more financial reserves can immediately spend on the needs of operations and services. RDT is about managerial strategies and financial measures of nonprofits that are used to proxy these strategies that were planned and enacted by nonprofit managers. Therefore, nonprofits with managers who take actions to increase their financial autonomy are more likely to bounce back quickly after affected by a disaster, the following hypothesis was developed:

Hypothesis 1: *Nonprofits with managers who act intentionally to increase their financial autonomy are more likely to bounce back quickly after being affected by a disaster.*

2.5.2 Modern Portfolio Theory

Modern Portfolio Theory (MPT) is an economic theory that was first introduced by Markowitz (1952). MPT explains how an investor selects an investment portfolio and is informed by several assumptions about investors and investment. First, it assumes that investors are rational decision-makers, which means they try to maximize their advantages and minimize their losses when they make decisions. Second, it assumes that investors have different risk aversion characteristics, and will evaluate the trade-offs between expected returns and risk levels. Third, it assumes the high investment returns are always associated with high-risk levels. Therefore, when selecting investment portfolios, investors try to maximize their return and minimize risks.

One important strategy for investors to optimize their investment portfolio is diversification (Markowitz, 1952). To be more specific, investors can expect the same return with different levels of risks by adjusting combinations of their investment portfolios. The MPT holds that diversification of financial portfolio enables investors to have the same expected returns of investment but with fewer risks, for when some assets do not achieve the expected returns, other assets do (Markowitz, 1952). Moreover, MPT holds that different combinations of assets are associated with different expected returns and risk levels (Markowitz, 1952). Thus, investors can maximize expected returns and minimize risks by choosing different combinations of assets.

2.5.2.1 Revenue Diversification

In the nonprofit context, the idea of MPT is used for nonprofits to manage their revenue portfolios, rather than selecting investment portfolios. Nonprofits usually generate revenue from multiple sources. Consistent with MPT, relying on one revenue source is associated with higher financial volatility compared to obtaining revenue from several and diverse sources. Nonprofits with multiple revenue sources have several to turn to when one revenue source has been cut off if the cut-off is not caused by a system risk such as economic downturn that may lead to all revenue sources decreasing at the same time (Kearns, 2007; Lin & Wang, 2016).

Multiple studies found revenue concentration is positively related to the financial vulnerability of nonprofits (M. A. Hager, 2001; Keating et al., 2005; Tuckman & Chang, 1991). G. R. Carroll and Hannan (1989) found a more diversified revenue structure increased nonprofit financial stability and reduced their volatility. Searing (2018) found that nonprofits with a more diverse revenue portfolio are more likely to recover from financial distress. However, when Lin and Wang (2016) tested revenue diversification Index in the context of the Great Recession and found revenue diversification made nonprofits more vulnerable during economic downturns. They explained that revenue diversification may help increase the financial capacity of nonprofits in the long run, but not necessarily improve or it even worsened the nonprofit financial situation in the short run. Therefore, diversifying the revenue sources can reduce financial volatility for nonprofits in the long-term, especially when the economic circumstance is stable (D. A. Carroll & Stater, 2008; Tuckman & Chang, 1991). Thus, nonprofits with diversified revenue are more likely to maintain financial stability for years. A stable financial structure enables nonprofits to focus on recovering and disaster response because nonprofits need to focus on solving problems that are caused by the disaster. For example, a mental health agency may recruit new staff to offset job vacancies caused by a disaster and develop new programs for the victims. Victims would need new services because many of them could suffer due to high pressures or loss of properties, families, and friends. Nonprofits may lack time, energy, and resources to deal with even small financial issues in the recovery period after being affected by disasters. As a result, financial volatility can reduce the recovery speed of nonprofits.

Hypothesis 2a: *Nonprofits with greater revenue diversification bounce back quicker than nonprofits with less revenue diversification.*

2.5.2.2 Revenue Structure

Like argued by the MPT that different combinations of assets are associated with different levels of investment risks, different combinations of revenue sources are associated with different financial performance. Nonprofits usually obtain revenue from three major streams: public contributions (government funding and private contributions), income, and investment. The different revenue streams have different impacts on organizational resilience because each revenue stream has its own characteristics (D. A. Carroll & Stater, 2008; Karen A Froelich, 1999). The donative revenue stream is associated with high administrative costs and sensitive to environmental change, which leads to difficulties in planning and maintaining the organization's programs (Karen A Froelich, 1999; Grønbjerg, 1993). In contrast, commercial nonprofits tend to have lower administrative costs and greater financial stability. Because of this, the operations and programs of commercial nonprofits are less likely to be disrupted after natural disasters. Nonprofits with low administrative costs can recover quickly from disasters because their efficiency of resource utilization is high, which means they can use less resources and do more. Second, in a natural disaster context, nonprofits are busy with satisfying the heightened service demands and fixing the damages of facilities caused by the disaster. A stable financial environment enables nonprofits to focus on recovering and responding to the disaster, satisfying community needs and rebuilding their damaged facilities. Therefore, choosing different combinations of revenue streams are highly associated with organizational resilience.

Hypothesis 2b: *Nonprofits with more commercial revenue bounce back quicker than nonprofits with less commercial revenue.*

2.5.3 Organizational Learning

Organizational learning was intensively studied in the 1990s because both public and private organizations have found themselves operating in a more competitive environment (Schein, 1996). Organizational learning theory assumes that organizations are complex systems and operate in ever-changing environments and learning organizations better adjust to environmental change and survive in a competitive environment through continuous learning.

According to Levitt and March (1988, p. 319), “Organizational learning is viewed as routine-based, history-dependent, and target-oriented, and organizations are seen as learning by encoding inferences from history into a routine that guides behavior.” Organizations not only learn from direct experience but also learn from the experiences of others (Levitt & March, 1988). Organizational learning includes four sub-processes 1) knowledge acquisition in which knowledge is gained, 2) information distributions in which information is shared to different parts of the organization and in turn leads to new information or understanding, 3) information interpretation in which commonly understood information is generated, and 4) organizational memory in which information is saved for future use. In terms of knowledge acquisition, organizations can acquire information from multiple sources, including 1) drawing on knowledge that they held already at the start, 2) learning from past experience, 3) learning from the best practices of other organizations, and 4) learning from the environment (Huber, 1991).

There are two types of organizational learning: adaptive learning and generative learning (Murray, 2002). Adaptive learning is associated with an organization’s ability to adapt to its environment. Whether an organization can adapt to its environment successfully reflects its capacity to select, interpret, and respond to environmental change. Adaptive learning is a lower level of learning because it is incremental learning that enables organizations to adapt to environmental change through small-scale adjustment. In contrast, generative learning changes the world view of organizations and is considered to be higher-level learning.

A learning organization refers to an organization that has a higher learning capacity and can consistently sustain innovation and learning (Mills & Friesen, 1992). According to Mills and Friesen (1992), a successful learning organization must have the following three characteristics:1) a commitment to knowledge 2) a mechanism for renewal within themselves 3) an openness to the outside world. Previous literature suggested that adopting organizational learning strategies is positively related to organizational performance (Baker & Sinkula, 1999; Ellinger, Ellinger, Yang, & Howton, 2002; Hunt & Morgan, 2005; Slater & Narver, 1995). For example, Ellinger et al. (2002)'s empirical study found that learning organizations are more likely to have better financial performance using the learning organizational questionnaire (DLOQ) to measure the learning capacities of organizations. The DLOQ measure organizational learning ability is seven dimensions: "1) create continues learning opportunities, 2) promote inquiry and dialogue, 3) encourage collaboration and team learning, 4) establish systems to capture and share learning, 5) empower people toward a collective vision, 6) connect the organization to its environment, 7) use leaders who model and support learning at the individual, team, and organizational levels" (Ellinger et al., 2002, p. 7; Marsick & Watkins, 1999).

With the interest of this dissertation to understand organizational resilience. According to previous literature, organizational resilience is not only associated with organizational tangible assets such as funds or staff, but it is also associated with intangible assets. Organizational ability to learn is an intangible asset of organizations and helps organizations to adapt to environmental change including unexpected crises (S. T. McManus, 2008). Though multiple studies suggested that organizational learning is associated with organizational resilience, less empirical literature explores how organizational learning contributes to organizational resilience (Vogus & Sutcliffe, 2007). Thus, one important aspect of this dissertation is to explore how organizational learning is associated with organizational resilience. Organization learning as a cultural element of organizations cannot be fully understood from “abstractions” and research needs to know what went on in an organization (Schein, 1996, p. 230). Therefore, this dissertation applies the qualitative method to explore the relationship between learning and resilience and understand organizational behavior or processes behind strategies.

2.6 Summary

This literature review chapter first reviewed literature that is associated with nonprofit resilience in a disaster context, including organizational resilience research in the business sector, nonprofit financial management research, and nonprofit disaster management research. This relevant literature informs that resource dependence theory, modern portfolio theory, and organizational learning theory. Therefore, these theories are reviewed in the following sections of this chapter, and the hypotheses are developed under each of these theories.

CHAPTER 3: RESEARCH METHOD

3.1 Introduction

This research study explores the organizational resilience of the nonprofit sector in a disaster context based on both primary and secondary data. A mixed-method design which integrates both quantitative and qualitative analysis is applied to explore the following two research questions:

1) Whether and when nonprofits bounce back to their original financial performance after significant natural disasters?

2) What organizational capacity and activities influence the rapidity of bouncing back?

A parallel mixed method is appropriate to explore the above research questions. The quantitative analysis is used to explore what financial capacity is associated with nonprofit resilience. Extensive nonprofit literature focuses on the relationship between nonprofit financial capacity and performance. Thus, this dissertation uses a large-N quantitative analysis to test the relationship between nonprofit financial capacity and performance in a new context: nonprofit response to natural disasters. The qualitative analysis is complementary to the quantitative analysis and seeks to explore other organizational capacities and abilities that contribute to organizational resilience. Contrary to financial capacity, less nonprofit literature focuses on other nonprofit capacities and abilities that contribute to nonprofit resilience. Thus, this dissertation uses a small-N qualitative analysis to explore what nonprofit capacities and abilities are associated with nonprofit resilience. The study is conducted in two phases: the quantitative phase and the qualitative phase. Quantitative analysis is conducted using a secondary longitude dataset, and a descriptive method is applied to learn how quickly nonprofits can bounce back to their original financial performance level after being affected by disasters. A regression model is applied to identify organizational characteristics and strategies that contribute to the speed of the recovery. The qualitative phase helps to identify factors that may influence recovery but are not included in quantitative data, as well as further interpret and explicate quantitative results.

This chapter includes two parts: quantitative analysis and qualitative analysis. The quantitative analysis part starts with a detailed introduction of data sources, follows with a sample selection process and then a description of variables is demonstrated, and, finally, illustrates a specification of the regression model. The qualitative part first details how the interview sample was selected. Next, it describes the processes of interview protocols development and interview implementation. This chapter closes with a summary.

3.2 Quantitative Analysis

3.2.1 Data Sources

The quantitative analysis of this dissertation is based on secondary data obtained from the NCCS Core PC files on their website[1], which were assembled and managed directly by the National Center for Charitable Statistics (NCCS). NCCS, housed at the Urban Institute, compiles the information on the IRS Form 990-series annually and creates several database files, including the NCCS Cumulative Master File (Master), the NCCS Core Files (Core), the NCCS-GuideStar National Nonprofit Research Database (NNRD or "digitized data"). This dissertation utilizes the NCCS Core PC files, which combine information from forms within the IRS Form 990-series, which contains tax-returned information required by the U.S. Internal Revenue

[1] NCCS Core file can be found in the following link: https://nccs-data.urban.org/index.php

Service for tax-exempt nonprofit organizations, such as name, mission, location, and financial characteristics. The NCCS Core PC files include classification and financial data of 501(c)(3) public charities with gross annual revenue of at least $25,000. Currently, the NCCS Core PC files range from 1989 to 2015. Besides the NCCS Core PC files, the NCCS Core files also include NCCS Core PF (private foundation) files and NCCS Core 501(c) among others.

3.2.2 Sample Selection

With this study's interest in exploring the rapidity of organizational resilience and the factors influencing such in a disaster context, the primary unit of analysis for this research is nonprofit organizations. Hurricane Katrina has been chosen as the case to do a quantitative analysis in this dissertation for the following reasons. First, Hurricane Katrina is one of the most destructive and deadly natural disasters in United States history (S. R. Smith, 2006). In August 2005, Hurricane Katrina intensified into a tropical storm when it headed to Florida and strengthened after entering the Gulf of Mexico (Zimmerman, 2015). It caused devastating damage to wide areas surrounding the Gulf coast, especially areas around New Orleans. It caused over $120 billion in property damages and over 1800 deaths (Donahue & O'Keefe, 2007). Second, nonprofits were directly impacted by the storm. In other words, nonprofits were victims of the storm (Chikoto, Sadiq, & Fordyce, 2013). For example, a Mississippi Center for Nonprofits survey reported that about 93% of nonprofits could not provide some of their services, 77% of nonprofits had physical facilities damaged, and 67% nonprofits lost staff or volunteers after being affected by Hurricane Katrina (Pipa, 2006). On the other hand, the role of nonprofit organizations in disaster response had been redefined due to the lack of governmental response (Eikenberry et al., 2007), and the important role of nonprofits in disaster response was confirmed by several government reports (Eikenberry et al., 2007; James, 2006). Third, recovery is a process, so it may take years for nonprofits to rebound to pre-disaster performance levels. It has been over ten years since Hurricane Katrina, and the whole recovery process of nonprofits can be tracked by available data on nonprofits according to their IRS Form 990s. Specifically, this dissertation uses the FEMA Katrina declaration map[2] to identify locations that were affected by Hurricane Katrina. The FEMA declaration map is shown in Figure 3.1. As shown in Figure 3.1, all counties in Louisiana and Mississippi, and 22 counties in Western Alabama, 11 counties of Florida are declared by FEMA as the most physically affected by Hurricane Katrina. Counties in dark orange eligible for full Individual and Public Assistance. Counties in light orange eligible for Individual and Public Assistance (Categories A and B only). Counties in yellow eligible for full Public Assistance. Counties in green eligible for Public Assistance (Category B only). In order to study the whole recovery process of nonprofits after being affected by the storm, a panel of data from 2001 to 2013 was selected to include enough years to track pre-and post-disaster performance. The NCCS core file included 97,064 nonprofits located in Louisiana, Mississippi, and Alabama from 2001 to 2013.

[2] FEMA Katrina declaration map is provided according to The Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. §§ 5121-5207 (the Stafford Act) §40, which identified disaster affected areas that are eligible for public and individual assistance.

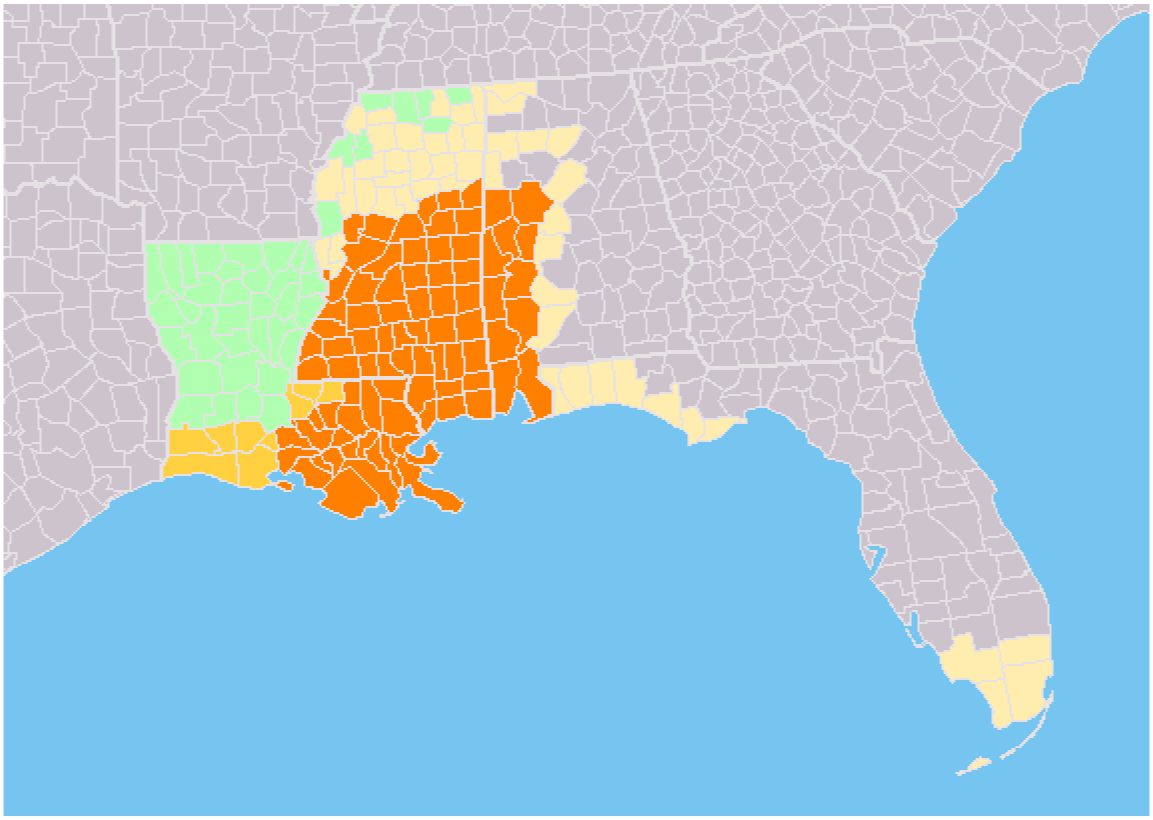

Figure 3.1 FEMA Katrina Declaration Map

Source:https://upload.wikimedia.org/wikipedia/commons/2/21/Katrina_FEMA_declarations.png

The nonprofit sector is diverse and complex, including a wide range of organizations, from large hospitals to small mentoring programs (Frumkin, 2009). Due to this diverse nature of the nonprofit sector, which includes organizations with distinctly different financial and organizational characteristics, only some subsectors that provide community services were selected for this study. Focusing on sectors that provide community services allows for avoiding mixing "apples and oranges" and facilitating clearer inferences from the findings. Because of this, only the human services nonprofit subsector is discussed in this dissertation; organizations in this subsector are important participants in disaster response due to the need for their services growing greatly after disasters. They are the main service providers in communities (B. Never, 2014). Besides, these organizations rely on government grants and private funding more than nonprofits in other subsectors; this makes the human service subsector more vulnerable to external shocks and better for the current analysis (Karen A Froelich & Knoepfle, 1996). Again, the focus of this dissertation is on the financial conditions of recovery and organizations within the human services nonprofit subsector that were subject to financial distress after disasters.

This dissertation then narrows down the research sample using the service fields of the nonprofit sector. In NCCS Core PC files, the information of the nonprofit sector and its subsectors is provided through NTEE (National Taxonomy of Exempt Entities) codes. The "National Taxonomy of Exempt Entities" (NTEE) system is a classification system for nonprofits and developed by IRS and NCCS. The system classifies nonprofit into 26 major groups under ten broad categories based on their service fields (Jones, 2019). This dissertation uses major groups of NTEE codes to identify nonprofits within the health and human services subsectors. This dissertation identified nonprofits that operate locally and are likely to provide direct public services to communities that fit under the broad categories of human services nonprofits and health based on the sampling criteria developed by Thornton (2006, p. 210). Thornton (2006) develops four selection criteria to form sample and to understand competitive grant markets for local-based organizations, including "1) the charities within the classification are local, in terms of consumption of output and source of donations 2) the charities within the classification are reasonably homogeneous across geographic markets 3) the charities within the classification provide services that are substantially distinct from for-profit firms 4) the charities within the classification should receive a nontrivial fraction of their revenues from donations." The sample of this dissertation includes all subsectors used by Thornton (2006) except subsectors under major group public safety, disaster preparedness, and relief; because organizations under this group are designed for disaster response, and they face different conditions than other human services nonprofits. The service fields that are selected in this dissertation are shown in Table 3.1.

Table 3.1. Selected Service Fields adapted from Thornton (2006) with sample Totals.

Service Fields (NTEECC)	Observations in Final Potential Sample	Percent of Total
Health Care (E)	6,547	18.71
Mental Health and Crises Intervention (F)	2,331	6.66
Crime and Legal-Related (I)	2,094	5.98
Employment (J)	1,120	3.20
Food, Agriculture, and Nutrition (K)	910	2.60
Housing and Shelter (L)	5332	15.23
Public Safety, Disaster Preparedness & Relief (M)	1435	4.10
Human Services (P)	15,230	43.52
Total	34,999	100

3.2.3 Data Cleaning

The IRS 990 data has some known biases. First, small nonprofit organizations (with annual revenue less than $25,000) and religious congregations are not required to file the IRS Form 990, so those organizations will not be represented in this data source (Karen A Froelich & Knoepfle, 1996). Therefore, the results of this dissertation cannot be generalized to small nonprofit organizations or religious establishments. Second, the IRS 990 data has some reliability issues because the tax return may be filed late by a nonprofit and prone to errors (Keating et al., 2005). For example, according to, more than 50% of nonprofits fail to provide schedule A, more than 20% of them submitted the 990 forms with signature, and about 10% of them filled the wrong tax year.

Though the IRS 990s include some error-prone data, according to Froelich and Knoepfle (1996, p. 40), the NCCS Core data files are “generally reliable” sources for nonprofit scholars to use in their research. To be more specific, the reliability of Form 990 data is higher among major categories of accounts, such as total expense and total revenue, when compared to some other accounts (Karen A. Froelich, Knoepfle, & Pollak, 2000). Most variables used in this dissertation are based on major categories. Moreover, NCCS did some initial cleaning work and removed data that contains simple mathematical errors. For example, NCCS verified whether there is a discrepancy between “total contributions” and the sum of contributions from individuals, governments, and others. The data lines with a more 25% discrepancy have been eliminated from the core files. Finally, the IRS 990 data remain widely used by nonprofit scholars to explore nonprofit financial performance (D. A. Carroll & Stater, 2008; C. F. Chang & Tuckman, 1994; M. A. Hager, 2001; Keating et al., 2005; Searing, 2018). Some drawbacks of the IRS 990 data can be addressed through extensive data cleaning (Calabrese, 2011). To reduce measurement errors commonly documented in IRS 990 data, several procedures were used to clean the dataset. The data cleaning process will be outlined in detail in table 3.2. First, all fiscal variables are adjusted to the 2005 currency value for inflation using the CPI index (https://www.usinflationcalculator.com/inflation/consumer-price-index-and-annual-percent-changes-from-1913-to-2008/). Second, multiple NCCS Core PC files were appended into one longitudinal dataset file since NCCS Core PC files are saved as an independent file for each tax year. The year range of this dataset from the year 2001 to 2013. The dataset is an unbalanced panel. Third, only nonprofit organizations located in states that were physically affected by Hurricane Katrina were kept in the sample. In other words, only nonprofit organizations located in counties declared by FEMA were kept in the dataset. Fourth, nonprofit organizations with

NTEE-CC codes listed in Table 3.1 were selected. Fifth, following Calabrese (2011) nonprofit organizations with missing rule dates and incorrect rule dates were removed from the sample. Sixth, following Searing (2018), Calabrese (2011), and Marudas (2004), nonprofit organizations with any one of the following indicators less than zero were dropped from the sample: total assets, total expenses, and total contributions.

Finally, in order to study organizational resilience, only nonprofit observations that were affected by Hurricane Katrina are included in the final sample. Organizational recovery is measured by expense recovery and net assets recovery; thus, two separate sample datasets are developed. The expense recovery sample only includes nonprofit organizations with a 10% decrease in total expense between 2006 and 2004. Table 3.3 shows the procedure of the expense recovery sample selection and data cleaning process. The net assets recovery sample only includes nonprofit organizations with a 10% decrease in total assets between 2006 and 2004. Table 3.4 shows the procedure of the net assets' recovery sample selection and data cleaning process.

Table 3.2. Procedure of Sample Selection and Data Cleaning.

