

2017

# Strategies for Integrating Technological Innovations in Small Businesses

Petra Samuel  
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# Walden University

College of Management and Technology

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Petra Samuel

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Walden University  
2017

Abstract

Strategies for Integrating Technological Innovations in Small Businesses

by

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MIT, American InterContinental University, 2008

BS, Andrews University, 1999

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

August 2017

## Abstract

The effective integration of technological innovation is vital to the success of small businesses and can catapult growth and profitability. Some business managers and supervisors, however, may not have a firm understanding of strategies for integrating technological innovations in businesses; this lack of knowledge may result in employee frustration and costly roadblocks to achieving business objectives. This case study was conducted to identify the strategies used by business managers and supervisors to integrate technological innovations in small businesses. Christensen's theory of disruptive innovation and Rogers' theory of diffusion of innovation served as the conceptual framework. Ten business managers and supervisors from Castries, St. Lucia, participated in semistructured interviews. Participants who were selected using purposive sampling worked in a small business in St. Lucia for at least 5 years, were part of senior management, and used strategies for integrating technological innovations in a small business. Two of the themes that emerged from data analysis were integration challenges relating to technological innovation complexity, and technology cost regarding hardware, upgrades and software procurement. Findings from this study may contribute to positive social change by providing business managers and supervisors insight about strategies and innovative solutions they can use to develop better business practices, increase tax revenues, and employment opportunities, improve profitability, and boost the economy.

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## Dedication

I dedicate this dissertation to my husband, Mekus Dylan Samuel, for his unwavering love, support, and sacrifice in helping me achieve this goal. I would also like to dedicate this dissertation to my patient daughter, Chloe Melladie Samuel, and son, Kyle D'mitri Dylan Samuel. I dedicate my dissertation to the St. Lucia Seventh Day Adventist (SDA) Academy where the foundation of my education was cemented from 1985 to 1990. To the students of the St. Lucia SDA Academy, I encourage you to continue dreaming big and to reach for the stars.

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## Table of Contents

Section 1: Foundation of the Study.....	1
Background of the Problem .....	1
Problem Statement.....	3
Purpose Statement.....	3
Nature of the Study .....	4
Research Question .....	5
Interview Questions .....	5
Conceptual Framework.....	6
Operational Definitions.....	7
Assumptions, Limitations, and Delimitations.....	8
Assumptions.....	8
Limitations .....	9
Delimitations.....	10
Significance of the Study .....	10
Contribution to Business Practice.....	10
Implications for Social Change.....	10
A Review of the Professional and Academic Literature.....	11
Overview of Technology .....	13
Concept of Innovation.....	14
Technological Innovation .....	16
Concept of Disruptive Technology.....	18



Concept of Disruptive Innovation.....	19
Concept of Diffusion of Innovation.....	21
Strategies for Successfully Integrating Technological Innovations.....	26
Failure Factors of Integrating Technological Innovations.....	33
Technological Innovation Strategies for Profitability and Competitive	
Advantage .....	36
Transition .....	38
Section 2: The Project.....	40
Purpose Statement.....	40
Role of the Researcher .....	40
Participants.....	42
Research Method and Design .....	44
Research Method .....	45
Research Design.....	47
Population and Sampling .....	50
Ethical Research.....	51
Data Collection Instruments .....	53
Data Collection Technique .....	54
Data Organization Technique .....	58
Data Analysis .....	59
Reliability and Validity.....	61
Reliability.....	61

Validity .....	62
Transition and Summary.....	64
Section 3: Application to Professional Practice and Implications for Change .....	66
Presentation of the Findings.....	66
Overarching Theme: Collaboration, Planning, and Communication.....	66
Subtheme 1: Integration Challenges .....	69
Subtheme 2: Technology Cost.....	71
Subtheme 3: Effective use of Technology .....	72
Subtheme 4: Profitability .....	74
Subtheme 5: Training.....	76
Subtheme 6: Flexibility in Work Schedule.....	79
Subtheme 7: Remaining Up-To-Date with Technology .....	80
Applications to Professional Practice .....	81
Implications for Social Change.....	84
Recommendations for Action .....	84
Recommendations for Further Research.....	87
Reflections .....	88
Conclusion .....	89
References.....	89
Appendix A: Interview Protocol.....	131
Appendix B: Letters of Cooperation From Research Partner .....	134