Beginning Sample Size (include all nonprofits observations in NCCS Core files from 2001 to 2013	4,353,942
Less nonprofits observations are not in disaster-affected counties	-4,256,878
Less nonprofit observations are not with NTEE-CC Code listed in Table 3.1	-61,207
Less nonprofit observations with missing rule dates and incorrect rule dates	- 213
Less nonprofit observations with negative assets, expenses, revenues and contributions	-645
Final Potential Sample size	34,999

Table 3.3. Procedure of Expense Recovery Sample Selection and Data Cleaning.

Final Potential Sample size	34,999
Less nonprofit observations are not with a 10% decrease in total expense between 2006 and 2004	-28,278
Drop observation before years of 2007 for expense recovery sample	-3,102
Drop observations after recovery	-1,211
Final Expense Recovery Sample Size	2,048

Table 3.4. Procedure of Net Assets Recovery Sample Selection and Data Cleaning.

Final Potential Sample size	34,999
Less nonprofit observations are not with a 10% decrease in net assets between 2006 and 2004	-27,602
Drop observation before years of 2007 for expense recovery sample	-3,414
Drop observations after recovery	-1,054
Final Net Assets Recovery Sample Size	2,929

3.2.4 Variables

This study includes two dependent variables, four independent variables, and several control variables. Further below, Table 3.5 presents the name, operationalization, and where to find each variable in the NCCS core data files. The detailed information about each variable is listed in the sections which follow.

3.2.4.1 Dependent variable

Both total expense recovery and net assets expense recovery are used to proxy the dependent variable of organizational recovery. The total expense has been chosen because it shows whether nonprofits spend sufficiently on their mission-related programs and services. After being affected by disasters, nonprofits are more likely to reduce funds on their mission-related services. Net assets have been chosen because they indicate insolvency (Keating et al., 2005). Nonprofits are more likely to lose assets such as buildings and equipment in a disaster, and loss of assets is usually associated with loss of net assets. Thus, nonprofits need to recover from their loss of net assets. Total expense and net assets are chosen to measure organizational recovery because they are frequently used in nonprofit literature to measure performance (Keating et al., 2005). More detailed reasons for choosing these two indicators can be found in section 2.3.2.

The net asset recovery is calculated as the difference between its total net assets in the fiscal year and total net assets of the year 2014 and then divided by total net assets of the year 2014. If this indicator is larger than -0.1, then it recovered to the previous total net assets level. The recovery of the total expense is calculated as the difference between its total expense in the fiscal year and expense of the year 2014 and then divided by the total expense of the year 2014. If this indicator is larger than -0.1, then it recovered to the previous total expense level. 10% is chosen as the threshold because, following Park and Mosley (2017), a nonprofit's performance fluctuating within 10% is assumed to be a normal fluctuation.

3.2.4.2 Independent Variables

This analysis includes four independent variables: financial autonomy, revenue diversification, commercial revenue dependence. Financial autonomy is measured by equity ratio and surplus in 2004 (the pre-disaster time period) since financial autonomy conditions contribute to resilience as I mentioned in section 2.5.1. The measurement and calculation of each independent variable are further elucidated in the following.

Equity Ratio

Equity is the annual surplus of total assets less total liability (Tuckman & Chang, 1991). Equity is represented by the net assets reported on the nonprofit's tax return forms. Total net assets of nonprofits can be classified into three categories: unrestricted net assets, temporarily restricted net assets, and permanently restricted net assets. Nonprofits can use unrestricted net assets in all types of activities, but they can only use temporarily restricted funds in specific activities, for how these funds can be used has already been imposed by donors when given (Calabrese, 2011; Tuckman & Chang, 1991). For example, when the Red Cross raises a donation after a disaster for the purpose of disaster response, it may restrict use to disaster response purposes. Nonprofits cannot spend their permanently restricted funds, and only the earnings of the permanently restricted funds can be spent by nonprofits (Calabrese, 2011). Most nonprofit studies do not separate unrestricted net assets from total net assets and just use the total net assets to calculate the equity of nonprofits. Moreover, equity can be held in two forms: liquid or illiquid according to whether they can easily be converted into cash (Tuckman & Chang, 1991).

According to Tuckman and Chang (1991), equity can help nonprofits in four ways when they experienced external shocks. First, nonprofits can use equity to borrow from funds in the capital market. Second, equity in unrestricted liquid forms can be converted into cash to offset revenue shocks. Third, when the external shock causes a large amount of loss in nonprofits that cannot be offset by unrestricted liquid funds, unrestricted illiquid funds can be sold out to meet the needs of the nonprofits. Fourth, after external shock, nonprofits can increase the services that can use restricted funds. Therefore, nonprofits with a higher equity ratio are more independent in their finance when they encounter adverse financial conditions (Figure 3.1).

"Equity ratio measures the relative amount of equity that an organization has" (J. M. Trussel, 2002). It can be operationalized in several ways. First, it can be measured as the ratio of net assets to total revenue (D. A. Carroll & Stater, 2008; M. A. Hager, 2001; Prentice, 2016; Tuckman & Chang, 1991). Second, it can be measured as the ratio of total liabilities to total assets to show the relative amount of debts that nonprofits hold (D. A. Carroll & Stater, 2008;

Keating et al., 2005; Lin & Wang, 2016; J. M. Trussel, 2002). Third, some studies use the ratio of net assets to total assets to measure the equity of nonprofits (Prentice, 2016; Searing, 2018). This study uses the ratio of net assets to total revenue to measure equity ratio, and it is calculated as a continuous variable.

Surplus

The surplus is the total operating margins, which is measured by total revenue less total expenditure, divided by total revenue (Tuckman & Chang, 1991). After being affected by a natural disaster, a surplus can be used by a nonprofit to repair damaged facilities, meet heightened service demands, and attract donations to meet organizational needs and respond to the disaster. Nonprofits with a sufficient surplus can satisfy the organizational financial needs and become more independent in their finance; thus, they can buffer external uncertainty and are less dependent on their external environments. Therefore, a surplus is the other indicator of financial autonomy (Figure 3.2).

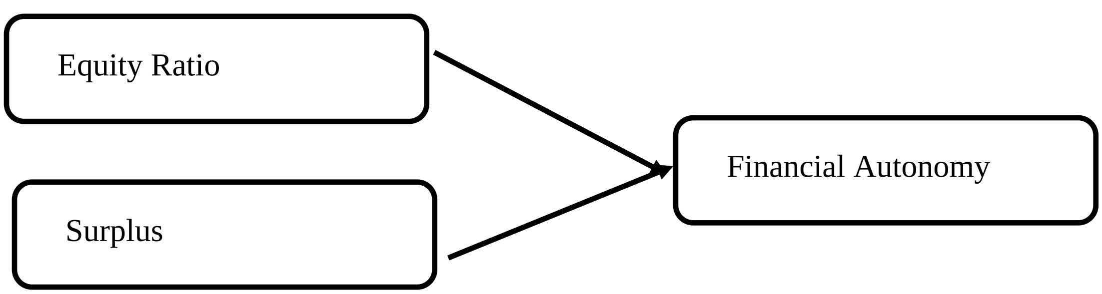

Figure 3.2. Indicators of Financial Autonomy.

Revenue Diversification Index

This study uses the Hirschman-Herfindahl index to calculate the diversification of revenue. This index is widely used in nonprofit research (D. A. Carroll & Stater, 2008; M. A.

Hager, 2001; Prentice, 2016; Tuckman & Chang, 1991). The Hirschman-Herfindahl index (HHI, shown below) compares the revenue generated from three primary revenue sources to total revenue. The range of HHI is from zero to one. A one means total revenue is equally distributed among three sources, and zero means total revenue is fully concentrated from a single source. A higher score means multiple revenue sources are more equally distributed in the revenue of an organization. Zero means an organization depends on one revenue source. The revenue diversification index is expected to be positively related to organizational resilience. The following formula shows how revenue diversification is calculated with HHI. RD denotes the revenue diversification index. The R denotes the percentage of each revenue source to total revenue.

$$RD = \frac{1 - \sum_{i=1}^{3} R^{2}}{2/3}$$

Commercial Revenue

Commercial revenue dependency is measured as a binary variable. It compares revenue from commercial activities to total revenue. It will be calculated as a binary variable. For the binary version, if more than 50% revenue of a nonprofit is generated by commercial revenue, the variable will be coded as 1; otherwise, the variable will be coded as 0.

3.2.4.3 Control Variables

Referencing existing research and theory, subsector, age, size, location, preperformance are added to the model as control variables. The calculation and the expected direction of their relationship with organizational recovery are further demonstrated in the following.

Subsector

Nonprofits of different subsectors in a disaster area compete for different pools of volunteers and donations (D. A. Carroll & Stater, 2008). Some subsectors face a more competitive resource environment than others, and, as a result, nonprofits within them may bounce back slower than those in other subsectors. Otherwise, some subsectors have abundant resources available around them which enables them to bounce back to their pre-disaster performance level quicker. For example, nonprofits that view disaster relief as their primary service field are more likely to have more volunteers and donations available to them, so they may bounce back quicker than nonprofits that do not view disaster relief as their primary service. Therefore, the subsector is added as a control variable.

Age

Age is one of these analysis control variables. According to Stinchcombe and March (1965), compared to more established organizations, new organizations have higher risks of mortality, for they lack social capital, financial resources, or routines, acquired through experience, to contribute to efficiency and legitimacy to survival. In a natural disaster context, new nonprofits have fewer opportunities to recover from adverse situations for the following reasons. First, new nonprofits are affected by natural disasters fewer times when compared to organizations that established for a long time. Organizations gain experiences from coping with natural disasters, and these experiences help organizations better cope with similar adverse events in the future. Therefore, lacking experience increases the likelihood of failure for organizations after a disaster. Second, new nonprofits may lack the financial resources that can be used to recover from adverse events. Third, organizations that have more ties with other organizations are more likely to be resilient in a disaster context (Kapucu, 2006). Older organizations usually have more collaboratives and allies than young organizations (Guo & Acar, 2005). This dissertation assumes that age has a positive relationship with organizational recovery.

Size

Organization size is indicated by two measures: one is a natural logarithm of the total revenue of a nonprofit (B. Never, 2014). Organization size is expected to be positively associated with organizational resilience for the current analysis. Most nonprofit finance literature finds that size predicts the financial performance of nonprofits (de Andrés‐Alonso, Garcia‐Rodriguez, & Romero‐Merino, 2015; Keating et al., 2005; J. M. Trussel, 2002). Some studies showed that smaller organizations are more vulnerable to economic downturns. Joseph (2011) found that smaller organizations (based on the number of employees and assets) have a lower ability to fundraise compared to larger organizations against the setting of the Great Recession. Similar to Joseph (2011), Lin and Wang (2016) showed that it was challenging for smaller organizations to recover from economic downturns because they have difficulties in searching for new funding sources and maintaining multiple funding relationships. However, Searing (2018)'s study yields contrary results to those studies that were conducted in economic downturns. Searing (2018) studied nonprofits' resilience when the market condition is stable and found that small nonprofits are more likely to recover from financial difficulties.

In a disaster context, smaller nonprofits with fewer employees and fewer assets are more likely to fail compared to larger organizations. To be more specific, smaller nonprofits, as they are limited in economic scale (Trussel, 2002), are more likely to lack the necessary financial capacity to meet the service demands and organizational needs in a natural disaster context. For example, small nonprofits may not have enough funds to repair damaged offices. Therefore, it is hard for small nonprofits to recover after being affected by natural disasters. In addition to that, small nonprofits may find it difficult to look for alternative funding sources in a natural disaster context for several reasons. First, they have limited funds, so they lack the capacity to explore and secure new funding resources. Second, they may not have professional staff members who are available to raise funds and manage new funding relationships for emergency use. Finally, it is easier for larger organizations to attract donations in a disaster context because they usually have higher reputations among donors. Donors are more likely to trust organizations with high reputations and choose to donate to those organizations. The evidence of Hurricane Katrina showed that most disaster response donations flowed to larger national organizations with high reputations in American society such as the Red Cross (S. L. Smith, 2012). Small organizations tend to be ignored by donors, especially donors outside their communities because donors are not familiar with those small local nonprofits. Therefore, this dissertation expects that organizational size is positively related to organizational performance.

Pre-Performance

Pre-disaster performance is added to the model as a control variable. Poor past performance has a negative influence on present performance. Pre-disaster performance is a binary variable and indicates whether nonprofits experienced financial distress before a disaster. Following B. Never (2014), if an organization's expenses decrease 20% in consecutive three years, it is considered as financial distressing experience and coded as 1.

Affected Areas

According to the FEMA Katrina declaration map (as shown in figure 3.1), counties are differently affected by Hurricane Katrina. Counties in dark orange are the most physically affected by Hurricane Katrina. Nonprofits in those counties are more likely to recover slower than nonprofits in less affected areas. Therefore, this dissertation includes a control variable called the affected areas. If a nonprofit organization's primary address as indicated on their form 990 was located in one of the dark orange counties, it is coded as 1.

Location

Nonprofits located in different regions are associated with different resources environments. For example, nonprofits in areas with higher median income and lower poverty rates may recover quicker than those in areas with lower median income and poverty rates. Therefore, this dissertation also uses nonprofit zip codes as a control variable.

Table 3.5. Variable Operationalization.

Name	Operationalization	NCCS Core data fields
Expense Recovery	(Total Expense of Year N-Total Expense of the Year 2004 disaster)/Total expense of the Year 2004	Exps
Net Assets Recovery	(Total Net Assets of Year N-Total Net Assets of the Year 2004 disaster)/Total Net Assets of the Year 2004	Fundbal
Equity Ratio	Net Assets of Year 2004/Total Revenue of the Year 2004	Fundbal
Surplus	(Total Revenue of Year 2004-Total Expense of the Year 2004)/Total Revenue of the Year 2004	Totrev, Exps
Revenue Diversification Index	HHI index	Cont,spevtg Progrev, dues, othinc, secur, invinc
Commercial Revenue	Program Revenue+ Dues+ Other Revenue/ Total Revenue	Progrev, Dues (2001-2000), Othinc, Totrev
Subsector	NTEECC Classification	Nteecc
Age	Fiscal Year-Start Year	Ruledata, Fisyr
Size	Natural logarithm of the total revenue	Totrev
Pre- Performance	(Total Expense of Year N-Total Expense of Year N-1)/Total expense of Year N-1	Exps
Affected Area	Qualified types of assistance declared by FEMA	County
Location	Zip	Zip5

3.2.5 Model Specification

To explore the relationship between the rapidity of recovery and organizational financial strategies and capacities, a discrete-time survival model has been chosen for this study. This model has been chosen for the following reasons: 1) this model seeks to assess whether and when the event (recovery) occurs and can indicate the probability of recovery occurs in a particular year (Singer & Willett, 1993) and 2) This model can include both the nonprofit organizations that recovered within the year range from 2007 to 2013 and also the organizations that did not recover in the year range. If a case does not experience the event in the measured period of time, it is referred to as a censored case in discrete-time survival analysis. By including both censored and uncensored data, I can more accurately estimate my first research question "whether and when nonprofits recover from a significant natural disaster" when compared to only include uncensored data (Singer & Willett, 1993). Finally, the recovery for different nonprofits happens in different years. As compared to logistic regression, which is commonly used by nonprofit scholars to access financial performance (Greenlee & Trussel, 2000; M. A. Hager, 2001; Lin & Wang, 2016; J. M. Trussel, 2002), the discrete-time survival model has the ability to capture information on variation in the timing of recovery occurrence (Singer & Willett, 1993).

To run the discrete-time survival model, the original dataset must be organized into an organization-period data set. Data for an organization i consists of j rows, where j represents the number of years during which organization i is observed. The first row (j=1) are data points from the year 2006, which is the first year after Hurricane Katrina and marks the start of the recovery period. Data is no longer included in the dataset once an organization recovered from the disaster. As a result, the number of years (j) that an organization was observed varies.

The event occurrence in the discrete-time survival model is conditional inherently, as the event can only occur one time. To be more specific, if an organization recovered in year j, the organization cannot recover before the year j. Similarly, if an organization recovered in year j, the organization cannot recover again after the year j. Therefore, the discrete-time survival model calculates the conditional probability of the recovery occurrence and is modeled as a logit function, which is shown below:

$$\ln \left(\frac{\lambda(t_{ij})}{1-\lambda(t_{ij})}\right)= \delta X_{ij}+\theta Z_i+\alpha D_j$$

The X represents time-varying covariates for nonprofit i in the time period j, including revenue diversification and commercial revenue. The Z represents time-invariant covariates, including equity ratio, surplus, age, size, subsector, and preperformance. The D denotes the time structure of the hazard, which is a vector of period-specific intercepts.

3.2.6 Summary of Quantitative Analysis

To summarize, the quantitative analysis will use two samples from the Katrina-affected regions. First, to assess the rapidity of total expense recovery, an expense recovery sample is developed. Table 3.6 shows the descriptive data of variables in the expense recovery sample. The expense recovery sample includes 2408 organization years and 517 organizations. Then, to assess the rapidity of total net assets recovery, a net asset recovery sample is developed. Table 3.7 shows the descriptive data of variables in the net asset recovery sample. Net recovery sample includes 2929 organization years and 569 organizations.

Table 3.6. Descriptive table for Expense Recovery Sample.

	N	Mean	S.D.	Min	Max
Exp.Recov.	1697	0.1473	0.3545	0	1
Equity Ratio	2408	4.3209	57.4159	-10.31677	1060.167
Recovered	250	2.4699	11.6389	-10.3168	129.1567
Unrecovered	1447	3.9332	55.9772	-10.3168	1060.167
Surplus	2408	-2.5637	45.9694	-853.7083	.9418328
Recovered	250	-0.0294	0.3948	-4.7510	0.9418
Unrecovered	1447	-2.4455	44.8366	-853.7083	0.9418
Revenue Diversification Index	1251	0.8008	0.2597	.0078523	1
Recovered	231	0.7710	0.2682	0.1643	1
Unrecovered	1020	.8075	.2575	.0079	1
Comrevbi	1253	0.3854	0.4869	0	1
Recovered	231	0.3896	0.4887	0	1
Unrecovered	1022	.3845	.4867	0	1
Age	1697	23.4294	15.5528	2.88	71.9
Recovered	250	22.7642	15.4124	3.77	68.88
Unrecovered	1447	23.5442	15.5794	2.88	71.9
Lntotrev	1685	12.6463	1.7667	2.639057	19.92036
Recovered	250	13.1079***	1.5911	9.9238	18.8514
Unrecovered	1435	12.5659***	1.7839	2.6391	19.9204
Pre-performance	1979	0.1733	0.3786	0	1
Recovered	206	0.1262	0.3328	0	1
Unrecovered	1272	0.1454	0.3527	0	1
Affectedarea	2408	0.1977	0.3983	0	1
Recovered	250	0.1600***	0.3673	0	1
Unrecovered	1447	0.3013***	0.4590	0	1
Location	1697	61701.6	14149.23	36604	71483
Recovered	250	62769.83	13557.01	38618	71483
Unrecovered	1447	61517.04	14245.46	36604	71483
Disaster NPO	1697	0.0183	0.1340	0	1
Recovered	250	0.024	0.1534	0	1
Unrecovered	1447	0.0173	0.1303	0	1
Healthcare NPO	2408	0.1283	0.3345	0	1
Recovered	250	0.184	0.3883	0	1
Unrecovered	1447	0.1818	0.3858	0	1
Mental Health NPO	2408	0.0577	0.2333	0	1
Recovered	250	0.064	0.2452	0	1
Unrecovered	1447	0.0850	0.2790	0	1
Legal Relate NPO	2408	0.0449	0.2070	0	1
Recovered	250	0.052	0.2225	0	1
Unrecovered	1447	0.0657	0.2478	0	1
Employment NPO	2408	0.0345	0.1825	0	1
Recovered	250	0.044	0.2055	0	1
Unrecovered	1447	0.0498	0.2175	0	1
Food NPO	2408	0.0129	0.1128	0	1

Table 3.6. (continued).

Recovered	250	0.028	0.1653	0	1
Unrecovered	1447	0.0166	0.1278	0	1
Housing NPO	2408	0.0835	0.2767	0	1
Recovered	250	0.132	0.3392	0	1
Unrecovered	1447	0.1161	0.3205	0	1
Human Service NPO	2408	0.3301	0.4704	0	1
Recovered	250	0.472	0.5002	0	1
Unrecovered	1447	0.4679	0.4991	0	1
N	2408				

Note. * shows t-test significance for each independent variables and control variables by recovery *** p<0.01. ** p<0.05. *p<0.1

Table 3.7. Descriptive table for Net Assets Sample.

	N	Mean	SD	Min	Max
Assetsrecover	2210	0.1040	0.3054	0	1
Equityratio	2929	1.8894	20.1162	-29.4503	1060.167
Recovered	230	5.4802*	69.9117	-2.8822	1060.167
Unrecoverd	1980	1.6463*	4.8142	-29.4503	29.2783
Surplus	2929	-0.3657	15.7791	-853.7083	1
Recovered	230	-3.7471**	56.2917	-853.7083	0.9817
Unrecovered	1980	-0.0915**	0.4197	-4.9688	0.9817
Revenue Diversification Index	1534	0.8209	0.2623	0.0078	1
Recovered	198	0.7898	0.2673	0.0078	1
Unrecovered	1336	0.8256	0.2614	0.0358	1
Comm.rev.	1538	0.4837	0.4998	0	1
Recovered	199	0.3919**	0.4894	0	1
Unrecovered	1339	0.4973**	0.5001	0	1
Age	2210	21.1169	14.7449	1.95	70.95
Recovered	230	20.2597	14.9467	3.88	68.95
Unrecovered	1980	21.2164	14.7218	1.95	70.95
Lntotrev	2198	12.8902	1.7713	7.5496	19.9203
Recovered	230	13.1663*	1.6463	9.7489	19.1540
Unrecovered	1968	12.8578*	1.7830	7.5496	19.9203
Pre-performance	2222	0.1607	0.3673	0	1
Recovered	187	0.1443	0.3524	0	1
Unrecovered	1561	0.1352	0.3420	0	1
Affectedarea	2929	0.1771	0.3818	0	1
Recovered	230	0.1695*	0.3760	0	1
Unrecovered	1980	0.2424*	0.4286	0	1
Location	2210	58979.66	15238.68	36604	71496
Recovered	230	60650.91	14708.84	36652	71446
Unrecovered	1980	58785.53	15290.8	36604	71496

Table 3.7. (continued).

Disaster NPO	2210	0.0248	0.1558	0	1
Recovered	230	0.0304	0.1721	0	1
Unrecovered	1980	0.0242	0.1538	0	1
Healthcare NPO	2929	0.1379	0.3448	0	1
Recovered	230	0.1956	0.3975	0	1
Unrecovered	1980	0.1813	0.3853	0	1
Mental Health NPO	2929	0.0460	0.2097	0	1
Recovered	230	0.0695	0.2549	0	1
Unrecovered	1980	0.0601	0.2377	0	1
Legal Relate NPO	2929	0.0317	0.1753	0	1
Recovered	230	0.0565	0.2314	0	1
Unrecovered	1980	0.0404	0.1969	0	1
Employment NPO	2929	0.0218	0.1462	0	1
Recovered	230	0.0478	0.2138	0	1
Unrecovered	1980	0.0267	0.1614	0	1
Food NPO	2929	0.0146	0.1202	0	1
Recovered	230	0.0304	0.1721	0	1
Unrecovered	1980	0.0181	0.1336	0	1
Housing NPO	2929	0.1218	0.3272	0	1
Recovered	230	0.0869**	0.2823	0	1
Unrecovered	1980	0.1702**	0.3759	0	1
Human Service NPO	2929	0.3615	0.4805	0	1
Recovered	230	0.4826	0.5007	0	1
Unrecovered	1980	0.4787	0.4996	0	1
N	2929				

Note. * shows t-test significance for each independent variables and control variables by recovery *** p<0.01. ** p<0.05. *p<0.1

3.3 Qualitative Analysis

The qualitative analysis of this dissertation is complementary to the quantitative analysis and seeks to understand the results of quantitative analysis and explore organizational capacities and abilities that contribute to organizational resilience but are not captured by the quantitative analysis. Phone interviews are adopted to collect data for qualitative analysis. This interview data collection approach is chosen because nonprofit resilience is understudied in the nonprofit context and a small-N inductive study is appropriate for exploring the social phenomenon that is not well studied. (Nowell & Albrecht, 2018; Small, 2009). The purpose of the interviews is to explore what organizational capabilities and abilities, especially organizational learning abilities, are associated with the success and rapidity of recovery. The interview protocol is developed and provided in Appendix A.

The interview protocol includes four sections. It starts with asking about and confirming the consent of interviewees to do study. The next section of the interview is designed to learn about interviewees' information and nonprofit background. The third section asks nonprofits how they are affected by Hurricane Florence (Question 1-3). Finally, the interview includes questions about factors that contribute to nonprofit recovery after Hurricane Florence (4-19). Interview questions 6, 7, 17, and 19 in this section ask about the general resilience conditions of nonprofits. Other interview questions developed based on previous findings in organizational resilience literature and are shown in Table 3.8. Table 3.8 shows interview questions and their related theories or previous findings in the literature.

Table 3.8. Interview Questions and Their Related Theories/Findings of Previous Literature.

Interview Questions	Theories/Findings of previous Literature	References
8. Does your organization have any formal planning processes for hurricanes or other risks?	Situation awareness;	McManus, 2008;
9. Are your employees aware of this formal planning effort?	Situation awareness;	McManus, 2008;
10. Does your organization have disaster-related insurance?	Situation awareness;	McManus, 2008;
11. What preparations did your organization make for the storm after your organization was informed?	Situation awareness;	McManus, 2008;
4. Did your organization have enough funds to recover from Hurricane Florence?	Slack of resources; organizational strategy	Gittell, Cameron, Lim, & Rivas, 2006; Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007 Meyer,1982;
5. Did your organization have enough volunteers and staff in the relief and recovery period after Hurricane Florence?	Slack of resources;	Gittell, Cameron, Lim, & Rivas, 2006; Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007 Meyer,1982;

Table 3.8. (continued).

12. Did your organization develop goals for the recovery? What are your goals?	Adaptive capacity	Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007; McManus, 2008
13. Did your organization work closely with other organizations during recovery? How did that contribute to the recovery of the organization?	Adaptive capacity	Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007; McManus, 2008
14. Did your organization have a team that worked specifically on recovery after Hurricane Florence?	Adaptive capacity	Kendra & Wachtendorf, 2003; Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007
15. Did your organization have staff who have professional knowledge about disaster recovery or experience in disaster recovery?	Organizational learning	Kendra & Wachtendorf, 2003; Sutcliffe & Vogus, 2003; Vogus and Sutcliffe 2007
16. How did the experience from Hurricane Matthew influence your organization's recovery from Hurricane Florence?	Organizational learning	Weick 1993; McManus 1998; Vogus and Sutcliffe, 2007
18. If your organization experiences a similar storm in the future, what will your organization do similarly and differently?	Organizational learning	Vogus and Sutcliffe, 2007
11. Did your organization set priorities for the response and recovery? What are those priorities?	Organizational culture;	Kendra & Wachtendorf, 2003; Weick 1993; McManus 1998; Vogus and Sutcliffe, 2007

3.3.1 Interview Sample Selection

Though Katrina is used as the case to conduct quantitative analysis as it provides a long-time span to explore the whole recovery period, Hurricane Florence is chosen to conduct qualitative analysis for the following reasons. Hurricane Florence is a more recent major tropical storm that affected coastal areas in one southeastern state in 2018. Thus, nonprofits that are affected by the storm are still in recovery periods, which is important for understanding the nature of the questioning about organizational resilience. Also, more accurate information can be obtained by interviews given the individual contacted for the interview may have worked for the organization at the time of the disaster and the gap between the events in question and the timing of the interview are in closer proximity.

The interview sample was selected in the following ways. First, the same sample selection criteria used with the quantitative analysis was employed to identify the interview sample. To be more specific, this study first selected nonprofit organizations in Hurricane Florence affected areas that were both eligible for individual assistance and public assistance provided by FEMA, which was designated in 33 counties in this southeastern state. The service fields of interview study included: Health Care (E), Mental Health and Crises Intervention (F), Crime and Legal-Related (I), Employment (J), Food, Agriculture, and Nutrition (K), Housing and Shelter (L), Public Safety, Disaster Preparedness & Relief (M), Human Services (P).

Second, of all the organizations that met sample selection criteria used with the quantitative analysis, only organizations in county A were selected. County A was selected for two reasons. First, county A was not on the coastal line, so it was not a typical area that was affected by hurricanes. Therefore, people in county A were not very familiar with hurricanes, and nonprofits did not have many experiences in coping with hurricanes prior to 2016. Hurricane Matthew in 2016, which was not supposed to cast large influence in county A, changed its path and caused significant damage to county A (Frederick, 2018). Two years after Hurricane Matthew, Hurricane Florence stroked county A and brought great damages to the county again. These two major hurricanes made county A an interesting case for exploratory study. Second, county A was the second poorest county of this selected Southeastern State (Barnes, 2019). Nonprofits were an important social capital of many families. However, nonprofits in this area were more likely to have fewer resources compared to other counties affected by Hurricane Florence.

The procedures for obtaining the interview sample were described as follows. First, information of nonprofits in county A was obtained from NCCS core files of 2015 and copy to a spreadsheet. Using NCCS core files of 2015 because 990 tax return information after 2015 were not available from the NCCS core files. While this sampling parameter did not include organizations that opened after 2015, it prompted that only organizations operating prior to the disaster were included and that the organizations were of a certain capacity, given that organizations with less than $25,000/year revenue were not required to submit a 990 tax form each year. Second, the researcher and an assistant searched for the executive name, phone number, and email address, and added it to that spreadsheet. The purposive sampling method was used by this interview study given the exploratory nature of this research inquiry.

3.3.2 Interview Implementation

The interviews are conducted in the following procedures. First, interviewees were contacted by introductory emails. The email included 1) a very brief introduction of the researcher, 2) the purpose of the interview, 3) some basic information about the interview, 4) some supplemental materials such as some initial results of the research. Second, for organizations that did not have their email address listed on their website, the research calls the organization to get their email address first. If an organization did pick up phone calls, the research left messages to organizations. If an organization failed to pick up the phone three times, the research will stop contacting the organization. Third, organizations that did not respond to the introductory email within 1-week, are contacted by a follow-up email by the dissertation study advisor. The research tried at least three phone calls before giving up interviewing an organization. Each organization was contacted at least three times (two emails and one phone call) before removing from the interview activated list. Fourth, after organizations agreed to participate in the interviews, the researcher scheduled interviews with interviewees at their most convenient time. Finally, after interviews are scheduled, the interview confirmation information and the consent are sent through follow-up emails. The consent form mainly includes the following contents: 1) the participation is voluntary and can drop-off at any stage of the research, 2) minimum risk is associated with the interview and research, and 3) the interview will be recorded using recording devices. The outreach emails scripts and the consent form can be found in Appendix B and Appendix C respectively. The researcher sent an email the day before the interview to confirm the interview the next day and inform about the materials that are used during the interview. The interview script was also included in that email.

The actual interview will be processed as follows. First, the researcher greeted the interviewees and informed them that the researcher would record the conversation using a recording pen and took notes while the interviewee is talking. Second, the researcher provided a brief overview of the dissertation research and interview protocol to interviewees. Third, the interview was semi-structured, which is to say that the researcher might ask follow-up questions based on interviewees' responses. Finally, by the end of the interview, the researcher expressed appreciation to interviewees for their participation. The interviews lasted from 20 to 40 minutes. Each interview's notes were kept in separate documents, and no identifying information of organizations included in contents and labels.

3.3.3 Extended Interview Sample to County B

After the cleaning process, the interview sample of county A includes 49 organizations. Only 6 interviews are completed. Among the left 43 organizations, 1) 6 organizations were rejected to participant in the interview as they identified themselves as not affected; 2) 5 organizations, though they file 990s separately, were actually one organization; 3) 1 organization closed; 4) 4 organizations did not have accurate contact information on their websites; 5) 27 organizations did not respond to the researchers' emails or phones calls, though the researcher exhausted her efforts to schedule an interview to these nonprofits. Due to not obtaining sufficient interview data, the researcher extended her interview sample to another county. The research selected a county that was comparable to county A from among the 33 counties in this southeastern state that was declared by FEMA as disaster-affected counties using a similar population size and impact by Hurricane Florence as criteria. Table 3.9 shows the demographic statistic of all 33 counties. First, county B and C county were considered because the population difference between these two counties and county A is less than 5,000. County B was ultimately chosen because it had a closer distance to county A compared to county C. In addition to that, county B is on the coastal line and was as heavily flooded as county A. To be more specific, both counties A and county B were on the path of Hurricane Florence, and documentation related to Hurricane Florence's weather impact indicate both counties received similar rainfall quantities. Both counties A and B were located in the dark purple area. Therefore, the research extended the interview sample to county B. The same interview procedure was used to interview organizations in county B.

3.3.4 Coding Procedures of Interview Data

I coded my interview data in the following steps. First, I recorded all the interview sessions using recording devices. Second, I transcribed the entire data session for each interview and saved it into an independent work file. All interview transcripts were saved in one folder. No identifiable information was included in any transcripts or the spreadsheet. Organizations were marked as by double-digit numbers such as "01" or "02". Third, while I had the database, I read through carefully and corrected any data entry errors. Fourth, I read interview transcripts on the spreadsheet lines by lines several times and identify the words, phrases, sentences, and chunks that relate to factors and mechanisms of nonprofit resilience. In this process, I also highlighted the most telling quotes from the transcripts. Fifth, I summarized these key findings for each interview question and then coded into categories. Finally, a second coder was invited to check whether she agreed on my coding. The coder completed the city IRB training. I shared my spreadsheet with her. The spreadsheet includes the code on the first page and transcripts of all interviews on the following pages. I trained her on how to use the spreadsheet to check the codes. Following my instruction, the coder identified eight disagreements. The coder and I discussed these eight disagreements and achieved agreements on them. I edited the codes based on our agreements. I also provided demographic information about the interview sample in the chapter of qualitative analysis results.

Table 3.9. Demographic Statistic of Counties Affected by Hurricane Florence.

County	Population	# of Nonprofits	Median Household Income	Poverty Rate
A	131,831	49	32,407	29.0%
B	136,744	32	51,164	11.9%
C	134,214	54	50,323	16.4%
D	24,877	8	38,123	22.2%
E	47,079	51	41,101	22.0%
F	33,190	13	32,396	20.7%
G	69,524	23	51,584	13.3%
H	73,139	29	59,684	10.3%
I	55,655	34	36,261	23.1%
J	102,912	33	49,391	16.3%
K	332,330	84	44,737	18.6%
L	58,856	26	36,679	20.7%
M	21,012	8	36,989	27.6%
N	533,670	247	49,253	14.5%
O	54,764	11	45,713	15.9%
P	5,230	5	40,532	21.9%
Q	202,675	39	54,610	15.1%
R	9,637	4	37,256	22.3%
S	61,452	22	49,272	14.8%
T	55,976	24	37,515	24.7%
U	38,431	52	67,213	9.0%
V	232,274	111	51,457	15.5%
W	197,683	37	48,162	13.5%
X	146,027	82	65,522	13.4%
Y	12,670	7	45,211	17.4%
Z	62,162	12	49,357	12.6%
AA	179,914	74	43,526	21.7%

Table 3.9. (continued).

AB	44,887	18	33,607	24.8%
AC	63,626	8	37,765	20.7%
AD	34,810	22	32,739	26.4%
AE	7,041	56	69,662	4.4%
AF	123,248	46	41,766	20.3%
AG	81,455	35	42,095	18.1%

3.3.5 Summary of Qualitative Analysis

In order to select interview organizations, an interview sample dataset is created. The interview sample includes 49 nonprofits in county A and 32 nonprofits in county B. Table 3.9 and Table 3.10 shows some descriptive data of organizational characteristics for the interview sample.

Table 3.10. Organizational Characteristics of county A Sample.

	N	Mean	SD	Min	Max
Size	45	12.1958	2.2951	7.1507	19.4678
Age	49	14.6551	14.18936	0	62.93
Health	7				
Mental health	4				
Crime	1				
Employment	1				
Food	1				
Housing	17				
Human SERV.	18				

Table 3.11. Organizational Characteristics of County B Sample.

	N	Mean	SD	Min	Max
Size	32	12.0011	1.8724	6.7799	14.8850
Age	31	11.8094	11.4178	0	37.95
Health	7				
Mental health	1				
Crime	3				
Employment	1				

Table 3.11. (continued).

Food	2
Housing	10
Human SERV.	7

3.4 Summary

A mixed method is adopted by this dissertation to explore the rapidity for nonprofits to recover from significant natural disasters and factors that contribute to the quick recovery. This method chapter first detailed the procedures to conduct the quantitative analysis, including sample selection, data cleaning, model specification, and variable operationalization. Then, this chapter introduced the procedures to conduct a qualitative analysis, including interview sample selection, interview implementation, and data coding steps. The next chapter shows the results of quantitative analysis and the chapter following shows the results of qualitative analysis.

CHAPTER 4: QUANTITATIVE ANALYSIS

4.1 Introduction

This dissertation explores two research questions 1) on average, whether and when bounce back to their original financial performance after significant natural disasters? and 2) what organizational capacities and abilities influence the rapidity of bouncing back? The mixed method is used to explore the above research questions. This chapter reports the results of the quantitative analysis. The results of quantitative analysis mainly answer the first questions and part of the second question. To be more specific, the results of quantitative analysis presents 1) whether and when nonprofits bounce back to their original financial performance after significant natural disasters? 2) how nonprofit financial capacities and abilities are associated with the rapidity of bouncing back.

With prior nonprofit research limited to explore nonprofit resilience, the results of this chapter inform nonprofit literature on financial capacities and abilities composed of nonprofit resilience. As mentioned in section 3.2.4, a discrete-time hazard model is used to run quantitative analysis and test the hypothesis outlined in chapter 2. Organizational recovery is measured using both total expense recovery and net assets recovery, thus this chapter relies on two separate datasets: total expense recovery dataset includes 2408 organization years and 517 organizations; total net assets recovery dataset includes 2929 organization years and 569 organizations. This chapter starts from reporting quantitative results of the total expense dataset and follows by reporting the results of the net assets recovery dataset. At the end of this chapter, the results from both datasets are summarized and compared.

4.2 Expense Recovery Sample

The expense recovery sample is developed from the final potential sample based on whether a nonprofit's total expense declines more than 10 % after Hurricane Katrina. If an organization's total expense declines more than 10% after Hurricane Katrina, it was identified as a disaster-impacted nonprofit and kept in this expense recovery sample. A more detailed description of sample selection is provided in section 3.2.3. Table 4.1 shows the descriptive data of variables included in the total expense recovery sample. This dataset includes 1068 organization years and 373 organizations. The results of the total expense recovery sample are provided in 4.2.1 and 4.2.2. Section 4.2.1 provides results of hazard and survival function and answers whether and how quickly nonprofits bounce back to their total expense level. Section 4.2.2 provides results of the discrete-time hazard model and tests hypotheses regarding nonprofit resilience.

Table 4.1. Descriptive Table for Expense Recovery Sample.

	N	Mean	S.D.	Min	Max
Equity Ratio	1068	1.267	8.652	-10.317	129.157
Surplus	1068	-0.068	0.359	-4.751	0.855
Revenue Diversification	1068	0.795	0.260	0.008	1
Commercial Revenue	1068	0.397	0.490	0	1
Age	1068	22.984	15.037	4.880	69.900
Size	1068	12.793	1.641	8.107	19.920
Pre-performance	1068	0.145	0.352	0	1
Affected Area	1068	0.165	0.371	0	1
Zip	1068	61631	14162.9	36604	71483
Disaster	1068	0.011	0.105	0	1
Healthcare	1068	0.167	0.373	0	1
Mental Health	1068	0.087	0.282	0	1
Legal	1068	0.057	0.232	0	1
Employment	1068	0.055	0.229	0	1
Food	1068	0.020	0.139	0	1
Housing	1068	0.121	0.326	0	1
Human Services	1068	0.482	0.500	0	1

Note. * shows t-test significance for each independent variables and control variables by recovery *** $p<0.01$. ** $p<0.01$. *$p<0.05$

4.2.1 Estimation Sample

The dataset for this dissertation study is a panel dataset that includes nonprofit observations from 2001 to 2013. In order to run the discrete-time hazard model, nonprofit observations from 2001 to 2006 are dropped from the dataset, as nonprofits begin to recover from year to 2007. The year 2006 is dropped because though Hurricane Katrina occurs in 2005, the year 2006 is used to identify whether a nonprofit is affected (more information can be found in 3.2.3). The total expense of the year 2004 is used to represent the original total expense level of nonprofits. The total expense from the year 2007 to 2013 was compared to this original level (2004) and a nonprofit is considered recovered when its total expense bounces back to its original level.

Table 4.2 summarizes the distribution of the recovery rates of nonprofits, the rate in the table describes a nonprofit's unadjusted likelihood of bouncing back to its pre-disaster total expense level (total expense of the year 2004) in a given period conditional on having not recovered in a previous year. Though the rate in this study represents recovery rates of nonprofits, it is often referred to as the hazard rate in survival analysis. Examining the second row of the table, of the 373 nonprofits in the sample at the beginning of the year 2007, 124 of them bounced back to their original total expense level by the end of 2007.

The third column of the table shows the proportion of nonprofits that have not recovered prior to that period. For example, from the year 2007 to 2008, 39.87 percent of the 373 nonprofits bounced back to their 2004 total expense level, which means they recovered from the impact of Hurricane Katrina. The distribution of these recovery rates over time describes the baseline hazard function. The recovery rates decline with time. This also implies that nonprofit has the highest chances to recover early on and as time goes on, the conditional probability of recovery declines. The median recovery time for nonprofits after Hurricane Katrina is 3 years.

Table 4.2. Life Table for Expense Recovery Table.

INTERVAL	TOTAL EXPENSE RECOVERY			NET ASSETS RECOVERY		
	Beg. Total	Recovered	Recovery rates	Beg. Total	Recovered	Recovery rates
2007-2008	373	124	0.3987	421	97	0.2604
2008-2009	249	45	0.1987	324	46	0.1528
2009-2010	204	40	0.2174	278	37	0.1426
2010-2011	164	22	0.1438	241	19	0.0821
2011-2012	142	5	0.0358	222	15	0.0699
2012-2013	137	6	0.0448	207	7	0.0344
2013-2014	131	8	0.1221	200	9	0.0900

Note: Beg. Total is the total number of nonprofits that are not recovered in the previous year.

4.2.2 Time Discrete Hazard Model Results

Table 4.3 shows the time-discrete analysis results for the total expense recovery sample. Table 4.4 shows the average marginal effects (AMEs) of each independent variable on the total expense recovery at 10, 30, 50, 70,90 percentiles across the distribution of each independent variable. Of the four independent variables, only the equity ratio is statistically significant. The remaining three independent variables-surplus, revenue diversification index and commercial revenue- are not statistically significant. Based on the results of the time-discrete analysis and AMEs in Table 4.3 and Table 4.4, each hypothesis is reviewed.

Table 4.3. Results for discrete-time hazard model of total expense recovery sample.

Variables	Total Expense Recovery		Net Assets Recovery	
	Coefficient	Std. Error	Coefficient	Std. Error
Equity Ratio	0.023*	0.009	-0.053	0.034
Surplus	0.567	0.306	0.183	0.254
Revenue Diversification Index	-0.334	0.333	-0.667*	0.335
Commercial Revenue	-0.140	0.175	-0.375*	0.187
Age	-0.007	0.006	-0.001	0.007
Size	0.246***	0.053	0.121*	0.057
Affected Area	-0.378	0.246	0.167	0.291
Pre-performance	-0.011	0.249	0.186	0.241
Location	0.000	0.000	0.000	0.000
Disaster NPO	1.432*	0.613	0.506	0.576
Healthcare NPO	-0.342	0.256	-0.045	0.260
Mental Health NPO	-0.283	0.315	0.070	0.342
Legal Relate NPO	-0.218	0.386	0.298	0.387
Employment NPO	-0.238	0.383	0.504	0.418
Food NPO	0.266	0.544	0.481	0.490
Housing NPO	0.032	0.264	-0.485	0.323
Intercept	-4.277***	0.798	-2.721***	0.862
2008	-0.837***	0.218	-0.528*	0.2201
2009	-0.641*	0.275	-0.633*	0.2701
2010	-1.138***	0.284	-0.993***	0.2848
N	1068		1214	
LL	-464.223		-452.2905	
Pseudo R^2	0.066		0.048	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2.2.1 Financial Autonomy

Hypothesis 1 from Chapter 2 proposes that nonprofits with managers who act intentionally to increase their financial autonomy are more likely to bounce back quickly after being affected by a disaster. Financial autonomy is indicated by equity ratio and surplus. Hypothesis 1 is supported by time-discrete survival analysis results when using equity ratio as an indicator while it is not supported when using surplus as an indicator. To be more specific, the equity ratio is statistically significant at the 0.05 level. The effect size of the equity ratio is 0.023, which means that a one percentage point increase in equity ratio leads to a 0.023 increase in the log odds of total expense recovery. This finding suggests that nonprofits with higher equity ratios before the disaster are more likely to bounce back to its original (i.e. 2004) total expense after a disaster.

Table 4.4 presents the AMEs of equity ratio on total expense recovery at different values of equity ratio. These estimates represent the AMEs of a one-unit increase at 10, 30, 50, 70,90 percentiles of equity ratio on the likelihood of total expense recovery. The first row under the equity ratio of Table 4.4 shows the percentiles across the distribution of the equity ratio. The second row shows the value of the equity ratio at each percentile. The third and fourth row shows the coefficient and standard deviation of the AMEs of the equity ratio separately. As shown in the first column under the equity ratio of Table 4.4, one-unit increase at the equity ratio value of -0.207 increases the likelihood of recovery by 0.003 percentage points on average. The effect kept the same with the increase in the value of equity ratio. The AMEs of at all percentiles are statistically significant at the 0.05 level. Similar to the results of the time-discrete hazard model, this finding suggests equity ratio helps nonprofits recover from the decrease of the total expense regardless of values of 10, 30, 50, 70,90 percentiles of equity ratio.

As shown in Table 4.3, the surplus-the second indicator of financial autonomy -has a positive coefficient (0.567) but it is not statistically significant. Table 4.4 reveals that the AMEs increase monotonically with the surplus, but it is not statistically significant as well. This finding suggests that nonprofits with more cash on hand before the disaster do not necessarily recover faster.

Table 4.4. Marginal effect of each independent variable on the total expense recovery at 10, 30, 50, 70,90 percentiles of each independent variable.

		Equity Ratio		
10%	**30%**	**50%**	**70%**	**90%**
-0.207	**0.072**	**0.230**	**0.603**	**2.071**
0.003*	0.003*	0.003*	0.003*	0.003*
(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
		Surplus		
10%	**30%**	**50%**	**70%**	**90%**
-0.239	**-0.077**	**-0.013**	**-0.023**	**0.137**
0.070	0.073	0.074	0.075	0.078
(0.036)	(0.040)	(0.041)	(0.043)	(0.046)
		Revenue Diversification		
10%	**30%**	**50%**	**70%**	**90%**
0.322	**0.734**	**0.943**	**0.998**	**1**
-0.034	-0.033	-0.032	-0.031	-0.031
(0.052)	(0.047)	(0.044)	(0.043)	(0.043)
		Commercial Revenue		
-0.019				
(0.024)				

Note: The table represents the average marginal effects calculated at the values of each independent variable at 10, 30, 50, 70, 90 percentiles.
Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

4.2.2.2 Revenue structure

Hypothesis 2a proposes that nonprofits with greater revenue diversification bounce back quicker than nonprofits with less revenue diversification. This hypothesis is not supported by the time-discrete survival analysis and AMEs. The finding suggests that it may not help for nonprofit managers to speed up recovery of their organizations through diversifying their revenue sources.