## Section 1: Foundation of the Study

Because of business and economic changes, leaders of small businesses are increasingly seeking new technological strategies to increase profitability (Harris, McAdams, McCausland, & Reid, 2013). According to Blair (2015), technological innovation has the potential to improve a business's competitive advantage. To fully realize these possible benefits, business managers and supervisors need to make sure their business processes align with these technological innovations. Failing to do so may result in a loss of productivity and revenue for businesses, and may further exacerbate social issues such as unemployment and poverty (Kim & Min, 2015; Srivastava & Misra, 2014). To strengthen the economy, secure a competitive advantage, increase profitability, and improve productivity and efficiency, small business leaders should explore sound strategies for integrating technological innovations in business processes (Chew & Gottschalk, 2013; Desai, 2013; Haned, Mothe, & Nguyen-Thi, 2014). In this study, I sought to contribute insight about the strategies business managers and supervisors can use to better integrate technology in the business. My focus was the eastern Caribbean island of St. Lucia. There, small businesses are the largest employers and contribute to more than 60% of the island's gross domestic product (GDP; World Bank, 2015).

### **Background of the Problem**

Small businesses foster economic growth and create employment in every country (Buchwald, Urbach, & Ahlemann, 2014). Given the role of technology in the global economy, business leaders are seeking ways to integrate technological innovations in business processes to improve profitability and efficiency (Murphy, 2014). To minimize

risk, small business managers and supervisors need to plan and use appropriate business strategies before embarking on new technological opportunities. Approximately 68% of small businesses fail within the first 5 years of operation (U.S. Small Business Administration, 2014). Some small business managers and supervisors may reduce the risk of business failure by defining the direction or destination of the business, and use appropriate technology to help them sustain the business and improve cash flow.

Despite the need to improve and use technology, less than 1% of manufacturing businesses in St. Lucia receive international quality certifications in technology for production processes (World Bank, 2015). Authors of the Private Sector Assessment Report (PSAR) on St. Lucia recommended small businesses on the island find technological innovations to improve efficiency and reduce the cost of doing business (Compete Caribbean, 2014). While 54% of the island's manufacturers use e-mail to interact with clients and suppliers, only 15% have websites and use the Internet for marketing (Compete Caribbean, 2014).

Generally, the success rate for technological integration among small businesses is low while the failure rate is high (Nguyen, Newby, & Macaulay, 2013). The high failure rate is an opportunity for business leaders to develop strategies, for making the right decisions regarding the integration of new technology in their businesses. As Blair (2015) noted, leaders who invest in such strategies may help their business become more efficient, have more frequent innovation, and be more profitable. The purpose of this qualitative multiple case study was to explore strategies business managers and supervisors can use to integrate technological innovations in small businesses.

### **Problem Statement**

Business managers and supervisors who are not prepared for integrating technological innovations in the business risk experiencing revenue loss, decreased productivity, and inflated costs of doing business (Coccia, 2014; Compete Caribbean, 2014). According to the World Bank (2015), St. Lucia ranks low in comparison to other countries, in integration and use of advanced technological innovations among its small businesses. The general business problem is some business managers and supervisors seek to integrate technological innovations without adequate preparation and information, which affects productivity and revenue. The specific business problem is some business managers and supervisors lack strategies for integrating technological innovations to improve profitability.

### **Purpose Statement**

The purpose of this qualitative multiple case study was to explore the strategies business managers and supervisors use for integrating technological innovations in small businesses. The target population included business managers and supervisors from two small businesses in the Caribbean island of St. Lucia. The study may contribute to positive social change by providing business managers and supervisors on the island with a deeper understanding of strategies they may use for integrating technological innovations in their business. Small business communities may obtain innovative solutions from the results of this study. Implementation of these strategies may result in better business practices, expansion of businesses, increases in tax revenues and employment, and a boost to the economy.

### **Nature of the Study**

This was a qualitative exploratory multiple case study. Qualitative researchers explore and use real-life experiences of individuals in a natural environment to grasp lived phenomena (Cronin, 2014; Gunawardhana, Suzuki, & Enkawa, 2015; Yin, 2014). Researchers use quantitative methods to collect numerical data and perform mathematical analyses to identify causality and correlate two or more variables (Hafford-Letchfield, 2014). A quantitative approach was not suitable for this study because the activities during this research did not demand mathematical analyses. Mixed-methods research refers to a combination of qualitative and quantitative approaches researchers use to generalize findings, test theories statistically, and reveal the behaviors and perceptions of a particular group (Kachouie & Sedighadeli, 2015). Although a mixed-method approach would have addressed the qualitative aspects of my study, it would have also entailed quantitative analysis such as use of statistics and computations, which were not relevant to my research focus. Thus, I concluded, a mixed-method approach was not appropriate for this study.