The AMEs of revenue diversification on total expense recovery fail to show statistical significance at all levels.

Hypothesis 2b proposes that nonprofits with greater commercial revenue bounce back quicker than nonprofits with less commercial. It is not supported by the results from time-discrete survival analysis and AMES as well. This finding shows that nonprofits with more commercial revenue do not bounce back quicker than nonprofits relying on donations. The findings of hypothesis 2a and hypothesis 2b suggest that the revenue structure of nonprofits does not have a direct influence on the rapidity of total expense recovery.

4.2.2.3 Control Variables

Organizational characteristics are used as control variables in this time-discrete hazard model. Table 4.3 also displays the results of the control variables yielded by the time-discrete hazard model. The organizational age is not statistically significant, which suggests that the age of the organization is not associated with the total expense recovery of nonprofits. In contrast, organizational size, measured as the natural log of total assets, is statistically significant at the 0.001 level. The coefficient of organization size is 0.246, which means one percentage point increase in organization size is associated with a 0.246 log-odds increase in the recovery of total expense. This is consistent with the previous expectation in Chapter 2, which suggests larger nonprofits are more likely to recover after being affected by natural disasters. Organizational pre-performance is calculated by whether a nonprofit total expense decreased in two consecutive years. The pre-performance is not statistically significant, which means the pre-performance of nonprofits is not associated with their total expense recovery after being affected by natural disasters. The location of nonprofits, measured as their zip code, is also not statistically significant, which implies the proximity of a nonprofit organization to the disaster-affected area holds no bearing on their recovery.

This dissertation study also explores the relationship between subsectors of nonprofits and the rapidity of their total expense recovery. Of all the nonprofit subsectors included in the sample (using human service nonprofits as a reference category), only coefficients of disaster nonprofits are statistically significant at 0.1 level in this model. The coefficient of disaster nonprofits is 1.432, which means on average, the log odds of total expense recovery for disaster nonprofits is 1.432 higher than human services nonprofits. These findings suggested that nonprofits focused on disaster relief bounce back quicker than human services nonprofits. These findings are discussed more in Chapter 6.

4.3 Net Assets Sample

The net assets recovery sample is developed from the final potential sample based on whether a nonprofit's total net asset decline more than 10 % after Hurricane Katrina. If an organizations' total net assets decline more than 10% after Hurricane Katrina, it was identified as a disaster-impacted nonprofit and kept in this total net assets recovery sample. A more detailed description of this sample selection process is provided in section 3.2.3. Table 4.5 shows the descriptive data of variables included in the total net assets recovery sample. This dataset includes 1214 organization years and 421 organizations.

The results of the net assets recovery sample are provided in 4.3.1 and 4.3.2. Section 4.3.1 provides results of hazard and survival function and answers whether and when nonprofits bounce back to their original net assets level. Section 4.3.2 provides results of the discrete-time hazard model and AMEs and shows which organizational capacities and abilities are associated with net assets recovery of nonprofits.

Table 4.5 Descriptive Table for Net Assets Sample.

	N	Mean	S.D.	Min	Max
Equity Ratio	1214	1.309	3.770	-16.138	29.163
Surplus	1214	-0.082	0.434	-4.969	0.9012
Revenue Diversification	1214	0.804	0.270	0.008	1
Commercial Revenue	1214	0.470	0.499	0	1
Age	1214	21.075	13.951	4.88	68.95
Size	1214	13.008	1.738	7.923	19.92
Pre-performance	1214	0.145	0.352	0	1
Affected Area	1214	0.142	0.349	0	1
Zip	1214	59069.58	15202.68	36604	71496
Disaster	1214	0.020	0.139	0	1
Healthcare	1214	0.196	0.397	0	1
Mental Health	1214	0.065	0.246	0	1
Legal	1214	0.040	0.197	0	1
Employment	1214	0.032	0.176	0	1
Food	1214	0.024	0.153	0	1
Housing	1214	0.139	0.346	0	1
Human Services	1214	0.484	0.500	0	1

Note. * shows t-test significance for each independent variables and control variables by recovery *** p<0.01. ** p<0.01. *p<0.05

4.3.1 Estimation Sample

The data of the disaster-impacted nonprofits are pooled into an organization-year data set containing 1214 organization years. The original data set includes nonprofit observations from the year 2001 to 2013. The dataset was truncated by removing organization years from 2001 to 2006. The final dataset only includes organization years from the year 2007 to 2013 as this study assumes organizations begin to recover from the year 2017. The disaster occurred in the year 2005, so the year 2004 is used to assess whether a nonprofit is impacted. Therefore, this study assumes nonprofits begin to bounce back to their original service level starting from the year 2007. The net assets from the year 2007 to 2013 were compared to this original level (2004) and a nonprofit is considered recovered when its total net assets bounce back to its original level.

Table 4.2 summarizes the distribution of recovery rates by period for nonprofits in the sample. The rates in the table describe a nonprofits' unadjusted likelihood of recovery in a given period conditional on having not recovered in a previous year, often referred to as the hazard rate. The second row under the net assets recovery section in Table 4.2 shows that of 421 nonprofits in the sample at the beginning of the year 2007 and 97 of them bounced back to their original net assets level by the end of 2007. The third row under the net assets' recovery section shows that the number of nonprofits recovered in the year interval 2008 to 2009 has fallen to 46. The third column under the net assets recovery section of Table 4.2 presents the hazard ratio of each year intervals, which in this case refers to the proportion of nonprofits that have not recovered previously, which then recovered. The results of the second row under the net assets recovery section show that 26.04 % nonprofits recovered from the year 2007 to the year 2008. In the year interval 2008 to 2009, 15.28% of the 324 non-censored nonprofits that have the potential to recover in this period. The chronological pattern of these hazard ratios, which in this study is recovery ratio, describes the baseline hazard function. The hazard ratio of recovery appears to be highest for those nonprofits immediately following the year they enter the recovery period. The hazard ratio declines over the years and rises again in the 2013 to 2014 period, which indicates that nonprofits are most likely to recover immediately following the year they are impacted by the natural disaster. As time goes, the probability for nonprofits to recover declines. 191 nonprofits are still not recovered in the year 2013 to the year 2014. As not all nonprofits recovered before the 2013 to 2014 period, the average time of recovery cannot be calculated. Instead, Similar to the total expense recovery sample, the median recovery time for nonprofits after Hurricane Katrina is around 5 years.

4.3.2 Time Discrete Hazard Model Results

Table 4.3 shows that estimates of time discrete hazard models for total net assets recovery. Table 4.6 shows the average marginal effects (AMEs) of each independent variable on the total net assets recovery at 10, 30, 50, 70, 90 percentiles across the distribution of each independent variable. Of the four independent variables, the revenue diversification index and commercial revenue are statistically significant. The remaining three independent variables- equity ratios and surplus - are not statistically significant. Based on the results of the time-discrete analysis and AMEs in Table 4.3 and Table 4.6, each hypothesis is reviewed.

4.3.2.1 Financial Autonomy

Hypothesis 1 proposes that nonprofits with managers who act intentionally to increase their financial autonomy are more likely to bounce back quickly after being affected by a disaster. In contrast to total expense recovery, Hypothesis 1 is not supported by the estimates of time discrete hazard model when using either equity ratio or surplus as indicators. To be more specific, the effect size of the equity ratio is -0.053, which means that a one percentage point increase in equity ratio leads to a 0.023 decrease in the log odds of total net assets recovery. Though the result is opposite to our expectations, it is not statistically significant. The effect size of the surplus is 0.183, which means that a one percentage point increase in surplus leads to a 0.183 increase in the log odds of total net assets recovery. The surplus is not statistically significant.

The AMEs of equity ratio on net asset recovery and surplus fail to show statistical significance at all levels. The AME of equity ratio at -0.0147 (10 percentile) shows that one unit increase in equity ratio which decreases the likelihood that nonprofits bounce back to its original net assets by 0.006 percentage point on average. This result is not statistically significant. The AME of surplus at -0.029 (10 percentile) shows that one unit increase in surplus which increases the likelihood that nonprofits bounce back to its original net assets by 0.02 percentage point on average. This result is not statistically significant. These findings suggest, contrary to total expense recovery, financial autonomy is not associated with total net assets recovery.

Table 4.6. Margin effect of each independent variable on the net assets' recovery at 10, 30, 50, 70,100 percentiles of each independent variable.

		Equity Ratio		
10%	**30%**	**50%**	**70%**	**90%**
-0.147	**-0.073**	**0.281**	**0.701**	**4.053**
-0.006	-0.006	-0.006	-0.006	-0.005
(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
		Surplus		
10%	**30%**	**50%**	**70%**	**90%**
-0.029	**-0.087**	**-0.013**	**-0.028**	**0.175**
0.020	0.020	0.020	0.020	0.021
(0.026)	(0.027)	(0.028)	(0.029)	(0.030)
		Revenue Diversification		
10%	**30%**	**50%**	**70%**	**90%**
0.311	**0.808**	**0.980**	**0.999**	**1.000**
-0.091	-0.074*	-0.068*	-0.067*	-0.067*
(0.062)	(0.057)	(0.047)	(0.039)	(0.031)
		Commercial Revenue		
-0.0415*				
(0.021)				

Note. The table represents the average marginal effects calculated at the values of each independent variable at 10, 30, 50, 70, 90 percentiles.
Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3.2.2 Revenue Structure

Hypothesis 2a proposes that nonprofits with greater revenue diversification bounce back quicker than nonprofits with less revenue diversification. Hypothesis 2a is not supported by the net asset recovery sample. In contrast to the direction of expected, the coefficient of revenue diversification is negative and statistically significant at the 0.05 level. The effect size of revenue diversification is relatively large (-0.726), which means a one percentage point increase in revenue diversification index is associated with a 0.726 decrease in the log odds of total net assets recovery. Similar to the results of the time-discrete hazard model, the AME of revenue diversification index is statistically significant after the tenth percentile. The AME of revenue diversification index at -0.311 (10 percentile) shows that one unit increase in revenue diversification index which decreases the likelihood that nonprofits bounce back to its original net assets by 0.311 percentage point on average. The effect size decreases with the value of the revenue diversification index increases. This finding shows that nonprofit with more evenly distributed revenue sources are less likely to bounce back to their original net assets level.

The hypothesis 2b proposes that nonprofits with greater commercial revenue bounce back quicker than nonprofits with less commercial revenue. The results do not support the hypothesis 2b as well. Commercial revenue has a negative coefficient and is statistically significant at the 0.05 level. The AME of commercial revenue provides stronger evidence of the negative relationship between the dependence on commercial revenue and net assets recovery. Changing from relying on other revenues to commercial revenue reduces the likelihood of recovery by 4.15 percentage points. This finding suggests that nonprofits with more commercial revenue recovered slower than nonprofits relying on donations.

4.3.2.3 Control Variables

This model includes six control variables. Only the organization size of them is statistically significant. The effect size of organizational size is 0.121, which means one percentage point increase in organization size, the log odds of net assets recovery increase 0.121. It is statistically significant at the 0.01 level. Similar to the total expense recovery sample, this finding suggested that the organization size helps nonprofits recover from the net assets decrease before disasters. Moreover, this finding is consistent with the expectation of this study and suggests that larger nonprofits with more capacity recover quicker from the natural disaster. The organizational age is not statistically significant. The results show that the age of nonprofits is not associated with the recovery of nonprofits. Pre-performance is not statistically significant when using net assets as a dependent variable as well. The finding suggests that the pre-performance of nonprofits is not related to the net assets' recovery. The control variable location means whether nonprofits are located in the most physically affected area is also not statistically significant. Thus, the location of nonprofits does not cast an effect on the net assets' recovery after natural disasters. Subsectors of nonprofits are controlled in this time-discrete hazard model. No coefficient of the services field in this model is statistically significant. The findings show that services fields are not associated with net assets recovery.

4.4 Summary

In summary, for nonprofits that recovered in the seven-year period in the dataset, the median recovery time for this nonprofit is calculated. The results of this study show that the median recovery time for nonprofits of total expense recovery is three years while net assets recovery is five years. Moreover, using total expense as a dependent variable, nearly 40% of the nonprofits recovered in the first year after being affected by Hurricane Katrina. This number drops to approximately 30% when using net assets as the dependent variable. This suggests that the recovery of nonprofits is a long-term process and nonprofits take a longer time to bounce back to its original net assets level than its total expense level. Therefore, nonprofits managers should set up a long-term recovery plan for their organizations. Also, it is also recommended that donors and policymakers provide long term support instead of instant relief to nonprofits.

Table 4.7 shows the summary of hypotheses and results from the total expense sample and net assets sample. The results of the discrete-time hazard model indicated mixed support for hypotheses outlined in Chapter 2. The first hypothesis was mixed supported by the results from the total expense recovery sample and net assets recovery sample. When using total expense recovery as the dependent variable, the equity ratio is statistically significant at the 0.05 level while the surplus is not statistically significant. This finding suggests that a high equity ratio helps recovery in terms of total expense. In contrast, when using net assets recovery as the dependent variable, the results are not statistically significant. This suggests that nonprofits with more financial autonomy may not recover quickly than those with less financial autonomy.

Hypothesis 2a and hypothesis 2b are not supported by using either total expense recovery sample or net assets recovery sample. When using expense recovery as the dependent variable, these results are not statistically significant. This indicates that revenue diversification and depending on commercial revenue do not help nonprofits in total expense recovery. In contrast, results show that reducing revenue diversification and commercial revenue can help net assets recovery. These results imply that total expense recovery and net asset recovery are associated with different organizational abilities and capacities. While a nonprofit with a large financial reserve is more likely to bounce back to its pre-disaster total expense level, it does not help a nonprofit to bounce back to its pre-disaster net assets level. In contrast, utilizing revenue strategies is more useful for net assets recovery but less useful for total expense recovery. Therefore, nonprofit managers should look into building larger reserves to achieve a quick total expense recovery and choose appropriate revenue strategies for a quick recovery in net assets.

Regarding control variables, results also show larger nonprofits recover quicker than smaller nonprofits, regardless of choosing total expense or net assets the dependent variable. This implies that smaller nonprofits are more vulnerable to external changes. The results also show that disaster-related nonprofits recover quicker than all other subsectors that provide community services. Moreover, the results of the total expense variable show that disaster relief nonprofits recover much quicker than human services nonprofits. This finding suggests that managers from human services nonprofits should be ready for long-term recovery. In addition to that, human services nonprofits may need more help during the expense recovery period.

In sum, a nonprofit with larger financial reserves is more likely to bounce back to its before disaster total expense level. However, financial reserves do not help nonprofits to bounce back to the level of their net assets before a disaster. Referring to the revenue strategy that is more useful for nonprofits to bounce back to their net asset's recovery but not very helpful for a bounce back to the total expense.

Table 4.7. Summary of Hypotheses and Results.

Hypothesis	Hypothesized Relationship	Results from Total Expense Recovery Sample	Results from Total Net Assets Recovery
H1 Financial Autonomy use equity ratio as a measure	+	*	Not Sig.
H1 Financial Autonomy use surplus as a measure	+	Not sig.	Not sig.
H2a: Revenue diversification	+	Not sig.	Opposite Direction
H2b: Commercial Revenue	+	Not sig.	Opposite Direction

CHAPTER 5: QUALITATIVE RESULTS

5.1 Introduction

This chapter presents the results of the qualitative interview portion of this dissertation study. These results are from ten interviews with nonprofits located in two counties of North Carolina State who experienced a disaster impact in 2018 related to Hurricane Florence. The interviews served two purposes: 1) explore organizational capacities or abilities (besides financial capacities and abilities that have already been studied in quantitative portion) help nonprofit resilience after being affected by a natural disaster; 2) help interpret findings from the quantitative portion of this dissertation study. The first question of the qualitative analysis is responded to here and the latter question is addressed in Chapter 6. This chapter first describes interview respondents and their nonprofits' characteristics. Following, how those interviewed nonprofits are influenced by Hurricane Florence is presented. Finally, this chapter discusses how the five themes identified in chapter three (e.g. situation awareness; slack resources; adaptive capacity; organizational learning, and organizational culture) are associated with the recovery of these nonprofits.

5.2 Response Rate and Sample Characteristics

5.2.1 Response Rate

This dissertation invited nonprofits in selected service fields (Table 5.5) of two counties in one southeastern state that were greatly impacted by Hurricane Florence. As nonprofits responded to the interview requests, documentation was kept regarding if they accepted or declined the interview. This dissertation used two different formulas to calculate the response (Table 5.1). The first response rate is calculated as the nonprofits that participated in the interview divided by the total nonprofits that meet the selection criteria. This first response rate for the total sample including both counties is 0.14. In other words, 14% of the 81 nonprofits participate in this interview study. The response rate 1 of county A is 0.12. In other words, 12% of the 49 nonprofits participate in this interview study in county A. The response rate 1 of county B is 0.16. In other words, 16 % of the 32 nonprofits participate in this interview study in county B. The second response rate is different from the first response rate in the denominator. The nonprofits that do not have contact information and nonprofits reject interviews because of affiliating to an organization that has already been interviewed and self-identified not according to selection criteria (not affect or not a nonprofit) are excluded. The response rate 2 of this qualitative study is 0.22. In other words, 22% of the 50 (81-13-11-2-5) nonprofits participate in this interview study. The response rate 2 of county A is 0.17. In other words, 17% of the 35 (49-7-2-1-4) nonprofits participate in this interview study. The response rate 2 of county B is 0.33. In other words, 33% of the 15 (32-6-9-1-1) nonprofits participate in this interview study. It is interesting to know that some nonprofits in the interview sample, though they are in the affected region and file 990 forms, do not view themselves as affected or identify themselves as nonprofits. For example, one nonprofit rejected and said "*our county did not have a significant presence in the disaster recovery process in recent years*" Another nonprofit rejected and said: "our nonprofit does not seem to fit the parameters of your study as we are a municipality, not a nonprofit". Given the small sample size and challenges in reaching out to them, only ten interviews are conducted for this dissertation.

Table 5.1. Interview Study Response Rate.

Status	Two Counties	County A	County B
No contact info	13	7	6
No response	33	26	7

Table 5.1. (continued).

Rejected	24	10	14
Accepted	11	6	5
Total	**81**	**49**	**32**
Response Rate 1	**14%**	**12%**	**16%**
Response Rate 2	**22%**	**17%**	**33%**

Table 5.2. Reasons for Rejection.

Reasons for Rejected	Two Counties	County A	County B
Not affect	11	2	9
Not nonprofit	2	1	1
Missing aka Reason not provided	6	3	3
Affiliate to an organization that has already been interviewed	5	4	1
Total	**24**	**10**	**14**

This small-N qualitative interview may be acceptable though from a data saturation perspective. The goal of this qualitative section is to explore the range of opinions or understandings of organizational resilience instead of generalizing hypotheses statements. Thus, the richness of information instead of frequencies of opinions is very important to this qualitative research (Kuzel, 1992). Thus, the sample size of qualitative research is depending on the adequacy of information, so the concept of data saturation is used by most of the qualitative research to determine the sample size. Therefore, I also coded whether my data is saturated in my coding processes. Data saturation is achieved when no new insights or understandings regarding a category of data can be obtained from extra data collection (Strauss & Corbin, 1990). Following Bowen (2008), I use a systematic coding procedure and a constant comparative method to determine whether data is saturated. First, I identified eight categories based on previous literature. For each category, I code from the very first interview. I read the transcript line by line to code the data. Second, for each new interview, I compared with data of the previous interviews and their coding to identify new codes. When new codes cannot be generated from adding interviews, I assumed my data are saturated. For example, three codes are developed of the 10 interviews for the “Staff affected “category. The third code is developed in the fifth interview. Data returned no new codes after the fifth interview and were therefore saturated. To ensure data saturation, I followed Brod, Tesler, and Christensen (2009) and created a data saturation grid, as shown in Table 5.3. All categories returned no new code at the ninth interview. Thus, data-saturated at the ninth interview. Therefore, this small N qualitative analysis should fulfill the purposes of this research.

Table 5.3. Data Saturation Grid.

Themes	Interview Questions	Codes	A	B	C	D	E	F	G	H	I	J
Staff Affected	Staff Affected	Code 1 Personal house damaged /destroyed	Y			Y					Y	Y
		Code 2 Not affected		Y	Y			Y	Y			
		Code 3 Panic/trauma experience					Y					
Property Affected	Property Loss	Code 1 Building damaged		Y	Y	Y						Y
		Code 2 Lost equipment		Y		Y						
		Code 3 Not affected	Y				Y	Y	Y	Y	Y	
Service Affected	Change of Service Needs	Code 1 Clients decreased				Y		Y				
		Code 2 Clients increased							Y	Y	Y	
		Code 3 Shift from mission-related services to disaster response		Y				Y		Y		
		Code 4 Not affected	Y		Y		Y					Y
Situation Awareness	Does your organization have any formal planning processes for hurricanes or other risks?	C1 Formal plan	Y		Y	Y					Y	
		C2 Following other organization's plan					Y	Y				
		C3 No plan		Y					Y	Y		
	Are your employees aware of this formal planning effort?	C1 Staff were aware	Y		Y	Y	Y	Y			Y	Y
		C2 Staff were not aware		Y					Y	Y		
	Does your organization have disaster-related insurance?	C1 Organization had insurance	Y		Y	Y		Y		Y	Y	Y
		C2 Organization did not have insurance		Y			Y		Y			
	What preparations did your organization make for the storm after your organization was informed?	C1 Maintain operation	Y		Y	Y				Y		
		C2 Evacuation									Y	Y
		C3 Safety checks, provide supplies or other needs:		Y				Y				
		C4 Update information about services					Y		Y			

Table 5.3. (continued).

Slack of Resources	Did your organization use slack financial resources to recover?	Code 1 Slack of financial resources				Y						
		C2 No slack financial resources		Y	Y				Y	Y	Y	Y
		C3 NA	Y				Y	Y			Y	
	Did your organization use slack human resources?	C1 Slack human resources									Y	
		C2 No slack human resources		Y					Y	Y		
		C3 NA	Y		Y	Y	Y	Y				Y
Adaptive Capacity	Did your organization develop goals for the recovery? What are your goals?	C1 Satisfying services needs	Y	Y		Y		Y	Y	Y		
		C2 Property recovery		Y								
		C3 No goals			Y		Y				Y	Y
		C4 Learning from experiences				Y				Y		
	Did your organization work closely with other organizations during recovery? How did that contribute to the recovery of the organization?	C1 No	Y		Y		Y					Y
		C2 National nonprofit		Y				Y			Y	
		C3 Government				Y			Y	Y		
		C4 Multiple local organizations							Y	Y		
	Did your organization have a team that worked specifically on recovery after Hurricane Florence?	C1 Organization form a team for the hurricane	Y	Y	Y		Y	Y	Y	Y	Y	Y
		C2 Organization form a team for the hurricane				Y						
Organizational Learning	Did your organization have staff who have professional knowledge about disaster recovery or experience in disaster recovery?	C1 Organization had staff with knowledge	Y	Y	Y	Y	Y					
		C2 No staff with knowledge						Y	Y	Y	Y	Y
	How did the experience from Hurricane Matthew influence your organization's recovery from Hurricane Florence?	C1 No significant impact	Y		Y							
		C2 Improve our ability to cope with Hurricane Florence		Y		Y	Y	Y				
		C3 NA							Y	Y	Y	Y

Table 5.3. (continued).

	If your organization experiences a similar storm in the future, what will your organization do similarly and differently?	C1 Do the same	Y	Y					Y	Y		
		C2 Do something different			Y	Y		Y			Y	Y
Organizational Culture	What is your priority of recovery?	C1 Preparation				Y						
		C2 Safety	Y	Y	Y		Y				Y	
		C3 Maintaining services	Y							Y		
		C4 No						Y	Y			Y
	Anything else should I know?	C1 Preparation	Y			Y						
		C2 NA		Y	Y			Y	Y	Y		Y
		C3 Importance of staff				Y	Y				Y	
		C4 Community					Y					

5.2.2 Interview Respondents and Their Nonprofits Characteristics

This interview study requested nonprofits to select one of their staff to participate in this interview, and participants' information is shown in Table 5.4. The organizational role of respondents ranges from case managers to CEO of nonprofits. Seven out of ten respondents are the CEO of their nonprofits. Among the seven CEOs, three of them are co-founder of the organization. Besides CEOs, the organizational role of respondents of this interview also includes chief strategy office, special project director, and case managers. Following the interview protocol, all respondents discussed their organizational recovery of Hurricane Florence from their own perspectives through the prompts asked about organizational activities and responses. Respondents range in tenure from 5 to 42 years with their organization. Six respondents work in their organizations for five to ten years. Given differences in their gender, age, position, and knowledge, they provide diverse perspectives on organizational resilience.

Table 5.4. Respondents Characteristics.

Organization	Position of Respondents	Tenure of Years
A	CEO	16
B	CEO/co-founder	6
C	CEO	42
D	Chief strategy officer	24
E	Special project director; President of corporate services	7
F	Case manager	6
G	CEO/co-founder	10
H	CEO	5
I	CEO	5
J	CEO/ co-founder	8

Next, the organizational characteristics of the ten interviewed nonprofits are referred to in Table 5.6. Six of these nonprofits from county A and four of them are from county B. According to their information on NCCS core datafiles 2015, these nonprofits are from five subsectors health care, mental health and crisis intervention, food, agriculture, and nutrition, public safety, disaster preparedness & relief and human services (Table 5.5). Compared to subsectors in the interview sample, the two subsectors - crime and legal-related, and housing and shelter - are not covered by these nonprofit respondents. The personnel size of these nonprofits' ranges from 0 to 2,550 paid employees. Some partially rely on volunteers to provide services, and some of them only have paid staff work with them. The annual revenue size of these organizations ranges from $1000 to 280 million.

Table 5.5. Subsectors Distribution across Interview Sample.

Service Fields (NTEE)	All nonprofits	Interview respondents
Health Care (E)	14	2
Mental Health and Crises Intervention (F)	5	2
Crime and Legal-Related (I)	4	0
Employment (J)	0	0
Food, Agriculture, and Nutrition (K)	2	1
Housing and Shelter (L)	4	0
Public Safety, Disaster Preparedness & Relief (M)	27	1
Human Services (P)	25	4
Total	81	10

The financial data of these interviewed nonprofits shows that multiple nonprofits experience financial impact (*total expense drop* or *net asset drop*) after being affected by the hurricane. *Total expense drop* is indicated by the difference in total expense between disaster year and previous year. *Total expense drop* suggests that a nonprofit may provide fewer services in disaster year compared to the previous year. In other words, a nonprofits service provision may be affected by the hurricane. Similarly, net assets drop is indicated by the difference in net assets between disaster year and previous year. The *net assets drop* is associated with a reduction of total assets or an increase in total liability. In a disaster context, *net assets drop* of a nonprofit may be caused by property losses or spending financial reserves on disaster response. As shown in Table 5.5, six of ten interviewed nonprofits experienced financial impact. The disaster caused three of the six nonprofits to experience drops in total expenses, slashing their total expense by 31% to 45% compared to the previous year. Four nonprofits experienced drops in net assets, with reductions ranging from 10% to 36% compared to the previous year. One nonprofit experienced both *total expense* and *net assets drop*, and this nonprofit was the smallest one of all interviewed nonprofits based on both personnel size and revenue size.

Nonprofits experiencing *total expense drop* varies by subsectors, the number of staff, and revenue sizes. For example, nonprofits that experience *total expense drop* are from three different subsectors: disaster relief, human services, and mental health. In contrast, the six nonprofits that do not experience expense decreases are also from four different subsectors: food, human services, mental health, and health. This implies that whether interviewed nonprofits experience expense drop was not associated with their subsector. Additionally, nonprofits experience net assets drop varies in subsectors, the number of staff, and revenue sizes as well. Four out of ten nonprofits experience a decrease in net assets. Three of them are human services nonprofits, and one of them is a health nonprofit. This implied that human services nonprofits might be more vulnerable to *net asset drop*. In terms of revenue size, these four nonprofits include both the largest and smallest respondents. Net assets drop for the largest and the smallest respondents might for different reasons. The respondents from the largest nonprofit mentioned that they use their financial reserves to repair damages of their buildings, while the smallest nonprofit tends to face difficulties with building repairs.

Table 5.6. Organizational Characteristics.

Bolded numbers showed the drop between disaster year and previous year

Nonprofit	County	Subsectors	Paid Staff	Volunteers	Size (Revenue of 2017)	Expense of 2017	Expense of 2018	Net Assets 2017	Net Assets 2018
A	A	Disaster Relief	33	0	**$282,984**	**$255,322**	**$175,615**	$419,303	$436,796
B	A	Human Services	0	2	**$3200**	**$3,258**	**$1929**	**$1556**	**$1000**
C	A	Health	45	30	$800,460	$794,118	$811,155	$475,037	$535,072
D	A	Health	2550	0	$274,739,214	$267,335,646	$289,290,231	**$256,580,755**	**$231,040,576**
E	A	Human Service	13	Many	**$525,978**	$532,597	$535,075	**$6,619**	**$5446**
F	A	Mental Health	7	1	$101,173	$75,975	$101,145	$630,641	$636,683
G	B	Food	1	100	$162,356	$139,681	$152,618	$182,752	$205,427
H	B	Human Services	8	300	$1,652,849	$1,636,845	$1,775,434	$514,547	$982,191
I	B	Mental Health	10	60	$223,512	**$402,126**	**$222,579**	$117,309	$526,273
J	B	Human Services	2	4	$124,437	$117,208	$153,051	**$17,668**	**$12,641**

Note: Information about subsectors, expense, net assets, revenue are obtained from 990 forms of nonprofits. The number of paid staff and volunteers are collected from interviews.

5.3 Hurricane Florence Impact on Nonprofits in the Sample

This dissertation explores what helps nonprofits recover from natural disasters. The starting point to explore recovery is to identify how nonprofits are impacted. Contrary to the quantitative analysis which uses total expense and net assets decrease to identify the impacts, this qualitative analysis provides detailed information on how nonprofits are impacted by a hurricane in 2018. As shown in Table 5.7, nonprofits were impacted by Hurricane Florence in varying ways and magnitudes. Thus, they faced different types of impacts including losing organizational facilities, having staff who cannot go to work, and experiencing changing needs of their target population that was essential for their operation. To be more specific, this dissertation coded these impacts into three categories: impacts on properties, impacts on staff, and impacts on services.

The first category is the impact on the properties. Four of the ten interviewed nonprofits (B, C, D, and J) had buildings that were damaged or destroyed by the hurricane. Among these four nonprofits, two nonprofits (B and D) lost equipment that was important for their operation. The second category is the impact on staff. Six of the interviewed nonprofits (A, D, E, H, I, and J) had staff members whose homes were damaged/destroyed by the hurricane, or they felt panic and had traumatic experiences for hurricanes. These staff members had to satisfy personal needs amidst a professional demand to respond to a disaster. The difficulties of nonprofit personnel increased nonprofits' difficulties to operate. One of the ten interviewed nonprofits (I) perceived staff personally impacts from the hurricane-affected their organization operation and service providing. In summary, how nonprofits' property or staff were affected tend to be associated with the physical location of organizations and the demographic characteristics of their staff, and these impacts sometimes were out of nonprofits' control. They can take action to reduce the impact but cannot avoid them.

The third category of impacts is the change of service needs. The services' needs can be changed in multiple ways as they provide different types of community services and face different target populations. Five interviewed nonprofits (D, F, G, H, and I) clients' numbers increased or decreased significantly. The decreasing number of clients might be associated with a portion of their target population evacuating to other counties. For example, the respondent from organization D said:

> *The demand for our services after this storm was slightly reduced. And we attribute that to people they move away from this area. Because we experience lots of flooding, in particular, people's homes flooded. They have no place to live. So, they must leave town and stay with their other family members. Especially some elderly whose homes are damaged and leave the town.*

The increased number of clients of a nonprofit might be associated with the increasing needs of its mission-related services due to the hurricane. For example, the respondent from organizational G said:

> *We added an additional 100 children to our program after the storm. Our target population remained the same, children from kindergarten - 12th grade, so we implemented our same system. The only hurricane Florence really the only thing it did with the added as hundred extra children to the year after Hurricane Florence. We went from 556 to 650 kids just because they didn't have a home anymore and they were just placed and so but that was really the only change we had after the hurricane and then once they got back home, then they did not need our program anymore.*

Three interviewed nonprofits (B, F, and H) were required by old clients to provide new services that were not in the original mission statement. The respondent from the organization I said:

> *Absolutely, because after the storm, we had a number of our clients who would come in and we're already served who live below the poverty line, who out of work for a number of weeks because of the storm or who had to use their financial resources to evacuate and*

so they were needing help with emergency assistance in the form of rent and utility, emergency food and other supplies.

In reflecting on the responses from these interviews about how their services were impacted, a relationship might exist between the experience of the nonprofit and their mission area. For example, a disaster response organization did not feel their services were impacted by a disaster, implying that since a disaster is their mission focus, responding to a disaster is business as usual. Referring again to the nonprofits who did reject the interview request due to not being impacted by a disaster, three of these were disaster relief nonprofits. The two respondents from health nonprofits expressed that they could not stop providing their services like other organizations during the hurricane because some of their clients need 24 hours care and some of their clients need emergency services. The two respondents that provided residency to their clients must plan on evacuation to safe places. Thus, how nonprofits' services were impacted by a natural disaster may be associated with their mission areas.

In summary, the disaster impacts of nonprofits can be very complex. Nonprofits' services and properties can be both impacted by hurricanes. Five (B, D, H, I, and J) out of ten interviewed nonprofits face multiple impacts from the hurricane, and interesting to note that no two of the nonprofits were impacted in the same ways Nonprofit B had property damaged and new service requests. Nonprofit D had some of their staff personally affected, property damaged, and service needs to be reduced. Nonprofit H and I had staff whose house were damaged and increased the service's needs. Besides, nonprofit H had new service requests. Nonprofit J's property and staff were both influenced by the hurricane. Facing multiple impacts complicates a nonprofit's challenges.

Table 5.7. Impacts of Nonprofits.

Nonprofit	County	Subsectors	Paid Staff	Volunteers	Size (Revenue 2017)	Impact on Property	Impact on Staff	Impact on Services Needs
A	A	Disaster Relief	33	0	$282,984	Not affected	Personal house damaged /destroyed	No change in service needs
B	A	Human Services	0	2	$3200	Lose equipment; buildings were damaged;	Not affected	New services request
C	A	Health	45	30	$800,460	Buildings were damaged;	Not affected	No change in service needs
D	A	Health	2550	0	$274,739,214	Lose equipment; buildings were damaged;	Personal house damaged /destroyed	Reducing service needs
E	A	Human Service	13	Many	$525,978	Not affected;	Panic/trauma	No change in service needs
F	A	Mental Health	7	1	$101,173	Not affected;	Not affected	New services request; Reducing service needs
G	B	Food	1	100	$162,356	Not affected;	Not affected	Increasing services needs
H	B	Human Services	8	300	$1,652,849	Not affected;	Personal house damaged /destroyed	Increasing service needs; new services request
I	B	Mental Health	10	60	$223,512	Not affected;	Personal house damaged /destroyed	Increasing Service Needs
J	B	Human Services	2	4	$124,437	Buildings were damaged;	Personal house damaged /destroyed	No change in service needs

5.4 Organizational Capacities and Abilities of Organizational Resilience

The main purpose of this qualitative analysis is to explore what organizational capacities and abilities that are not included in the quantitative analysis contribute to the recovery of nonprofits. Based on previous literature, five themes of organizational capacities and abilities- situation awareness, slack of resources, adaptive capacities, organizational learning, organizational culture may indicate nonprofit resilience. The information on each theme is collected through several interview questions. The results of each theme are synthesized in sections 5.4.1 to 5.4.5, respectively.

5.4.1Situation Awareness

5.4.1.1 Long-term Situation Awareness

The first theme of organization resilience identified from previous literature is situation awareness. Situation awareness means: "Being aware of what is happening around you and understanding what information means to you now and in the future (Endsley, 2016, p.13)". It can be indicated by recovery priorities, insurance, and employees who are clear about their roles and responsibilities in emergencies. This dissertation divided situation awareness to long term situation awareness and short-term situation awareness. Long-term situation awareness means a nonprofit is aware of external risks for the organization and takes actions to prepare for these external risks. Short-term situation awareness means after a nonprofit acknowledges that a disaster comes soon, whether or to what extent a nonprofit can be aware of the impacts of the disaster and actions that can reduce the negative effects of it.

To learn about the long-term situation awareness, the interview asked the following three questions: 1) Does your organization have any formal planning processes for hurricanes or other risks? 2) Are your employees aware of this formal planning effort? 3) Does your organization have disaster-related insurance? Table 5.8 shows the interview questions that indicate the long-term situation awareness and their codes. The responses for the first question "Do your organization have any formal planning processes for hurricanes or other risks" were code into three categories: *formal plan, following other organizations' plan, no plan*.

The first category is *formal plans*, which are coded as to whether an organization has a written document that shows goals and procedures of disaster response. Four of the nonprofits interviewed (A, C, D, and I) had formal plans for an external adverse event. For example, Organization D was a large health organization and they had a formal plan that can help them continually operate in a disaster context. The respondent from organization D described their preparations as:

> *Yes, we have a formal emergency operation plan where we identify disaster occurrences and how we will prepare for. We put our emergency operation plan into four years. we get our staff here. We made additional registration housing, food and raise for additional fuel, and prepared additional generators and medicines. Our plans require us to be able to operate for 6 to 9 hours. If we cannot get support from anybody. We have emergency generators. We have a kitchen. We have medical gasses. Hospitals are complicated things. We have good plans. We have these emergency operation plans for years and years. After hurricanes, we do debrief to learn from what went well and what did not go well. Routinely, update this emergency operations plan. So, it is not a static document. It is something, we connect ourselves to getting better.*

The second code is *following other organizations' plans.* Two of the organizations, organization E and F, shared offices with other organizations and therefore followed the emergency plans of those organizations. Organization E shared their office with a local government, so they were following the local government's "*severe weather working procedures*". The only thing they did before the disaster was to inform their clients whether the government building closes during the storm. Organization F was housed under a university, so the organization followed the university's emergency plan.

The third code is *no plans*. Three of the nonprofits interviewed (B, G, and H) said that they did not have any plan regarding hurricanes before they were informed that Hurricane Florence will impact their county. Nonprofit B did not have an emergency plan for both Hurricane Matthew (the previous hurricane) and Hurricane Florence, but he expressed his interest to have a plan in the future:

> *Yes, we should have a formal plan, it is written, perhaps you ask that question too soon, but we should have a nonprofit organization contingency and disaster plan. We need that, so everyone would know what to do in case there was a hurricane, and it came twice, hurricane Matthew and then Hurricane Florence, so it forms directions and my volunteers will know what to do in case we have another natural disaster.*

The organizations G and H were in the county that did not experience any hurricanes before Hurricanes Florence in recent years. The respondent from organization H identified no plan as a challenge for the organization and said:

> *No, internally we did not have nearly enough guys to heat up. All the phone calls are coming in. Again. We had to win, and the county would like to give us a couple of their employees to manage those phone calls and allocate the volunteers. So, I think that the biggest challenge was before the storm hit there was no plan in place. And so, we were just trying to learn as we went and that was a challenge.*

Whereas lack of plans did not cause too much trouble to the organization G. They usually collaborate with local schools. So, the organization G contacted schools that they usually work with and let schools inform their enrolled students who need food about the new address of distribution sites during the school closure. For organizations that have plans regardless of formal or informal plans, they all claimed that their employees are aware of the planning efforts.

In sum, not all interviewed nonprofits realized that they may need a plan for external risks. The nonprofits that have plans, whether they choose to have a plan or not, may be associated with the number of staff employed. Four out of five nonprofits that have more than ten staff have formal plans for disaster. Additionally, nonprofits that have formal plans are from three different subsectors: disaster relief, health, and mental health. None of the human services nonprofits that participate in this interview have formal plans for external risks. Finally, having a plan cannot make nonprofits immune to disaster impacts, but it helps them better cope with the impacts brought on by the hurricane.

Table 5.8. Long-term Situation Awareness, Codes, and Prevalence.

Long-term Situation Awareness Themes	Codes	Respondents
Does your organization have any formal planning processes for hurricanes or other risks?	C1 Formal Plan: The disaster preparation/response procedures are written down into a document.	A, C, D, I, and J
	C2 Following Based organization plan: the organization based on another organization such as governments or universities.	E and F
	C3 No Plan: do not have any formal or informal planning for a storm.	B, G, and H
Are your employees aware of this formal planning effort?	C1 Yes	A, C, D, I, J, E, F
	C2 No	B, G, H
Does your organization have disaster-related insurance?	C1 Yes	A, C, D, F, H, I, J
	C2 No	B, E, G

The long-term situation awareness is also indicated by the second interview question “whether an organization has insurance to cover their disaster loss.” Seven nonprofits have general insurance that can cover damages caused by natural disasters. Among these seven nonprofits, three nonprofits (C, D, J) had building or equipment damages. All these three nonprofits use insurance to cover their building repairs. Three out of ten organizations (B, E, and H) did not have insurance that could cover damage from floods. Organization B' s building and equipment are damaged because of the flood. As it does not have insurance, organization B collaborates with a housing organization on repairing, but it is still waiting for the repairs at the interview time which has already been one year after the hurricane. Though organization E did not have any type of insurance, it shared the office with the local government and the local government has insurance that covers building repairs. Organization H did not have any insurance as well, but it did not have any property damages after this hurricane. In summary, most nonprofits in the sample had their insurance or shared insurance with other organizations that can cover their property damages. For nonprofits that did not have insurance, they may have protracted difficulties to recover if they experienced property damages.

5.4.1.2 Short-term Situation Awareness

Organizational resilience is not only associated with long term situation awareness, and it is also related to instant situational awareness. Practically speaking, instant situation awareness is preparations a nonprofit makes after it is informed of an imminent disaster. This study explores how instant situation awareness is associated with organizational resilience by asking the interview questions: What preparations did your organization make for the storm after your organization was informed? As shown in Table 5.9, the preparation of nonprofits after they were informed about Hurricane Florence can be coded in four categories. First, four nonprofits (A, C, D, H) nonprofit A, C, D, and H gathered staff and prepared supplies so that the organization could operate normally during the storm. These nonprofits usually make decisions on who will stay with the organization providing services and what supplies should be prepared for maintaining services. Second, the organization I and J evacuated to other countries. These two nonprofits that provided residency to their clients must think about whether they should evacuate their clients and make the preparations for evacuation. For example, organization J describes how they planned on evacuation as following:

> *Yes. We contacted each other by phone. We talked to decide whether and when we should evacuate or stay. We decided that we can send it to everyone ... We might move everybody to one house, and we tried to prepare food.*

Third, organizations B and F shift their focus from providing missioned related services to make sure the survival of clients. Since they provided services to vulnerable groups or those who live in poverty, some of their clients needed extra help to prepare for the impact of the hurricane. Though these two organizations closed during the hurricane, they had to do a safety check with their clients and provide some necessities to their clients. Fourth, organization E and G simply informed their clients that their nonprofits would close during the hurricane. The preparation for Hurricane Florence usually varied among different nonprofits. Based on this interview, the preparation nonprofits undertook for Hurricane Florence included maintaining operations, as usual, making a decision and preparing for evacuation, conducting safety checks and providing supplies to their clients, and updating information about nonprofit arrangements during the hurricane (do not provide disaster response-related services).

Table 5.9. Instant Situation Awareness, Codes, and Prevalence.

Instant Situation Awareness Themes	Codes	Respondents
What preparations did your organization make for the storm after your organization was informed?	C1 Maintain operation: gather staff and prepare supplies so that organization can operate normally during the storm	A, C, D, H
	C2 Evacuation: the whole organization evacuate to other places	I, J

Table 5.9. (continued).

	C3 Safety checks, provide supplies or other needs: conduct safety checks with clients and provide necessity to clients	B, F
	C4 Update information about services: update information the new operation time and places of the organization	E, G

When a combination of long and instant awareness across singular nonprofits, this dissertation found that having form/informal plans might be helpful for nonprofits that need to operate during the hurricane. Nonprofits A, C, D had to maintain their services during the Hurricane. As they are all aware of this operation requirement and have formal plans on operation in disaster context (long-term), they just follow their plans to prepare after they were informed about the coming hurricane (instant). In contrast, nonprofit H needed to operate during the disaster but without any types of plans. The respondent of nonprofit H expressed that operating without a plan is a great challenge for the organization. The nonprofit H said:

> *No, internally we did not have nearly enough guys to heat up. All the phone calls are coming in. Again, we had to win, and the county would like to give us a couple of their employees to manage those phone calls and allocate the volunteers. So, I think that the biggest challenge was that before the storm hit there was no plan in place. And so, we were just trying to learn as we went and that was a challenge.*

Nonprofits I and J's main task is to determine whether to evacuate to another place. These two nonprofits both have plans on how to make this decision after they are informed. For nonprofits (B, F E, G), their main preparation for Hurricane Florence was safety checks and providing supplies to their clients, they did not feel challenges even without a long-term disaster preparation plan.

5.4.2 Slack of Resources

The level of slack resources is indicated by whether an organization has enough financial margins, vast financial reserves, and adequate human resources. This dissertation explored whether nonprofits had slack financial resources and human services separately. In the interview protocol, this dissertation used “did your organization need extra funds to recover from Hurricane Florence?” and “ if your organization needs extra funds, how did your organization solve this problem” to indicate whether a nonprofit needs and uses financial or human slack resources in their recovery process separately. As shown in Table 5.10, the response of whether a nonprofit has financial slack resources are coded into three categories, which are using slack resources, not using slack resources, and not applicable. Not applicable means the interviewee of a nonprofit did not need more financial resources than usual (without disaster happen) to recover.

The first code is using slack financial resources to recover. Slack resources are a privilege and not accessible to all nonprofits, and only one nonprofit, nonprofit D, had financial reserves and used its financial reserves to recover and then requested for FEMA assistance later. The respondent from nonprofit D (the largest nonprofits in terms of the number of staff and total revenue) said:

> *We did. We take from our reserves before we get reimbursement from the insurance of FEMA. For hurricane Florence, we have 75% reimbursement already and we are still waiting for another 25% reimbursement.*

The second code is not using slack resources to recover. The nonprofits in this category did have disaster impacts, but, without slack resources, they need external help. Five nonprofits (B, C, G, H, J) generated new resources (such as insurance, in-kind or monetary donations) to recover, as they might not have slack resources to spend on recovery. Two nonprofits (C and J) used insurance to recover from their damages which included building and roof damages. One nonprofit, nonprofit B asked help from a housing nonprofit to repair their house. Relying on another organization to recover might be in low efficiency because nonprofit B has not recovered by the time of the interview. The interviewee of nonprofit B complained that:

> *We are still waiting for them [the organization that provides repair services to nonprofit B]to completely repair the ceiling and everything. We are still waiting, and you know it has been two years. We were still waiting to move back to the facility.*

Two nonprofits (G and H) generated new resources through donations to satisfy the increasing needs of their services. Nonprofit G reported generating many donations because of its reputation and strong social capital. When asking about how they generated new donations, the interviewee from nonprofit G said:

> *The community pulled together, and different organizations, either churches or civic groups or individuals, just donated money to us because they knew we were feeding children and they knew that the hurricane was going to make our numbers increase. So, it just came from community support.*

The situation was similar to nonprofit H. They reported benefiting from their reputation and connection with local governments to obtain disaster funding sources. The interviewee from nonprofit H said:

> *Because we were named the single point of contact for the hurricane relief efforts. We had somewhere in the ballpark of $400,000 in donations that we're doing a restricted for disaster relief and so, in the beginning, we used those funds for the more immediate relief need, like the food, the utility, and fund assistance.*

The third code is not applicable due to no disaster impact. As for whether nonprofits needed slack of resources only applied to nonprofits that needed extra financial resources due to property damages or increased needs of services, nonprofits that did not need extra funds were coded as not applicable. Four out of the ten nonprofits' interviewees (A, E, F, I) reported that their nonprofits did not need extra funds during the recovery period.