Researchers who perform qualitative exploratory multiple case studies conduct interviews and observations, and collect and analyze data obtained from research participants (Charmaz, 2014; Yin, 2014). During qualitative research, researchers also use open-ended research questions to interpret multiple dimensions of a phenomenon using various data sources (Hott, Limberg, Ohrt, & Schmit, 2015). A qualitative research design was appropriate for my study because I needed to use open-ended questions to address my central research question. Phenomenologists address current phenomena in

real-life contexts (Chan, Fung, & Chien, 2013; Yin, 2013). To a certain extent, this design was in alignment with my study. However, in order to evaluate the strategies leaders use to integrate technological innovations through observations, I needed to conduct observations and interviews. I deemed use of a phenomenological approach as not being flexible and adequate enough to accommodate these research activities.

Grounded theory, which involves the formulation of theories for a large populace (Smith, 2015), was not appropriate for this study. This key principle of grounded theory was not in accordance with my research and I opted not to use it. Researchers use an ethnographic approach to closely study people and their cultures (Davies, 2015). An ethnographic method would not have covered all aspects of this study and was, thus, unsuitable.

Narrative inquiry was not appropriate for this study because it involves analysis of storytelling, art or autobiographies (Kuronen, 2014; Raeburn, Schmied, Hungerford, & Cleary 2015; Von Contzen & Alders, 2015), which were not part of my study.

### **Research Question**

The overarching research question for this study was, What strategies do business managers and supervisors use for integrating technological innovations in small businesses?

### **Interview Questions**

To answer my research question, I posed the following questions to participants:

1. What strategies are you using for integrating technological innovations in the business to improve profitability?

2. How do you select and implement the strategies for integrating technological innovations in the business to improve profitability?
3. How do you determine the most effective strategy for integrating technological innovations in your business?
4. How do you measure the effect of using the strategies for integrating technological innovations on the business in terms of profitability?
5. How would you describe the challenges you experience using the strategies for integrating technological innovations?
6. How do you remain up-to-date with strategies for integrating technological innovations and changes in technology?
7. What additional information would you like to add regarding strategies for integrating technological innovations to improve profitability, which was not included in the interview?

### **Conceptual Framework**

The theories of disruptive innovation and diffusion of innovation formed the conceptual framework for this study. In 1997, Christensen pioneered the theory of disruptive innovation (Christensen, 2013). According to Christensen, disruptive innovation is part of business processes, cutting-edge technologies, and low-end performing products and services in already established markets. Business managers and supervisors use technological innovation integration strategies when introducing disruptive innovation into their businesses.



Diffusion of innovation is the second model for this study. In 1962, communication scientist Rogers (2015) coined the term diffusion of innovation. The process of diffusion of innovation is the permeation of new technology into societies and cultures, from launch to extensive adoption (Kapoor, Dwivedi, & Williams 2014). The acceptance and adoption of innovation by management may be dependent on cost and accessibility while acceptance and adoption by employees may be due to familiarity (Uchida, 2015). Business managers and supervisors may use strategies from disruptive innovation and diffusion of innovation to more successfully integrate technological innovation in their businesses (Tola & Contini, 2015).

### **Operational Definitions**

Following are definitions of terms I used in this study:

*Business model:* A business model is a system of interrelated activities that are dependent on one another and which define how a firm conducts business with clients (Kim & Min, 2015).

*Business process:* A business process is a group of activities in which one or more types of input are converted into output, which adds customer value (Jurisch, Palka, Wolf, & Krcmar, 2014).

*Business process innovation:* Business process innovation is the performance of activities intended to produce noticeable and impressive paybacks resulting in the achievement of business objectives (Looy, Backer, & Poels, 2014).

*Business process reengineering:* Business process reengineering is a thorough restructuring of processes intended to produce quality, service, and cost enhancements (Hussein & Dayekh, 2014).

*Disruptive technology:* Disruptive technology is an innovation leveraging product and service improvement geared at obtaining unanticipated market returns and achieving potential trailblazing innovation (Christensen, 2013).

*Industry transcending innovations:* Industry transcending innovations are new products or services, which disrupt existing industries (Christensen, 2013).

*Innovative technology:* Innovative technology refers to new products or services that pose a challenge to industries or businesses (Christensen, 2013).