Following the interview protocol, interviewees were asked if "your organization needed extra volunteers to recover from Hurricane Florence?" and "if your organization needed extra volunteers, how did your organization solve this problem" to indicate if the organization uses slack human resources to recover. Similar to slack financial resources, the answer about the slack human resources was also coded into three categories, which are using slack resources, not using slack resources, and not applicable. Extra human resources were likely to be needed when nonprofits had more clients to serve or staff who cannot work during disasters. Therefore, this question does not apply to six out of ten nonprofits (A, C, D, E, F, and J) that accessed themselves and did not need extra human resources. D, C, and J need extra financial resources to cover their property damages, and they let people outside their organizations do repairs, so that is why they do not need extra human resources.

The remaining four (B, G, H, and I) of the ten nonprofits' interviewees claimed that their nonprofits need more people to recover. These four nonprofits are coded into the first and second categories. The first code is using slack resources, which means nonprofits depend on original staff and volunteers to work extra hours to solve the problem. Only one nonprofit (I) responded that they used slack human resources as part of disaster recovery. The interviewee from the nonprofit I said:

> *We could have more people to help. [how did your organization solve these issues?] We have good people. They worked long hours without extra pay.*

The second code is not using slack human resources due to recruitment. Three nonprofits (B, G, and, H) recruited new volunteers to recover. Two nonprofits (G and H), reporting an increased number of clients requesting services following the disaster, recruited new volunteers to help. These two nonprofits reported recruiting new volunteers quickly because of their strong communities' bonds. For example, the respondent from nonprofit G said:

> *We live in a small town. So, our town only has 2500 people in it, but our county is big. We are in a big county but a very small town. My husband and I have lived here for 22 years. So, a lot of people just know us…They knew what we did. So, they kind of reach out to us and ask how they can help us.*

The respondent from nonprofit H said:

> *We had people from all over the county that they were coming in here. And we had a phone system setup. We are coordinating volunteer efforts to see which released sites need volunteers. Our county really came together. …*

In contrast, nonprofit B did not recruit enough volunteers to help; as a result, it had to reduce its services. The interviewee of nonprofit B said:

> *I do a lot of work myself. Two volunteers help us. And, volunteers come in on Fridays' special event. We cannot afford them every day or every week.*
> *We cannot open five days a week. We had to change our schedule.*
> *We work three times a week after 6 p.m.*

Therefore, for nonprofits that needed extra human resources, strong social capital could be very helpful. Additionally, recruiting volunteers for long-term recovery could be a challenge to nonprofits. The interviewee H said:

> *I think that other organizations are now struggling with volunteers for long-term recovery. Immediately after the disaster, everybody comes to help. I think that died down a little bit. The volunteers became less, and now other organizations that are out there doing the rebuilding and repairs are struggling for volunteers.*

In summary, slack resources are a privilege and not accessible to all nonprofits. Nonprofits with slack resources appeared able to quickly recover from the hurricane, at least more quickly than those without slack resources. For those without slack of resources, these nonprofits needed to generate new resources to do disaster response. Slack financial resources were especially helpful for nonprofits that had property damages, and without slack financial resources, insurance was also helpful for quick recovery from property damages. Without slack of human resources, a higher reputation in a community may also help a nonprofit to generate human resources quickly.

Table 5.10. Slack of Resources and Its Codes.

Slack of Resources	Codes	Respondents
Did your organization use slack financial resources to recover?	C1: Slack financial resources	D
	C2: Other resources	B, C, G, H, J
	C3: NA	A, E, F, I
Did your organization use slack human resources?	C1: Slack of human resources	I
	C2: Other resources	B, G, H,
	C3: NA	A, C, D, E, F, J

5.4.3 Adaptive Capacity

The adaptive capacity is referred to as the capacity and ability of a nonprofit that helps nonprofit bounce back quickly from negative impacts brought by the storm based on resources and preparations they have. Usually, it is associated with organization communication and relationships with other organizations, their soli mentality, the ability of leaders, and governance structure (McManus, 2008). This dissertation used the following three interview prompts to explore the adaptive capacity of nonprofits: 1) Did your organization develop goals for the recovery? What are your goals? 2) Did your organization work closely with other organizations during recovery? How did that contribute to the recovery of the organization? 3) Did your organization have a team that worked specifically on recovery after Hurricane Florence?

Goals of recovery can be coded into four categories: satisfying service needs, property recovery, learning from experience, and no goals. Most nonprofits associated their goals with their impacts (the change of service needs, the staff/property losses) and preparation (plans, insurance). For nonprofits that had service needs changed (B, D, F, G, H, I), five (B, D, F, G, H) out of six of them set up goals as satisfying their service needs. Nonprofit I thought had service needs change, but it did not set up a goal for recovery. The reason might be that it had a plan on evacuation and the plan helped to reduce its impacts; as a result, they were not greatly influenced by the hurricane. The respondent of the nonprofit I said that they did not have a goal- "*No. we evacuate and return after two weeks.* For nonprofits (B, C, D, J) that had property damages, one (B) out of four of them set up goals as property recovery. Organization B did not have insurance or financial reserves that could be used for repairs, so it set property recovery as one of its goals. In contrast, nonprofits C, D, J either used insurance or financial reserves to cover their property damages, so they did not set property recovery as their goals. Moreover, three (B, D, H) out of ten interviewed nonprofits had multiple goals. Organization B had both goals of satisfying service needs and property recovery, as it impacts both on services and properties. Nonprofit D and H were associated with their goals with their impacts, and in the meantime, emphasized the learning aspect of recovery. Nonprofit D included maintaining operation and adjusting their plans after the debriefing. During the interview, the respondent from organization D said:

> *Our first goal is to ensure our operations. ...Secondly, we do this debrief as I described earlier. And then we put plans to correct those things that we can do differently when going forward.*

Nonprofit H learned the importance to have formal planning for a whole county and formed VOAD and set working collectively as its goal. During the interview, the respondent from organization H said:

> *After the storm hit, we realized that we needed as a county to have more formal planning for recovery. So, one of the results of that is our county forms a VOAD, which is a volunteer organization active in disaster. ... Before the next storm comes in, our goal is*

just to make sure that everybody in the county is on the same page and that we all know who is responsible for what.

The findings of nonprofit recovery goals showed that interviewed nonprofits were focused on different aspects of recovery. Moreover, few nonprofits developed comprehensive goals for recovery, and only two nonprofits saw organizational learning as their goal. Though most nonprofits were clear about their recovery goals; organizational learning aspects are ignored by most interviewed nonprofits. And organizational learning is viewed as an important aspect of organizational recovery in previous literature. Though set organizational learning may not be helpful for nonprofits in this disaster, it may enable interviewed nonprofits in a better position in the future.

The collaboration, in the relief and recovery process, is coded into four categories: no collaborations, relying on another nonprofit for recovery, partnership with local governments, and work collectively with multiple local organizations. Whether nonprofits collaborated with other nonprofits might be associated with whether they were impacted. The four nonprofits (A, C, E, G) that did not have any types of collaborations were perfectly overlapped with the four nonprofits that did not experience the change of service needs. On the contrary, nonprofits that were impacted by the hurricane in terms of service needs all had some types of collaboration with other organizations. The different collaboration types might be associated with organizational characteristics, such as size or reputation. Relatively small nonprofits (B, F, G, and I), with staff less than 10 and revenue less than $230,000, relied on another nonprofit for recovery. For example, the respondents from the nonprofit I said:

Yes, we work closely with other organizations such as the united way. As an organization with a small budget, we rely on another organization to recover.

Three organizations (D, H, G) partnered with governments. Organization D and H collaborated with county governments in recovery and these two organizations are the only two organizations with revenue greater than $1 million. These two organizations worked as partners with county governments. Nonprofit G worked with its city hall. Though organization G was not with large revenues, it had a high reputation in their community, and their reputation might be the reason why the city hall chose to partner with them. The respondent from organization G said:

> *We live in a small town. So, our town only has 2500 people in it, but our county is big. We are in a big county but a very small town. My husband and I have lived here for 22 years. So, a lot of people just know us. So, one of the other things is just we have to reach out like that because they knew what we did. So, they kind of reach out to us and ask how they can help us.*

Besides partnering with governments, organization G and H also worked collectively with multiple local organizations on recovery. In summary, interview nonprofits develop partners with different types of organizations including other nonprofits and governments. Besides, nonprofits can collaborate with one organization or multiple organizations at the same time. Types of collaborations that were developed by interviewed nonprofits are associated with their organizational needs and size. Collaboration can help nonprofit recovery in multiple ways including providing resources to repair damaged facilities and working as a partner to provide community services.

For the third prompt that asked whether a nonprofit assigned a team for recovery specifically, only one nonprofit (D) developed a team that worked on recovery specially and all other nonprofits had all their staff members work on recovery. This might be because only nonprofit D had over 2000 staff and other organizations all had less than 50 staff. In summary, whether a nonprofit chooses to form a team to work on recovery may be associated with the staff size of nonprofits. Nonprofits with fewer employees reported having to use all their staff to work on the recovery issue. In order to recover, nonprofits that were impacted by the hurricane may have their staff to work for extra hours or reduce some mission-related services during the recovery period in order to dedicate capacity to the recovery efforts.

Table 5.11. Adaptive Capacity and Its Codes.

Adaptive Capacity	Codes	Respondents
Did your organization develop goals for the recovery? What are your goals?	C1 No goals	C, E, I, J
	C2 Property recovery	B
	C3 Satisfying services needs	A, B, D, F, G, H
	C4 Learning from experiences	D, H
Did your organization work closely with other organizations during recovery? How did that contribute to the recovery of the organization?	C1 No collaborations	A, C, E, J
	C2 Relying on another nonprofit for recovery	B, F, G, I
	C3 Partnership with local governments,	D, G, and H
	C4 Work collectively with multiple local organizations	G, H
Did your organization have a team that worked specifically on recovery after Hurricane Florence?	C1 No	All expect D
	C2 Yes	D

5.4.4 Organization Learning

"Organizational learning is viewed as routine-based, history-dependent, and target-oriented, and organizations are seen as learning by encoding inferences from into routines that guide behaviors" (Levitt and March 1988, p319). Organizations not only learn from direct experience but also learn from the experiences of others. This dissertation uses questions "How did the experience from Hurricane Matthew influence your organization's recovery from Hurricane Florence?" and "If your organization experiences a similar storm in the future, what will your organization do similarly and differently?" to explore whether organizations learn from their past experiences. Also, this dissertation uses the question "Did your organization have staff who have professional knowledge about disaster recovery or experience in disaster recovery?" As knowledge can gain from their staff who have knowledge or skills that an organization does not have previously.

Most interviewees of these nonprofits reported that their organizations learned from their past experiences. First, this dissertation uses "How did the experience from Hurricane Matthew influence your organization's recovery from Hurricane Florence?" to explore whether and how a nonprofit learned from its experience. Six nonprofits (A, B, C, D, E, and F) from county A experienced Hurricane Matthew (two years previous to Hurricane Florence); and four nonprofits from county B did not experience Hurricane Matthew, so these four nonprofits are coded as not applicable. For nonprofits that experienced Hurricane Matthew, some of them reported that they learned from it. Four nonprofits' interviewees (B, D, E, and F) claimed that their organization learned from Hurricane Matthew which helped them to better prepare and recover from Hurricane Florence. For example, the respondent from nonprofit F said:

> *We were not prepared for Hurricane Matthew. So, it took longer to recover. This time for Hurricane Florence, we were more prepared. We have responded this time. We have the staff to provide water and other supplies. Our university made sure clients get anything they needed. They prepared flashlights, batteries, and candles. I think we had a faster turn round to recover other than the first time because we were more prepared this time.*

Both interviewees from nonprofit A and C claimed that the experience from Hurricane Matthew did not cast significant influences on how they prepared and recovered from Hurricane Florence.

This might be because both nonprofits viewed professional emergency rescue as part of their services and had a formal emergency rescue plan for many years. For example, the respondent of nonprofit A said:

> *…We kind of pretty much treat every storm the same as far as preparation, and then our recovery depends on the severity of the damage.*

Additionally, this dissertation uses the question "If your organization experiences a similar storm in the future, what will your organization do similarly and differently?" to further explore whether nonprofits learned from Hurricane Florence. Four out of ten nonprofits' interviewees (A, B, F, and G) said that their organizations will do the same in the future. All other nonprofits interviewees said that they will do something different in the next disaster. For example, the interviewee from nonprofit J said:

> *I think that we will still get together and decide whether to evacuate or stay. I think that we will be a little bit more prepared in what to pack when we do evacuation next time.*

In addition to learning from past experiences, a nonprofit could obtain knowledge and information on disaster management through hiring staff who had professional knowledge and experience before they came to the nonprofit. Six out of ten nonprofits had staff with professional knowledge or experience in disaster recovery. Nonprofits might benefit from staff who had professional knowledge of disaster recovery. For example, the interviewee from nonprofit B said:

> *Yes, she is our grant writer. She came from Florida. She is an expert. She is good at computers and everything else. She helped us apply for assistance to repair our facility.*

In summary, although only two nonprofits explicitly mentioned organizational learning as part of their goal, it was interesting that even for those that were not intentionally doing it – they were learning from past experience. And they reported that this lived experience helped to guide future action. Additionally, nonprofits benefited from their staff who had professional knowledge or experiences on disaster relief and response.

Table 5.12. Organizational Learning and Its codes.

Organization Learning	Codes	Respondents
How did the experience from Hurricane Matthew influence your organization's recovery from Hurricane Florence?	C1 No significant impact	A, C
	C2 Improve our ability to cope with Hurricane Florence	B, D, E, F
	C3 Not Applicable	G, H, I, J
If your organization experiences a similar storm in the future, what will your organization do similarly and differently?	C1 Do the same	A, B, F, G
	C2 Do something different	C, D, E, H, I, J
Did your organization have staff who have professional knowledge about disaster recovery or experience in disaster recovery?	C1 Yes	A, B, C, D, E
	C2 No	F, G, I, J, H

5.4.5 Organizational Culture

Organizational Culture is referred to as shared values or philosophy among the staff of an organization that guides its behavior in the recovery process. This dissertation uses interview questions "what is your organization's priority of recovery?" to identify the most valued philosophy or behavior about recovery from the interviewees' perspectives. Besides, many respondents expressed their opinions on the most valued philosophy or behavior about recovery when answering the interview question "anything else should I know?".

Referring to priority on nonprofit recovery, interviewees of different nonprofits have different opinions on it. The recovery priority of interviewed nonprofits can be coded into four categories (as shown in Table 5.13): preparation, safety, maintaining services, no priority. First, one (D) of ten nonprofits believed the priority of recovery is preparation. The interviewee of nonprofit D emphasized the importance of having a plan and said:

> *Being prepared as possible as we could and operating our emergency plan.*

Second, three nonprofits (A, B, and C) believed the priority of recovery is safety. For example, nonprofit A said:

> *Our number one is always safety, and after that, it's a matter of getting restored services, such as water, electricity, and communications and getting the trees cleared from the roadway; So, utility companies can get in and start doing their work.*

Third, two nonprofits (A, H)' recovery priority is maintaining services. For example, the respondent from nonprofit H said:

> *The main priority was ensuring that all of our backpack kids continued to receive food while school was out. Yes, the families knew where to go to get the food while the school was closed.*

Organizational culture has also been mentioned when some nonprofits' interviewees answered the last question "Anything else should I know?" I coded the answers to the questions related to organizational culture into four categories: the importance of preparation, the importance of its staff, community support, and not applicable. Two of ten nonprofits (A and D) emphasized the importance of preparation. For example, nonprofit A said:

> *I mean all you can do is prepare for the worst. Prepare for the worst-case scenario, and then use the resources you have on hand. It starts from there.*

Some nonprofits (D and E) value the importance of its staff. For example, nonprofit D said:

> *The key takes away involved with a good cross-section of your employees. …The Grassroots team is the ones that see things that I may not see, and our CEO may not see a question. … We do not see questions about Flashlight batteries…. responding to the needs of our employees. We are labor-intensive. We cannot run this organization without wonderful people.*

The nonprofit I also emphasized the importance of staff and said:

> *As a small budget organization, we have good people, they give back to the community.*

One interview nonprofit (E) viewed community support as a culture that helps them to recover. For example, the interviewee from nonprofit E said:

> *Another part I think is important too is culture. I come from and live in Maryland. I work for County A, but it is very different when a hurricane is coming because you saw that as a community that was very strong within county A. We do appreciate people working together.*

In summary, most interviewed nonprofits set priority to the recovery. The priorities of recovery mentioned by the interviewed nonprofits were preparation, safety, and maintaining services. According to the report of interviewed nonprofits, the organizational culture helped nonprofits recover from disasters including good preparation, loyal staff, and the collective community.

Table 5.13. Organizational Culture and Its codes.

Organizational Culture	Codes	Respondents
What is your organization's priority for recovery?	C1 Preparation	D
	C2 Safety	A, B, C
	C3 Maintaining Services	A, H
	C4 None	F, G
Anything else should I know?	C1 Preparation	A, D
	C2 NA	B, C
	C3 Importance of staff	D, E
	C4 Community	E

5.5 Recovery Paths

Previous sections of this chapter explored how interviewed nonprofits were impacted by the hurricane and their capacities and abilities were associated with recovery. But not all interviewed nonprofits were recovered from the hurricane at the time of the interviews. Among the ten interviewed nonprofits, eight nonprofits besides B and H reported that they had already recovered from the hurricane at the time of the interview (around one and a half years after the hurricane). Among the eight recovered nonprofits, nonprofits A and E were not impacted on the organizational level and only had staff personally impacted by the hurricane. As this dissertation focused on what helps nonprofit recover from disaster, nonprofits (B and H) that were not recovered and nonprofits (A and E) that reported they did not experience any impact on the organizational level, though their staff was personally impacted, were not included in the following discussion. As shown in Table 5.14, five recovery paths are identified. As different impacts call for different responses. The six nonprofits are first grouped by their impacts. Then these nonprofits are grouped by their abilities and capacities as nonprofits that experienced the same impacts were different in capacities and abilities.

Table 5.14. Recovery Paths for Different Impacts.

Impacts from Disaster (Nonprofits)	Recovery paths	Recovered Nonprofits
Property (C and J)	Situation Awareness: Insurance	C and J
Service (F, G)	Situation Awareness: No Slack of Resources: No Adaptive Capacity: Clear goals Adaptive Capacity: Collaborations with multiple organizations including governments Organizational Learning: Related professional knowledge Organizational Learning: Experience	G
	No recovery path: Reducing service needs; do not work on this issue	F
Property and Services (D)	Slack of Resources: Financial Reserves No recovery path: Reducing service needs; do not work on this issue	D
Staff and Services (I)	Slack human resources: Having unimpacted staff to work long hours Situation Awareness: Formal plans Slack of Resources: Financial reserves and many staff and volunteers Adaptive Capacity: Collaboration	I

Two recovery paths for property damages are identified from these interviews, and these two paths were used by three nonprofits (C, D, and J). To be more specific, two nonprofits (C and J) among the three nonprofits that experienced property impact used insurance to cover its building damages. Insurance is a signal of situational awareness as nonprofits made these arrangements in non-disaster times, thus, this path was very helpful for nonprofits that had situation awareness of natural disasters. The second path was used by the nonprofit (D) that had slack financial resources. Nonprofit D used its financial reserves to cover damage suffered by its physical property. While this path was helpful to large nonprofits with financial reserves, a smaller organization might be challenged to follow this course. In contrast, one nonprofit (B) also experienced an impact on properties but failed to recover at the time of the interview because it did not have insurance or financial reserves. The nonprofit B applied for new grants and collaborated with a professional institution to repair its facilities, but it did not recover one year and a half after the hurricane. This implies that the absence of insurance and slack financial resources may cause nonprofits to fail to recover from property loss.

One recovery path for reducing the organizational impact that was brought by losing staff is identified. Nonprofit I reported that having employees cannot work during the disaster recovery period increased their challenges in operation. Without slack resources, the solution for the nonprofit I was to let staff work for longer hours without pay. The interviewee from the nonprofit I said: "*We have good people. They work for longer hours without extra pay.*" The recovery path was for the interviewed nonprofit that lack of staff is having staff willing to work for longer hours. While this approach tests the limits of the donative labor hypothesis, this may not be a strategic path for recovery since it relies on the good will of staff who may also be suffering their own personal disaster impact.

The recovery for nonprofits (D, F, G, and I) that had service impacted was more complex. Nonprofits (D and F) had a target population reduction given evacuation or what reason. A reduction in target populations means there will be less demand for services. The good thing is that the resources and attention of these nonprofits were freed up to focus on recovery, but it also brings challenges as well, such as earned revenue decreasing and failing to meet the service number required by grants. The negative side of target population reduction is hard to avoid. For nonprofits G and I with increasing client numbers and new services requests, they had more workloads or needed more funds. Two recovery paths were identified. The first recovery path was identified from nonprofit I. It had a preparation plan before a disaster and had resources to implement the plan. The second recovery path was used by nonprofits that did not have preparation plans and slack of resources. In this situation, adaptive capacities among the five themes were more helpful for the interviewed nonprofits. The representative of this recovery path was nonprofit G. Both used new donations from the community instead of slack resources to provide extra services. They had clear goals of recovery and collaborated with multiple local organizations including local governments.

In summary, the disaster impacts on nonprofit are complex and nonprofits are different in size, age, resources, knowledge as well, thus, there is no single good recovery path for all types of impacts and nonprofits. Slack of resources, insurance, connections, and staff capacity can help a nonprofit recover from property damages, but a different recovery path is associated with different efforts and efficiency. Slack of human resources can help nonprofits that have staff cannot work due to being personally impacted by the hurricane. Therefore, nonprofits can choose recovery paths that fit their organization. Situation awareness, preparation, abilities to generate new resources, and organizational learning can help nonprofits recover from impacts on their services. All these recovery paths for the hurricane are gathered from interviews of these ten nonprofits, whether these recovery paths can be adapted to a large population or other cases that need to be tested in future studies.

CHAPTER 6: DISCUSSIONS AND CONCLUSIONS

6.1 Introduction

Nonprofits operate in an ever-changing environment. External shocks such as natural disasters, terrorist attacks, pandemic disease, economic recessions and so on are often unforeseen, unpredictable, and may infringe upon a nonprofit's capacity to both generate resources and maintain its mission-related operations. For example, Auer (2006) surveyed nonprofits in Hurricane Katrina and Rita-affected areas in Louisiana four months after the storm, and 95% of the nonprofits reported being negatively affected by the storms. The same survey showed that over half were not providing services and 27% nonprofits only provided limited services in some of the areas hardest hit by Hurricane Katrina. Similar to Hurricane Katrina, other disasters influence nonprofits adversely as well. Though nonprofits themselves were in worse situations after being affected by natural disasters, many nonprofits as the primary service providers of communities get involved in disaster response naturally. Clients served by nonprofits before the disaster, if they remained in the area, have the same needs and sometimes even have more significant needs after the disaster (Pipa, 2006). Therefore, being resilient becomes essential to the nonprofit sector.

Our understanding of organizational resilience in a nonprofit context is limited though as some research has studied concepts similar to organizational resilience but has not investigated nonprofit resilience outright. For example, Searing (2018) studied whether organizational characteristics and financial ratios that were used to diagnose nonprofit financial vulnerability can predict the recovery of financially distressed organizations. Lin and Wang (2016) examined how fundraising-related, financial strategies and organizational characteristics influenced the growth of revenue and expense in the Great Recession using a logistic regression model.

Besides, most studies related to nonprofit resilience were conducted in an economic downturn context. However, the term "nonprofit resilience" has not been used in this research and what helps nonprofits recover from a natural disaster is less understood. Thus, this study explores organizational resilience, which in this dissertation is defined as the capacity and ability of nonprofits to bounce back to their performance level before the adverse event after being affected by an adverse event (Meyer, 1982), in a disaster context. To be more specific, this dissertation explores the following two research questions 1) Whether and when nonprofits bounce back to their original performance level after a natural disaster's impact? 2) What organizational abilities and capacities equip nonprofit resilience?

This study contributes to nonprofit research in several ways. First, it contributes to nonprofit research by bridging business resilience research and nonprofit resilience-related research and exploring nonprofit recovery from external shocks in a new context "natural disaster". Second, this enriches the financial health literature on nonprofits by exploring whether factors that cause poor financial health of nonprofits also affect nonprofit resilience. Finally, this study also holds implications for practitioners. Being able to understand the average time required to bounce back under different conditions should aid in strategic planning by nonprofits. Nonprofit managers can gain insights useful for developing strategies to make better preparations before disasters and navigating resources to recover from disasters. Donors and policymakers will also gain a clearer expectation of the rapidity of bounce back post-disaster but also use this information to support nonprofits to recover from the disasters. The following sections first summarized research questions and approach briefly, and then discussed the results, limitations, and contribution of this discussion, and finally showed the implications for future research.

6.2 Summary of Literature Review and Hypotheses

This dissertation reviewed the literature of organizational resilience in both the business and nonprofit sector and disaster relief and response. Based on the literature review, this dissertation identified three theories useful for investigating nonprofit resilience: resource dependence, modern portfolio, and organizational learning theories. The following part of this section lists the key findings of the literature review and hypotheses developed for this study.

Organizational resilience research in the business sector is conducted in multiple specific contexts such as external disasters or industrial incidents, and some research focused on building a general model that can be used by different types of disasters. The key findings of these research showed that organizational characteristics (size and type) (S. E. Chang & Falit-Baiamonte, 2002; Kroll, Landis, Shen, & Stryker, 1991), slack of resources (Gittell et al., 2006; Meyer, 1982), organization strategies (Meyer, 1982), organization culture (Kendra & Wachtendorf, 2003), staff capacity (Kendra & Wachtendorf, 2003), contextual factors (exposure/neighborhood characteristics) (Kroll et al., 1991), situation awareness (S. McManus et al., 2008) and so on contribute to the recovery of organizations. Contrary to organizational resilience research in the business sector, organizational resilience research in the nonprofit sector is usually conducted in economic downturn settings. The key findings of these research showed that fundraising strategies (Geller et al., 2010; Joseph, 2011; Lin & Wang, 2016; Park & Mosley, 2017), financial capacity (Lin & Wang, 2016), size (Lin & Wang, 2016), subsector (Geller et al., 2010; Joseph, 2011; Lin & Wang, 2016) are associated with recovery of nonprofits. This dissertation, based on the literature reviewed and resources dependence theory, modern portfolio theory, and organizational learning theory developed Hypotheses that were tested in the quantitative analysis shown in Table 6.1.

Table 6.1. Hypothesis and Theories.

Hypotheses	Theories
H1: Nonprofits with managers who act intentionally to increase their financial autonomy are more likely to bounce back quickly after being affected by a disaster.	Resources Dependence Theory
H2a: Nonprofits with greater revenue diversification bounce back quicker than nonprofits with less revenue diversification.	Modern Portfolio Theory
H2b: Nonprofits with greater commercial revenue bounce back quicker than nonprofits with less commercial revenue.	Modern Portfolio Theory

6.3 Summary of Research Approach

This dissertation study applied a mixed-method design to explore whether and when nonprofits recover after a significant disaster and what helps them to recover. For quantitative analysis, this dissertation used Hurricane Katrina as the context for exploring nonprofit organizational resilience and relied upon the tax return information of nonprofits using IRS Form 990 obtained from NCCS (National Center for Charitable Statistics) core files. Since it may take years for nonprofits to recover from Hurricane Katrina (2005), a panel dataset that ranged from 2001 to 2013 was developed. The final data set included over 8000 organization years. A time-discrete hazard model was used to explore organizational capacities and abilities that contributed to nonprofit resilience. The nonprofit performance was a proxy to organizational recovery, which was measured as the change of the total expense and net assets. The independent variables included financial autonomy, revenue diversification, and commercial revenue. Control variables were organizational characteristics and environmental factors, such as age, size, subsector, and location.

For qualitative studies, ten interviews were conducted to explore organizational capacities and abilities that contributed to organizational recovery but were not captured by quantitative analysis. The qualitative analysis used Hurricane Florence instead of Hurricane Karina as the case because Hurricane Florence is a more recent major tropical storm that affected coastal areas in North Carolina in 2018. Thus, nonprofits that were affected by the storm were still in recovery periods at the time of data collection, which helped to obtain timely and accurate information on organizational resilience. The interview protocol was designed to gather information on nonprofit recovery from five themes, which are situation awareness, slack resources, adaptive capacities, organizational learning, and organizational culture. Situation awareness means: "Being aware of what is happening around you and understanding what information means to you now and in the future" (Endsley, 2016, p. 13). The level of slack resources is indicated by whether an organization has enough financial margins, vast financial reserves, and adequate human resources. The adaptive capacity is referred to as the capacity and ability of a nonprofit that helps nonprofits bounce back quickly from negative impacts brought by the storm based on resources and preparations they have (S. T. McManus, 2008). Organizational learning is a process that an organization retains and transfers its knowledge. Knowledge is referred to as knowledge that is associated with disaster response. Organizational culture is referred to as shared values or philosophy among the staff of an organization that guides its behavior in the recovery process (BusinessDictionary, 2020).

6.4 Quantitative Results and Discussion

The time-discrete hazard model for the total expense recovery suggests that financial autonomy was positively associated with the total expense recovery when using equity ratio as an indicator. This means nonprofits with a higher equity ratio, can convert their equity to cash that can spend on disaster relief or programs. The results of the time-discrete model did not support the impacts of pre-disaster surplus (in 2004) on total expense as previous literature suggested. The previous literature suggested that organizations with more cash on hands can better cope with external risks as they can spend their cash on operations and programs immediately. The reason for this might be that most nonprofits in the sample had a negative or small surplus (as it ranges from -4.969 to 0.901 with a mean of 1.309). These surpluses were not sufficient for nonprofits to spend on their operations or programs after suffering from a disaster impact, so having little or no surplus may not help nonprofits to bounce back to their total expense level.

Moreover, the time-discrete hazard model for the total expense recovery suggests that the revenue structure may not be associated with the total expense recovery. Nonprofits with more evenly distributed revenues across donations, earnings, or investments did not have an advantage over nonprofits that relied on a single revenue source in bouncing back to their original total expense level. Previous studies yielded complex results of revenue diversification. Some studies claimed that revenue diversification makes nonprofits more flexible in their finances and therefore able to reduce their vulnerability to internal uncertainties and external risks (D. A. Carroll & Stater, 2008; Karen A Froelich, 1999). Other studies claimed that revenue concentration increases nonprofits' efficiency by decreasing their administrative cost and fundraising expense (Frumkin & Keating, 2011; Wicker & Breuer, 2013). In contrast, this dissertation found revenue diversification may not be helpful for nonprofit recovery in a natural disaster context. More discussion about revenue diversification and nonprofit financial performance shows in the following sections. Besides, nonprofit relying on commercial revenue did not show an advantage in total expense recovery compared to nonprofits relying on other types of revenues. This finding suggests that the total expense recovery may not be associated with revenue strategies of nonprofits.

Third, the finding of the total expense recovery sample showed that large nonprofits bounced back quicker than smaller nonprofits. This result is consistent with the expectation that larger nonprofits have more resources to cope with adverse conditions. Finally, the results suggested that the service field was also associated with total expense recovery. To be more specific, disaster-related nonprofits recovered quicker than human service nonprofits that provided community services. The quick recovery of disaster-related nonprofits might be associated with the surge of donations after the natural disaster.

The findings of the net assets' recovery sample diverged from those of total expense recovery in several ways. First, in contrast to total expense recovery, the results of net assets recovery showed that financial autonomy may not help nonprofits to recover their net assets. This finding indicates that nonprofits that had more pre-disaster financial reserves may not recover quicker than those with fewer financial reserves in their net assets. To be more specific, the equity ratio was not associated with the net assets' recovery of nonprofits. Equity indicates a nonprofit's liquidity and capacity to borrow from the capital market. Thus, the finding of equity ratio indicates that nonprofits with higher liquidity and capacity to borrow from the capital market may not recover quicker compared to others. It is interesting that, contrary to net assets recovery, equity ratio can assist total expense recovery. Two reasons might be associated with this divergence. First, most nonprofits do not have a large number of funds that can spend on their services and repair their properties at the same time, so they may set maintaining operation and programs as their priority (total expense recovery) and put repairing or building their loss properties as secondary (net assets recovery). Second, a large portion of equity for many nonprofits is restricted equity, and restricted equity is only allowed to be used in programmatic spending. Therefore, donors and policymakers may consider providing donations or funds that help nonprofit repair or rebuilding their properties. For the surplus, similar to the results of total expense recovery, it does not help total net assets recovery. As mentioned previously, nonprofits in the sample may not have enough surpluses to spend on recovery.

Second, contrary to the total expense recovery sample, the findings of net assets recovery showed that revenue diversification and dependence on commercial revenue were negatively associated with net assets recovery. Inconsistent with the predicted direction of hypothesis 2a (nonprofits with greater revenue diversification bounce back quicker than others), reducing revenue diversification can help net assets recover. The reason might be that higher administrative expenses are required to manage diverse revenue streams, and these higher expenses can reduce nonprofit efficiency for net assets recovery. Additionally, nonprofits that depend on commercial revenue recovered slower than nonprofits that rely on other types of revenues. One potential reason might be that nonprofits that rely on donations are more practiced in donor relations so are able to leverage those relationships and adeptly implement donor appeals following a disaster. These findings showed that nonprofits need to be extremely cautious when considering transferring revenue strategies, such as diversifying revenue streams or increasing commercial revenue, which is useful in normal - non-disaster conditions, and these revenue strategies may not be useful or even harmful to nonprofits in a disaster recovery context.

The results in this study revealed that total expense recovery is associated with equity ratio, size, and subsector. On the other hand, net asset recovery is associated with revenue diversification, commercial revenue, and size. Different dependent variables used to model nonprofit recovery have vastly different relationships with predictors. Thus, nonprofit recovery should be examined using multiple financial indicators (dependent variables) to provide a full picture of the recovery mechanism. This is consistent with previous literature. Searing (2018) explored nonprofit recovery using two financial indicators, insolvency, and financial disruption. She found that recovery from insolvency is negatively associated with surpluses, while financial disruption is positively associated with surpluses. Similarly, this also implies that different financial indicators of recovery are associated with different organizational abilities and capacities.

While a nonprofit with a large amount of equity (liquidity) is more likely to bounce back to its pre-disaster total expense level, it may not help a nonprofit to bounce back to its pre-disaster net assets level. In contrast, utilizing revenue strategies is more useful for net assets recovery but less useful for total expense recovery. Therefore, nonprofit managers should consider building larger pre-disaster reserves to achieve a quicker recovery in service provision and may consider trimming revenue streams to essential ones and reducing dependence on commercial revenue for a quick recovery in net assets. Additionally, in terms of total expense recovery, disaster-related nonprofits recover quicker than human service nonprofits. Thus, private donors and policymakers may consider providing more support to human services nonprofits as they provide important community services. Unlike total expense recovery, subsectors may not be associated with net assets recovery. Finally, the finding of the quantitative analysis showed that larger nonprofits recovered quicker than smaller nonprofits, regardless of choosing total expense or net assets as the dependent variable. This implies that smaller nonprofits are more vulnerable to external changes such as a disaster. Therefore, managers of small nonprofits should be better prepared for external risks and make long term recovery plans.

Private donors and policymakers should also provide more support to smaller nonprofits in the form of information, knowledge, funds, and volunteers.

6.5 Qualitative Results and Discussion

This dissertation interviewed ten nonprofits in one southern eastern state. The ten interviewed nonprofits were influenced by Hurricane Florence in varying ways and magnitudes. Some nonprofits had facilities or equipment damaged; some nonprofits had their staff personally affected that may impact their work in nonprofits. Moreover, nonprofits' service may also be affected. Some nonprofits had more clients looking for services; some nonprofits changed their services' attention from providing mission-oriented services to disaster response, and some nonprofits experienced target population reduction.

Multiple nonprofits' capacities and abilities were associated with recovery from these impacts. Based on previous literature, the capacities and abilities associated with nonprofit resilience were classified into five themes- situation awareness, slack of resources, adaptive capacities, organizational learning, organizational culture. To be more specific, in terms of situation awareness, some nonprofits have already realized that they had risks of experiencing hurricanes or other types of disasters, so they had documented plans for hurricanes before the occurrence of Hurricane Florence. Larger nonprofits were more likely to have plans and having a plan cannot make nonprofits avoid all impacts from disasters, but it helps them better cope with the impacts brought by the hurricane. Whether nonprofits had insurance also reflected nonprofits' awareness of long-term risks of organizations. Nonprofits with insurance in this sample can quickly recover from property damages compared to others. After nonprofits were informed about a coming hurricane. Nonprofit preparations for the hurricane included 1) maintaining operation, 2) making decisions and preparing for evacuation, 3) doing safety checks and providing supplies to their clients, and 4) simply updating information about nonprofit arrangements during the hurricane (do not provide disaster response-related services). These findings imply that having a long-term plan may be more helpful to nonprofits that need to maintain operation and make decisions on evacuations.

According to the interviewees, slack resources appear to be a privilege and not accessible to all nonprofits. Nonprofits with slack resources can quickly recover from the hurricane. Without slack of resources, nonprofits need to generate new resources to do disaster response. Slack financial resources were especially helpful for nonprofits that had property damages, and for those nonprofits without slack financial resources, insurance was also helpful for recovering from property damages. For those nonprofits reporting they did not have slack human resources, a higher reputation in a community can also help a nonprofit to generate human resources quickly.

Besides situation awareness and slack of resources, interviewed nonprofits were different in their abilities to adapt to Hurricane Florence. Interviewed nonprofits' abilities to adapt to the hurricane were reflected by their abilities to set up goals, develop collaboration, and utilize their personnel. In terms of goals, most interviewed nonprofits developed their goals based on their impacts and needs. Some interview nonprofits also developed their goals on learning from their failure and success, which might be helpful for nonprofits to cope with similar disasters in the future. In terms of collaborations, interviewed nonprofits had different needs and capacities, which led them to develop partnerships with different types of organizations and with different purposes. The collaboration was utilized by interviewed nonprofits in multiple ways including obtaining resources to repair damaged facilities and working as a partner to meet the needs of services. Besides, the ability of interviewed nonprofits to develop collaborations were associated with their size and reputation. Therefore, nonprofit managers should consider choosing their partners strategically based on their needs and capacities. In terms of utilization of personnel, though previous literature (S. McManus et al., 2008) found that having teamwork on recovery specifically is helpful for organizational resilience, assigning a team to work on recovery might be challenging for many nonprofits. Most interviewed nonprofits reported that they did not develop a team to work on disaster response, because most interviewed nonprofits were small in personnel size and could not build a team for recovery. Most interviewed nonprofits had to let all their staff participate in the recovery. Therefore, nonprofits with limited capacity in staff may consider dedicating staff attention to the disaster response instead of providing mission-related services even if they are not traditional disaster response nonprofit.

Interviewed nonprofits reported that their recovery benefited from their staff who had professional knowledge or experiences on disaster recovery and their own experience. This confirmed statement of S. McManus et al. (2008) and Vogus and Sutcliffe (2007) that organizational learning is helpful for organizational resilience. Thus, nonprofit managers need to pay attention to retain and transfer information and knowledge and value their staff who had professional knowledge or experiences during the recovery period. Additionally, interviewed nonprofits were divergent in their culture. The most valued aspects of recovery mentioned by nonprofits including preparation, staff, safety, serving their mission. More research needs to be done to explore how organizational culture is associated with organizational resilience.

The disaster impacts on nonprofit are complex and nonprofits are different in abilities and capacities of resilience. Thus, there is no single good recovery path for all types of impacts and nonprofits. Multiple recovery paths were identified from recovered nonprofits. Using either slack of financial resources or insurance are two recovery paths for nonprofits that experienced property damages. This implies that quick recovery from property damages is more associated with preparation (situation awareness) and size (slack resources). In contrast, recovery from service is more complex. Besides preparation and slack resources, adaptive ability, and organizational learning are important to recovery as well. Some nonprofits with higher adaptive ability can quickly recover from a disaster without preparation and slack resources. Thus, nonprofit managers should make preparations for disasters in normal conditions, and after being affected by disasters, nonprofits managers need to strategically adapt to the new situation through developing goals, partnerships, and learning from past experiences or staff with knowledge of disasters.

6.6 Comparison between Qualitative and Quantitative Results

The qualitative analysis served two purposes: 1) explore organizational capacities or abilities (besides financial capacities and abilities that have already been studied in quantitative portion) help nonprofit resilience after being affected by a natural disaster; and 2) help interpret findings from the quantitative portion of this dissertation study. The section primarily addresses the second purpose of the qualitative analysis, providing evidence and interpretation for some results of the quantitative analysis. First, the quantitative results showed that commercial nonprofits recovered slower than other types of nonprofits. The qualitative analysis showed that donations were very helpful for interviewed nonprofits to recover from disaster impacts. This implies that nonprofits traditionally relied on donations may have advantages over other types of nonprofits in disaster recovery; as these nonprofits may have setups, such as professional grant writers and large donor pools, enable them to generate donations more quickly than other types of nonprofits.

Moreover, the quantitative results showed that organizational size was positively correlated with organizational recovery. The results of the qualitative analysis were consistent with quantitative analysis. In the qualitative analysis, the largest interviewed nonprofit (D) had large financial reserves that helped it repair their damaged properties; and it had formal plans for an emergency operation, which helps it reduce impacts from the disaster and maintain its service operation. In contrast, the smallest interviewed nonprofit (B) face many challenges in their recovery processes. For example, this nonprofit was unable to recruit enough volunteers, so it had to reduce its services, and since it did not have insurance or slack financial resources to recover its property, it had to generate new resources and wait for financial or in-kind assistance for their property recovery.

Finally, the quantitative results showed that disaster relief organizations bounced back quicker than human services organizations in total expense but not in net assets. The qualitative analysis provided some evidence of these results. Total expense is a proxy of nonprofit performance in program provision. According to the results of interviews, the services of disaster relief nonprofits were less likely to be affected by natural disasters compared to human services nonprofits. The reason might be that disaster relief organizations tend to have detailed and well-documented emergency plans and most of their staff have professional knowledge and experiences in disaster relief. For example, the disaster relief nonprofit (A) had a formal plan for operating in a disaster context and reported that its service was not affected by the hurricane. In contrast, none of the interviewed human services nonprofits had formal plans for external risks, and one of the nonprofit (H) reported that without a plan increased their challenges to cope with the disaster, and it had not recovered one year after the hurricane. On the contrary, the net assets recovery was associated with property recovery. Slack resources and insurance were helpful for the recovery of property loss (such as building damages or destroyed). Slack resources and insurance were related to organizational size instead of subsectors. For example, only nonprofit B among the four interviewed nonprofits that experienced property loss did not recover because nonprofit B did not have insurance or slack resources. Thus, disaster relief nonprofits do not have an advantage in the recovery of property loss compared to human services nonprofits. The recovery of property loss is associated with slack resources and insurance, which tend to be determined by organization size.

6.7 Limitations

The merit of this study holds promise for nonprofit resilience research but not without its limitations. First, this dissertation used two specific disasters, so generalizing these results to other cases needs to be cautious. Second, some limitations of the quantitative analysis such as omitted variable bias and a survival bias were associated with using a secondary dataset- the NCCS Core PC data files. Third, the qualitative analysis was small in interviewed size and contains the response bias of the respondent. Each of these limitations is explored further in the following parts of this section.

6.7.1 The Limitation of Quantitative Analysis

The quantitative section of this study explored nonprofit capacities and abilities that were associated with organizational resilience using Hurricane Katrina as a case, so the findings of this study were obtained based on these two specific cases. Adopting these findings to other contexts needs to be cautious since every disaster has its characteristics and is different in magnitudes. Besides, every disaster is associated with a specific context and every context is different as well. However, the findings of this dissertation can be generalized to other disasters or other contexts with modifications based on specific cases. The reason for this might be that every disaster share similarity regarding its impacts on nonprofits. For example, they may cause staff or property loss of nonprofits and may increase or decrease the needs of nonprofits. Therefore, similar capacities and abilities are required to recover from these disasters. Therefore, though these findings of this study were gained from specific cases, they had generalizability to other natural disasters. Even there are lessons can be learned by nonprofits that experience other external risks. Additionally, though some previous studies focused on nonprofit recovery, they usually used economic recessions and other impacts as cases but not natural disasters. Therefore, selecting Hurricane Katrina as a case expands nonprofit recovery research to a new context-natural disasters.

Moreover, the sample of quantitative analysis in this dissertation was based on a secondary database – the NCCS Core PC data files that are compiled from IRS 990 data which contained tax return information of nonprofits. Several limitations were associated with the utilization of NCCS Core PC data files. First, NCCS Core PC data files had sampling bias. This sample did not include small nonprofits (with annual revenue less than $25,000) as they are not required to file the IRS Form 990. Although this dissertation cannot include the small nonprofits, it included nonprofits with size in a large range (total expense recovery sample: mean= 12.793 S.D. = 1.642; total net asset recovery sample: mean= 13.008 S.D. = 1.738). Therefore, extra caution must be taken when generalizing the findings of this study to small nonprofits.

Third, some scholars critiqued the reliability of the IRS 990 data (Keating et al., 2005). The NNCS core data files are “generally reliable” sources for nonprofit scholars (Karen A. Froelich et al., 2000), and most variables of this dissertation used major categories of accounts. Also, the dataset was deep cleaned to increase the reliability of the NCCS Core PC data files. Future studies testing the same hypotheses in the same setting using different datasets or pairing

990 with a survey like Lin and Wang (2016) will be helpful to add more evidence to the results of this study.

Fourth, this quantitative analysis has a survival bias. The sample only included nonprofits that file their tax returns from 2001 to 2014. Many nonprofits that did not survive throughout this difficult period after being affected by Hurricane Katrina were not included in this sample. According to Auer (2006)'s survey, more than half of nonprofits in Hurricane Katrina and Rita affected areas were stopping providing services. In future studies, comparing nonprofits survived from disaster and not survived disaster might be also helpful to explore nonprofit resilience.

Fifth, the retrieved sample consists of data up to the year of 2013. Though the sample included data eight years after Hurricane Katrina, some nonprofits still had not recovered during these eight years. Thus, this study cannot track whether this nonprofit can recover finally or the exact recovery time of these nonprofits after 2014. Future research on nonprofits recovery should consider developing a panel data in a year range more than eight and collecting data for multiple time points.

Finally, this dissertation relied on year-end data as the day ends data is hard to collect eight years after Hurricane Katrina. However, nonprofits make progress on their recovery daily. Therefore, the results of this study can only provide a limited perspective on the implications of disasters for nonprofits. Future studies can use survey tools to explore more nuances for the timing of recovery.

6.7.2 The Limitation of Qualitative Analysis

The first limitation of the qualitative section of this dissertation is that it has a small sample size (ten interviews). Several difficulties in data collection processes lead to small N of this qualitative analysis. First, NCCS core datafiles of 2015 were used to identify nonprofits that fit the scope of this study (81 nonprofits were identified) and contact information of some nonprofits cannot be found based on their information listed on their NCCS dataset (13 nonprofits). Second, some nonprofits rejected to participate in this interview because they were affiliated to a parent organization that had already been interviewed, or they, even though were identified from a nonprofit source, self-identified as not affected or not nonprofits (18 nonprofits). Whereas the goal of this qualitative section is exploring the range of opinions or understandings of organizational resilience, and from the data saturation perspective, data of this interview were saturated at the ninth interview. Therefore, while the size of the interview study is small, it seemed to be sufficient to gain a sound range of understandings of organizational resilience. Future studies should test the results of the small-N interview study in a larger dataset.