*Knowledge diversity:* Knowledge diversity refers to the solicitation of knowledge sharing across departments or firms and from individuals with diverse backgrounds (Brunswick & Vanhaverbeke, 2014).

*Swim lane map:* A swim lane map is a type of flowchart depicting processes, decisions, and loops and how they integrate with one another. A swim lane map also includes subprocesses, places, methods, and activities in the form of lanes, which demarcate the responsibility of individuals or teams (Wolf, Doane, & Thompson, 2015).

### **Assumptions, Limitations, and Delimitations**

#### **Assumptions**

Assumptions are unconfirmed notions, which are accepted to be true (Roy & Pacuit, 2013). My first assumption in planning and conducting this study was that participants would be honest when responding to interview questions. I made these

assumptions because the research questions contained elements that required detailed explanation, and assumed participants would not clearly articulate their point of view. Qualitative researchers who use interview methods ask open-ended questions during interviews to explore underlying aspects of the phenomena they are studying (Yin, 2014). At the initial stage of the interview process, participants were abrupt with their responses to interview questions. As I continued to ask open-ended questions, participants became more comfortable and divulged information that addressed the interview questions. A second assumption was participants would not deviate from the research topic in responding to interview questions. I assumed they would, instead, relay real life experiences that related to the research.

### **Limitations**

Limitations are potential weaknesses or gaps of the research (Holmes, 2013). The first limitation of this study was the research included only business managers and supervisors of small businesses in St. Lucia who had integrated technological innovations. This choice might have posed as a limitation because large businesses or governmental agencies were excluded from the research. If I had included these business entities in the research, the results of the research might have been different. A second limitation of this study was my small sample of 10 business managers and supervisors. Authors such as Robinson (2014) and Royset (2013), both whom have a vast knowledge of research, have asserted research results vary based on sample size. My research results may have differed had I used a larger number of participants.

### **Delimitations**

Delimitations are limits or restrictions a researcher institutes in the study (Bhat, Gijo, & Jnanesh, 2014). One delimitation of my research was the location of the study, Castries St. Lucia. I did not extend the scope of my research over multiple geographical regions. I decided to focus on Castries because it is the capital of St. Lucia and has a high concentration of small businesses. A second delimitation was I only included 10 business managers and supervisors from two small businesses on the island. Another delimitation was that I conducted research on two companies using a multiple case study. This decision may have limited my ability to develop more themes and discover additional issues relating to technological innovations, which might have not been revealed researching only two businesses.

### **Significance of the Study**

#### **Contribution to Business Practice**

Findings may contribute knowledge regarding effective practices for integrating technological innovations in small businesses. The information may assist business managers and supervisors in identifying technological integration strategies. Researchers have found knowledge of such strategies can help business managers prevent business failure, reduce loss of revenue, improve productivity and profitability, and boost the economy (see Chew & Gottschalk, 2013; Desai, 2013; Haned et al., 2014).

#### **Implications for Social Change**

This study might contribute to social change by providing business managers and supervisors with a deeper understanding of systematic and strategic processes for

integration of technological innovations. They may be able to use this insight to improve performance, reduce the cost of doing business, and increase profits. Implications for social change also include the potential to provide the small business community with creative solutions to achieve change, use standards and improved processes, increase revenues from levies, develop businesses, and increase employment. An outcome of this study might be that business managers and supervisors of small business communities in St. Lucia are encouraged to use strategies for integrating technological innovations in small businesses on the island. This may lead to an increase in small business performance, revenue, and overall success.

### **A Review of the Professional and Academic Literature**

The purpose of this qualitative exploratory multiple case study was to explore strategies business managers and supervisors use for integrating technological innovations in small businesses in St. Lucia. The overarching research question for this study was, What strategies do business managers and supervisors use for integrating technological innovations in small businesses? I examined several technological innovation integration strategies, which may help business managers and supervisors integrate technological innovations and assist in achieving an increase in profitability and productivity for St. Lucian small businesses.

Several researchers have addressed the effects of integrating technological innovations such as business model realignment, disruptive innovation, training, diffusion of innovation, reactions to innovation, and profitability (Chew & Gottschalk, 2013; Coccia, 2014; Kesting & Günzel-Jensen, 2015; Harris et al., 2013). In this review, I

examine literature, which relates to the success factors for integration of technological innovations (e.g., economic growth, competitive advantage, productivity, and efficiency). I also analyze scholarship on lessons learned from neglecting integration of technological innovations in small businesses. Several studies have been conducted on technological innovation integration strategies in small businesses (see Arora & Mithas, 2015; Atkin, Hunt, & Lin, 2015; Brunswicker & Vanhaverbeke, 2014; Chew & Gottschalk, 2013). My hope was to discover newer scholarly literature on specific to strategies small businesses in developing countries such as the Caribbean islands or in St. Lucia.