The second limitation of the qualitative section of this dissertation is selecting Hurricane Florence as a case to understand organizational resilience. Using Hurricane Florence as a case helps the researcher to learn the most recent practices of nonprofits in disaster recovery and it is easier for practitioners to recall their strategies and activities of recovery. However, it also makes this dissertation fail to use the same financial indicators of quantitative analysis to identify whether nonprofits in the qualitative sample are recovered. This is because Hurricane Florence occurs in 2018 and tax return information of 2019 is needed to identify whether nonprofits are recovered, however, the tax return information of these organizations is still not available to the public. Therefore, this dissertation can only use nonprofit self-reported data to identify whether they are recovered from the Hurricane. Though this approach increases difficulties to compare the results between quantitative analysis and qualitative analysis, it provides more details on the recovery status of nonprofits and helps to understand the view of nonprofit practitioners on organizational recovery.

Third, this qualitative analysis may also suffer from response bias. This interview study was based on respondents' self-report. Respondents of this interview were different in positions, ages, and gender, so they may answer interview questions from very different perspectives. However, this interview study aimed to collect organizational activities and strategies to recover instead of respondents' opinions of recovery, so the answers were less likely to be affected by respondents' subjective perception. Although the recollection data for this interview study may suffer since it has been two years since the disaster, future research should consider reducing response bias by interviewing multiple people in one organization or complementary interview with observation and focus groups.

Fourth, the timing of the data collection is a limitation of the qualitative analysis. The data is collected one year and a half after the hurricane. Eight interview nonprofits had already recovered while two nonprofits had not recovered by the time of the interview, which helps the research grouped nonprofits and compare their recovery work. However, these nonprofits make progress on their recovery daily and the research could obtain more information on the recovery timeline of nonprofits if research collected data after the disaster on month bases. Therefore, future studies should consider collecting data at multiple time points and track nonprofit recovery for a longer time.

Finally, this qualitative analysis used phone interviews to collect data. The phone interview eliminates geographical distance and saves the cost of time and money. However, face to face interviews are preferred in many situations as it is easier for trusting building between two parties of the interview and provides visual cues for interviewers to understand interviewees' emotional reactions. The research selected phone interviews to collect data, because the time limitation for this dissertation study and the research question of this study is to explore organizational abilities and capacities, and interviewees are less likely to have a strong emotional reaction. It is good to select face to face interview design when researchers have time and money.

6.8 Contributions

6.8.1 Contributions to Research

This dissertation makes contributions to research and theory in several ways. First, the present research explored when and whether nonprofits bounce back from natural disasters and what organizational abilities and capacities help nonprofits to do so. This study found that financial autonomy, revenue structures, organization size, organization service fields, preparations, collaboration, knowledge of recovery all are associated with organizational resilience. Therefore, this dissertation helps to better understand nonprofit resilience in general.

Additionally, this study contributes to resilience research in nonprofit and business sectors by bridging organizational resilience research in both sectors. Unlike in business management literature that has frequently discussed the meaning, operationalization, and model of organizational resilience, the concept of organizational resilience, though reflected in many studies, was seldom explicitly used by nonprofit scholars. This study introduced the concept of organizational resilience to the nonprofit literature and explores factors influencing organizational resilience based on previous resilience research in both sectors. The findings of organizational resilience in the business sector may not be useful in the nonprofit sector, as the nonprofit sector has heavily relied on external resources. The findings of this dissertation show that strategies are frequently used by the business sector such as using slack financial and human resources is not helpful for interviewed nonprofits, as many of them do not have large financial reserves and have to generate new funding resources to recover.

Third, this dissertation enriches the financial management literature on nonprofits. Most existing nonprofit finance literature examined factors (financial, organizational, contextual) that make nonprofits vulnerable to external shocks. In contrast, the current research explores whether factors that make nonprofits vulnerable also reduce the nonprofit's ability or capacity to bounce back to their previous performance level after being affected by external shocks. This study found that organizational capacities and abilities that help nonprofits bounce back after being affected by natural disasters are divergent from those that predict poor financial health. To be more specific, this study found surplus, revenue diversification, and commercial revenue, which helped nonprofits reduce vulnerabilities, and did not help nonprofits bounce back to their total expense level. And unlike financial vulnerability literature, this dissertation found revenue diversification, and commercial revenue reduced nonprofits' ability to recover from natural disasters.

Fourth, this dissertation explores nonprofit resilience in a new context: natural disasters. Most existing literature has explored how strategies and organizational characteristics impact the recovery of nonprofits during economic downturns, but natural disasters as typical external shocks to nonprofits have not been analyzed to date. Yet, several previous studies found that natural disasters had tremendous negative impacts on nonprofits and meanwhile nonprofits were required to participate in disaster response, so it is interesting and important to study how nonprofit can recover after being affected. This dissertation found that nonprofits may need more than eight-year to recover from a natural disaster and multiple nonprofit abilities and capacities are associated with recovery.

Finally, this dissertation contributes to disaster response literature by including local nonprofits that are affected by disasters but do not view disaster relief as their primary service area. This stands in contrast to most existing literature, which has focused just on disaster relief organizations and has emphasized their role in disaster response. This dissertation, thus, also focused on how local nonprofits, as victims of disasters, bounced back to their original performance level. The findings of the quantitative analysis showed that human services nonprofits were less likely to recover compared to disaster relief nonprofits. This finding implies some subsectors might be more vulnerable than disaster relief nonprofits. Future research on disaster response of nonprofits should consider nonprofits in subsectors other than disaster relief nonprofits as well.

6.8.2 Contributions to Practice

Beyond its research contribution, this research offers to nonprofit practitioners some new insights on organizational resilience after natural disasters. Disasters pose a practical management challenge to nonprofits that have been affected by disasters or that may experience natural disasters in the future. Being able to understand the average time required to bounce back under different conditions should aid in strategic planning by nonprofits. Nonprofit managers can, from the present analysis, not only have a clearer expectation of the rapidity of bouncing back but also use this information to make post-disaster plans. In other words, nonprofit managers can gain insights useful for developing strategies to make better preparations before disasters and navigating resources to recover from disasters. Moreover, this dissertation informs funders, donors, policymakers, and other outside stakeholders about nonprofits’ needs, especially locally, in recovery stages. Thus, they can provide better support to nonprofits and help them quickly recover from the impact of natural disasters. More specific implications are listed below.

First, the finding of quantitative analysis suggested that more than half nonprofits in the sample spent over three years to bounce back to the original total expense level and five years to bounce back to the original net assets level, and some nonprofits did not fully recover eight years after Hurricane Katrina. First, nonprofit managers should be aware of the vulnerability of nonprofits to natural disasters as it takes years for nonprofits to recover from it, and make a good preparation for it, including developing a formal plan and purchasing insurance. Second, nonprofits managers need to set recovery goals and plan for three to five years and realize to recover from the property (net assets recovery) slower than operations and services (total expense recovery). Third, it implies that funders, donors, policymakers, and other outside stakeholders should not only provide instant assistance to nonprofits but also offer long-term support to them. Additionally, funders, donors, policymakers, and other outside stakeholders need to realize the net assets of nonprofits take a longer time (about five years) to recover compared to the total expense and provide long-term support to net assets recovery (such as building repair).

Second, the findings of quantitative analysis suggested that a higher equity ratio helps nonprofits to recover their total expense. It implies that nonprofits with higher equity before disasters are more likely to recover their services in a short time after the disaster, thus, nonprofit managers should consider building more equity before a disaster. Nonprofit donors and policymakers should consider giving nonprofit more flexibility on building unrestricted equity instead of pushing nonprofit only spend on their programs. Additionally, these findings of quantitative analysis implied that revenue concentration and reducing commercial revenue were more helpful for nonprofits to recover their total net assets, which is a divergence from findings of previous literature on financial vulnerability. Thus, nonprofit managers should realize that the revenue strategies that help nonprofit reduce vulnerability may not help nonprofits recover. Nonprofits relied on multiple revenue sources and commercial revenue may consider restructuring the revenue portfolio by concentrating on one or two revenue sources and reducing dependence on commercial revenue.

Third, the finding of quantitative analysis suggested that disaster relief nonprofits have an advantage in total expense recovery when compared to human services nonprofits, which implies that managers of human services nonprofits need to realize their vulnerability in recovery stages. Additionally, funders, donors, policymakers, and other outside stakeholders should raise awareness of how human services nonprofits are affected by natural disasters differently than disaster relief nonprofits and provide more help and support to human services nonprofits. Additionally, the finding of quantitative analysis suggested that it is more difficult for small nonprofits to bounce back to their original performance level. Managers from small nonprofits need to realize their vulnerability in recovery stages. Also, funders, donors, policymakers, and other outside stakeholders should provide more resources such as grants, volunteer hours, and information to small nonprofits.

Finally, the qualitative analysis suggested that the impact of natural disasters on nonprofits is complex. Nonprofit managers should use different recovery strategies when experiencing different types of impacts. Having a slack of resources and insurance is helpful when nonprofit loses properties. Having a preparation plan for natural disasters is helpful for nonprofits that experienced impacts on services, but not all interviewed nonprofits realized that they may need a plan for external risks. Thus, infrastructure organizations that support organizations in affected regions should encourage nonprofits to develop preparation plans for external risks. Making thorough preparations, setting appropriate goals, and developing collaborations are associated with quicker recovery from service needs changes. Additionally, the knowledge and experiences of past events are also associated with a quick recovery of nonprofits. Therefore, nonprofits managers should use multiple ways to increase their knowledge of disasters such as hire staff who have professional knowledge of disaster recovery, provide training on disaster recovery, or learn from other nonprofits who have professional knowledge and experience on recovery. It is important for nonprofit managers to learn from their own success and challenges being affected by natural disasters.

6.9 Future Directions

The findings of this research identify organizational capacities and abilities that help business corporations to recover may not be useful for the nonprofit sector. For example, Vogus and Sutcliffe (2007) further explained that high levels of slack resources enable organizations to continue operating after being affected by external shocks, which leads to organizational resilience. Moreover,Vogus and Sutcliffe (2007) emphasized that organizational resilience is not only determined by how many resources an organization possesses but also related to how organizations deploy those existing resources. However, this qualitative analysis found that most nonprofits do not have slack for resources, so it is more important to explore how nonprofits can quickly generate new resources for recovery. Therefore, in the future, more nonprofit research on organizational resilience should be done. Future directions include developing resilience models for the nonprofits in other turbulent events such as the economic downturn, natural disasters, terrorism, and regulatory actions. It is impossible for organizations to prepare for all different turbulent events, but it is necessary for organizations to reduce their vulnerability to high-impact events and quickly bounce back from major disruptions. Therefore, developing a resilience model that can be used to cope with various types of turbulent events benefits the nonprofit sector.

Another future direction for research should be exploring organizational resilience in the context of specific groups of nonprofits. For example, what helps small nonprofits (revenue below $25,000) or housing nonprofits recover after being affected by natural disasters. Both quantitative analysis and qualitative analysis findings show that it is more challenging for smaller nonprofits to recover from natural disasters, but nonprofits with revenue less than $25,000 are not included in quantitative analysis samples. Therefore, future research can explore what helps small nonprofit survive through natural disasters. Additionally, the findings of the qualitative analysis show that donations and volunteers dramatically increase immediately after the natural disaster and then decrease after the relief phase is completed. Some nonprofits that work on long term recovery lack volunteers and funds. Therefore, future research can explore what helps long term recovery, especially for housing nonprofits as it usually takes years for these nonprofits to repair and rebuild houses in a community.

The dissertation yields complex results on the impact of revenue diversification on nonprofit recovery. The findings of the total expense recovery sample show that revenue diversification may not help nonprofits to recover to their original total expense level. The finding of net assets showed that nonprofits with more evenly distributed revenues across different sources may reduce the rapidity of net assets recovery. These results are inconsistent with the expectation derived from previous research. Besides this dissertation study, previous literature also found that the findings of revenue diversification on nonprofit financial performance diverge from each other (Hung & Hager, 2019; Qu, 2019). More recent studies stated that using HHI to measure nonprofit revenue structure might be a problem itself as it is optimized for the combination of revenue sources rather than evenly distribution of revenues across multiple revenue sources that contribute to sound financial performance (Hung & Hager, 2019; Qu, 2019). Simply evenly distributing revenue sources or just adding a revenue stream may increase administrative cost and fundraising expenses without increasing the financial stability of nonprofits (Frumkin & Keating, 2011; Wicker & Breuer, 2013). Therefore, future studies need to explore whether rapidity organizational recovery can be achieved by optimizing the combination of revenue sources according to the specific situation of a nonprofit. Additionally, the finding of quantitative analysis of this dissertation showed that commercial revenue may not help even impede nonprofits recover from disasters. In contrast, some nonprofits in the qualitative analysis rely on government funds to recover after being affected by the disaster. Therefore, future studies can explore how government funds influence nonprofit recovery after being affected by natural disasters.

In summary, this dissertation explored when and whether nonprofits recover from disasters and what helps nonprofits to recover. The findings of this dissertation contributed to understanding how nonprofit can be resilient in a natural disaster context and bridging organizational resilience research between the business sector and the nonprofit sector. Future research should seek to build on the initial findings of nonprofits' resilience in a disaster context to add to our understanding of nonprofit resilience in nuances and different contexts.

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APPENDICES

Appendix A

Interview Script:

Your participation in this interview is entirely voluntary and all your responses will be kept confidential. No identifiable information about you or your organization will be revealed in my dissertation or in any other reports. You have been provided with a copy of the informed consent. Do you consent to participate in the interview?

Consent

1. I will record our conversation for note taking purposes. Do I have your consent to do this?

Prompt: As I will be recording the interview, please do not say your name during the interview. For the purpose of the interview, I will be referring to <insert the name of the organization you are referring to>. I will start recording now.

Begin recording

Information about the interviewee

First, I would like to gather some information about you.

1. What is your role within the organization?

2. How long have you been working in this organization?

Next, I would like to know some details of your organization's information.

3. How many staff does your organization have (both full-time employees and volunteers)?

4. What were **the total expenses** of your organization in 2017? (Line 18 on 990s)

    What were **the total expenses** of your organization in 2018?

5. Can you tell me **the total net assets** of your organization in 2017 and 2018? The total net asset is your organization's total assets less your organization's total liability. (Line 20)

Now, I would like to ask some questions about how your organization was impacted by Hurricane Florence.

1. How was your organization’s staff affected by Hurricane Florence?

    PROBE: If yes, how did Hurricane Florence affect the operation or service provision of your organization?

    PROBE: If yes, how did your organization resolve this issue?

2. Did your organization lose any property after the hurricane?

    PROBE: If yes, how did this affect the operation or service provision of your organization?

PROBE: If yes, how did your organization solve this problem?

3. Did the service need of your organization change after Hurricane Florence? If so, what were those changes?

PROBE: If yes, how did your organization address the changing needs of your target population after Hurricane Florence?

Now I would like to ask some questions about how your organization's resource environment was impacted by Hurricane Florence.

4. Did your organization have enough funds to recover from Hurricane Florence?

PROBE: If **there were adequate or extra funds**, how did your organization utilize those funds?

PROBE: If **there were not enough funds**, how did your organization address this issue?

5. Did your organization have enough volunteers and staff in the relief and recovery period after Hurricane Florence?

PROBE: If the organization ***had extra volunteers than usual***, how did your organization utilize those volunteers?

PROBE: If the organization **did not have enough volunteers**, how did your organization address this issue?

6. In general, please describe if there are any other differences in your organization after Hurricane Florence as compared to before Hurricane Florence.

7. During the recovery process, what were some challenges faced by your organization?

PROBE: Were there any external barriers?

PROBE: Were there any internal difficulties?

Next, I will ask some specific questions about how your organization prepared for Hurricane Florence.

8. Does your organization have any formal planning processes for hurricanes or other risks?

PROBE If **yes**, was this planning effort helpful to your organization? Why?

If **no**, how did it affect your organization's recovery from Hurricane Florence?

9. Are your employees aware of this formal planning effort?

PROBE: Do your employees know their role during and after a disaster?

10. Does your organization have disaster-related insurance?

    PROBE: Is this disaster-related insurance helpful?

11. What preparations did your organization make for the storm after your organization was informed?

    PROBE: Did your organization set priorities for the response and recovery? What are those priorities?

    PROBE: Were those preparations helpful to your organization? Why?

I will ask some specific questions about how your organization addresses those changes in your organization's needs or service needs.

12. Did your organization develop goals for the recovery? What are your goals?

    PROBE: Were these goals helpful to the recovery? Why or why not?

13. Did your organization work closely with other organizations during recovery? How did that contribute to the recovery of the organization?

14. Did your organization have a team that worked specifically on recovery after Hurricane Florence?

    PROBE: Please describe the role of each staff member who works on this team.

    PROBE: Who leads this team? Please describe the work of the leader to me.

    PROBE: How frequently do team members meet? Please describe the processes/activities of that meeting to me

    PROBE: Was the work of this team helpful to the recovery? Why or why not?

15. Did your organization have staff who have professional knowledge about disaster recovery or experience in disaster recovery?

    PROBE: If yes, what is the role of these staff within the team?
    PROBE: How did these staff members help your organization to better recover from Hurricane Florence?

16. How did the experience from Hurricane Matthew influence your organization's recovery from Hurricane Florence?

17. It has been a year since the storm; tell me about your current status.

PROBE: How long do you think it will take to fully recover from the storm? What are some barriers to recovery?

PROBE: What factors do you use to determine if your organization has successfully recovered from the storm?

18. If your organization experiences a similar storm in the future, what will your organization do similarly and differently?

19. Is there anything else I should know about the recovery process from an organizational perspective?

Appendix B

Consent to Participate in Research

Identification of Investigators & Purpose of Study

Hello, my name is Xintong Chen and I am a Ph.D. candidate at North Carolina State University. I am conducting research for my doctoral dissertation on nonprofit resilience in natural disaster context. The purpose of this telephone interview is to explore what factors contribute to nonprofits resilience after being affected by natural disasters. You are invited to participate because your organization located in Hurricane Florence affected the area and may still be in recovery period. This study's sample is limited to 20 to 30 nonprofit organizations, which are located in Hurricane Florence affected areas.

Research Procedures

Should you decide to participate in this research study, you will be asked to indicate your consent. This study consists of an interview using the Zoom online platform or over the phone. You will be asked to provide answers to a series of questions related to your organization capacity or ability to recover from Hurricane Florence.

Time Required

Participation in the interview will take no more than one hour of your time. The interview would be scheduled at a date and time convenient to you.

Risks

For your involvement in this study, the investigators do not perceive more than the minimal risks that you would encounter in your normal day.

Benefits

Participation in this study may not benefit you personally. This study contributes to the nonprofit field as it explores how nonprofits better prepare and navigate negative impacts of natural disasters.

Confidentiality

The results of this research will be shared with my dissertation committee members at North Carolina State University. The results may also be presented at conferences and published in academic journals. Interviews will be conducted and recorded using the Zoom online platform. The results of this project will be coded in such a way that the respondent's identity will not be attached to any report of this study. The researchers retain the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the researchers. Data linking you personally to the study will be destroyed and data identifying your organization will be stored in password-protected electronic format.

Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind. You may also refuse to answer any individual question without consequences.

Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Xintong Chen
North Carolina State University
917-930-8377
xchen43@ncsu.edu

My faculty adviser is Dr. Mandi Stewart and she can be contacted:

Mandi Stewart
North Carolina State University
School of Public and International Affairs
(919)515-2481
Ajstewa5@ncsu.edu

Questions about Your Rights as a Research Subject

Dr. Thomas Birkland	Jennie Ofstein
Chair, Institutional Review Board	IRB Director
North Carolina State University	North Carolina State University
(919)513-1837	(919)515-8754
tom_birkland@ncsu.edu	irb-director@ncsu.edu

Giving of Consent

Participation in the interview implies your consent to participate in this study and that you have received a copy of this consent form. Further, your consent implies that you understand what is being requested of you as a participant in this study and that you freely consent to participate. You have been provided with a copy of this form and certify that you are at least 18 years of age.

Appendix C

Email to set up interview

Dear <Insert interviewee's name>:
Hello, my name is Xintong Chen and I am a Ph.D. candidate at North Carolina State University. I am writing to invite your organization to participate in my doctoral dissertation research on nonprofit resilience in natural disaster context.

You are being contacted to participate in this interview study because your organization located in Hurricane Florence affected areas and may still be in recovery periods. Specifically, I want to hear your organization's recovery experience and story about Hurricane Florence. I hope that I can interview someone in your organization who is familiar with your organization work regarding recovery from Hurricane Florence.

Your participation is very important to the study and will help advance our understanding of what organization capacity and ability contributes to the recovery from a natural disaster including hurricanes.

Your participation in this interview is entirely voluntary and all of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of this interview information. The interview would take no more than 1 hour of your time and can take place online using Zoom or over the phone at a date and time convenient to you between **XXX** and **XXX**. For your information, I have attached a copy of the study's "Informed Consent" form.

I will contact you again in the coming days to find out your willingness in participating in this study, and I have attached the informed consent information. Should you have any further questions or comments, please feel free to contact xchen43@ncsu.edu or 9179308377.

I appreciate your time and willingness to participate in this interview.

Sincerely,
Xintong Chen
Ph.D. Candidate
North Carolina State University
School of Public and International Affairs
Department of Public Administration

Follow up email 1

Hello <insert interviewee's name>,
I am following up to ask for your participation in the interview study being conducted about the nonprofit resilience in disaster context. We hope to hear from you soon because I am expected to graduate at XXX and need to complete all interviews by XXX.

Your participation in this interview is entirely voluntary and is helpful to understanding what organization capacity and ability contributes to the recovery from a natural disaster including hurricanes.

See more about the study below and look forward to hearing from you.

Sincerely,
Xintong Chen
Ph.D. Candidate
North Carolina State University
School of Public and International Affairs
Department of Public Administration

<insert previous email and attach informed consent>

Follow up email 2

Hello <insert interviewee's name >,
I am following up again to ask for your participation in the interview study being conducted about the nonprofit resilience in disaster context. We don't mean to be a pest but hope to include your perspective in this study. I need to complete the interviews no later than XXX so it's important to hear from you as soon as possible.

See more about the study below and look forward to hearing from you.

Sincerely,
Xintong Chen
Ph.D. Candidate
North Carolina State University
School of Public and International Affairs
Department of Public Administration

<insert previous email and attach informed consent>

Confirmation email

Hello <insert executive name>,
I am writing to confirm the interview date and time. You have indicated your availability to participate in an interview on <date> and <time>.

The interview will take place <over the phone OR via Zoom online so please log on to this address at the appointed time: <insert link>.>

I have attached the informed consent to explain more about the study and look forward to speaking with you on <date> at <time.>. Your interview will be conducted by <insert name>.

Should you have any further questions or comments, please feel free to contact xchen43@ncsu.edu or 9179308377.

Sincerely,
Xintong Chen
Ph.D. Candidate
North Carolina State University
School of Public and International Affairs
Department of Public Administration

<insert previous email and attach informed consent>

Phone script

Hello, my name is Xintong Chen. Could I speak to <Insert interviewee's name >?

· I am calling from North Carolina State University. I am working on a research study regarding nonprofit resilience in disaster context. You recently received an email about this study, including a request to set up an interview.

· Your participation in an interview is very important to us, and entirely voluntary. All of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of the interview information, and the interview would take no more than one hour of your time.

· Would you be willing to participate in an interview? <wait for response and respond appropriately to schedule the interview via zoom or via the phone> <the interview may take up to one hour of your time>

· If you have any questions, you can contact me at 917-930 -8377 or xchen43@ncsu.edu

· Thank you! I appreciate your participation in this research study.

Thank you email

It is nice talking to you through the phone. Thanks again for your time! I appreciate your participation in this research study. If you have further questions about this dissertation research, you can contact me at 917-930 -8377 or xchen43@ncsu.edu