I begin the literature review with an overview of technology, followed by the concepts of innovation, technological innovation, disruptive technology, disruptive innovation, and diffusion of innovation. The literature review also includes strategies for successful integration of technological innovations, change management, business model alignment, and communication. It also includes discussion on successful technological innovation strategies in business, training, failure factors of integrating technological innovations, and technological innovation strategies for profitability and competitive advantage.

To construct the literature review, I obtained information through searches and examinations of recent research writing, in the area of technological innovation studies. I also accessed peer-reviewed literature by using databases from Walden University Library. These included Google Scholar, Emerald Management Journals, Business Source Complete, ABI/INFORM Complete, Science Direct, technological innovation studies, and Sage Management & Business Studies. The search included keywords and

phrases such as innovation, disruptive innovation, disruptive technology, business process integration, business strategies, innovation strategies, sustainability, technological innovations, sustainable development, small businesses, diffusion of innovation, disruptive innovation, information systems, organizational change, technology adoption, technological strategies, cultural context, and process improvement. This literature review includes 285 journal articles and three books on topics referencing technological innovation integration strategies. Of a total of 285 references, 269 (98.5%) were peer-reviewed publications from between 2013 - 2017.

### **Overview of Technology**

As the landscape of business and technology changes, business managers and supervisors have become more aware of the potential positive impact technology can have on their businesses. Technology is the diffusion of findings, new knowledge, or innovations from specific activities, which transfer to the products and processes of a business (Boccardi, Heath, Lozano, Marzetta, & Popovski, 2014). Berawi (2015) defined technology as an innovation process, which involves reinforcement of products or services by constructing, transforming, forecasting, and producing new product functionalities. The reengineering of processes and incorporation of new features into products may enhance the competitive value of technology and the potential to increase business productivity (Hussein & Dayekh, 2014). The performance of a business depends on how well the integration of new technology merges with business processes to develop better-quality products, which increase profitability and efficiency.

## **Concept of Innovation**

Christensen (2013) conveyed one of the most common definitions of innovation, describing it as how an individual or societal group perceives an idea as being new. Other researchers have viewed innovation as a business's fundamental tactical means of entering and attracting new market competitors, securing a competitive advantage, and increasing the business's market share (Tavassoli & Karlsson, 2015). A business's drive for innovation fosters growth, creativity, and the ability to appeal to new entrants within similar markets (Ceicyte, 2015). The type of innovation, whether continuous or discontinuous, requires a transformation of current business processes, products, or services (Bateman & Davies, 2014). The act of transforming business processes may signal the presence of innovation in a business. Innovation results from successful strategies, sound market relationships, and investment (Rogers, 2015). Bartoloni and Baussola (2015) asserted innovation and creativity are preconditions for achieving successful development of new products and services. Innovation encompasses all factors leading to sustainable growth and profitability (Marcelino Sadaba, Perez-Ezcurdia, Echeverria-Lazcano, & Amurrio, 2015). Hence, business managers and supervisors should cultivate a business culture that encourages innovation to sustain the business, increase revenue, and stimulate future business expansion.

A business culture, which is focused on big thinking, is a catalyst for innovation and creativity, which results in concepts a layperson may not visualize (Bianchi & Steele, 2014; Suwannathat, Decharin, & Somboonsavatdee, 2015). Zhang and Zhu (2015) purported that innovation occurs in four dimensions: (a) product innovation, (b) process



innovation, (c) marketing innovation, and (d) organizational innovation. A business may choose a form of innovation conducive to the financial and physical resources available to the business (Bateman & Davies, 2014). In light of the determinants of innovation, it is not typical for businesses to use all four innovation types simultaneously or in combination (Marcelino Sadaba, Perez-Ezcurdia, Echeverria-Lazcano, & Amurrio, 2015).

Product innovation involves development of new products for individuals internal and external to a business (Restuccia, de Brentani, Legoux, & Ouellet, 2015), whereas process innovation refers to adopting an innovation, either conceptually or physically, within a business (Schenk, 2014). Kumar and Zattoni (2014) described another innovation type, marketing innovation, as introducing a new marketing strategy into the business process by incorporating the four P's of marketing, namely, product packaging or design, placement, pricing, and promotion of products. Implementing the four Ps fosters customer satisfaction, encourages new product visibility, and opens up new investment avenues, which may, in turn, provide a surge in sales, and ultimately increase profits and improve organizational performance (La & Yi, 2015). The use of such marketing tactics can also result in new business development and expansion opportunities for small businesses.

Organizational innovation refers to the incorporation of a new business strategy, which reflects how a firm performs external relations or conducts business within the workplace (Aeron & Jain, 2015). Organizational innovation stems from aligning appropriate business strategy to the business objective, rather than focusing on the

business structure (Berends, Jelinek, Reymen, & Stultiens, 2013). In considering the innovation dimensions of other research, Pelser (2014) asserted new product innovation and process innovation have the strongest connections and positive influences on organizational performance. These positive influences may support future business expansion and increase employment in a community.

The results of an analysis by (Hueske, et al., 2015) on the external environment business group and individual barrier model (EOGI model) highlighted that the EOGI model works as a conductor for minimizing innovation barriers. The model helps minimize innovation barriers and contribute to new firm competence, which includes having the interaction of a knowledgeable technical committee central to the business (Nambisan, 2013). The level of interaction usually centers on the business's innovation strategies.

### **Technological Innovation**

Technological innovation is the level at which new technology surpasses seemingly superior technology (Christensen, 2013). Battisti, Colombo, and Rabbiosi (2015) described technological innovation as a process where new or improved technology is developed or purchased and put into extensive use. Hong, Kim and Cin (2015) described technological innovation as a process of utilizing upgraded technologies and solutions, sustaining market demands and customers.

Technological innovation provides solutions to development challenges businesses may experience (Aytekin, Degerli, & Degerli, 2015). Integrating technology may mean creating new interdependencies among platforms or a way to exhibit self-

sufficiency. One of the most recent technological innovations reflecting both interdependence and self-sufficiency is cloud computing. Cloud computing is a direct result of increased use of information and the insatiable need for storing information online (Linthicum, 2016; Ratten, 2014). Cloud computing technology may provide businesses the ability to use basic technological services to access information and, at the same time, minimize the cost of acquiring hardware and software (Ratnam & Dominic, 2014; Tarmidi, Rasid, Alrazi, & Roni, 2014). The Malaysian government adopted cloud computing because it provides the seamless integration of the country's current technologies with cloud- computing technologies. The Malaysian government could then access information from various geographic regions on demand (Khan, 2014). The goal of the government of Malaysia was to spread cloud computing throughout the region (Abolfazli et al., 2015). Cloud computing may help businesses remain buoyant in both common and high-tech industries.

Business managers and supervisors understand and interpret technological innovation in the context of their immediate business environment (Ritchie, Lewis, Nicholl, & Ormston, 2013). The size of the business and level of innovation are important when considering the firm's strategic goals (Pellegrino & Vivarelli, 2015). Using technological innovation within the business may increase organizational performance, decrease transaction related costs, enhance workplace satisfaction, increase productivity, and create an avenue to gain implicit knowledge regardless of a focus on strategy or structure (Bala Subrahmanya, 2015). Research on the effects of technological innovations of customer satisfaction and operational performance among manufacturing

companies revealed technological innovation has significant and positive effects on firm, delivery, cost, flexibility, and innovative performances (Abdallah, Phan, & Matsui, 2016; Kingston, 2015).

### **Concept of Disruptive Technology**

What makes disruptive technology unique is the displacement of the dominant firm by the business, which currently owns the disruptive technology (Abraham, Harris, & Auerbach, 2015). Cases of disruptive technology include the displacement of brick-and-mortar retailers to online retail stores, laptops displacing desktops, and more recently, smartphones displacing landlines or original cell phones. Foss and Saebi (2015) asserted disruptive technology may have adverse effects on a business's culture and business processes. Users easily accept disruptive technology if they comprehend the reason for the disruptive technology and how the disruptive technology may be beneficial. Researchers indicated management might differ during the evaluation and adoption of a disruptive technology because disruptive technology has more successful features than does sustaining technology (Brattstrom, Lofsten, & Richtner, 2015).

Disruptive technology involves new products and changes in the structure of a business (Menguc, Auh, & Yannopoulos, 2013). If business managers and supervisors observe how businesses with similar products and services use particular technological innovations and heed to lessons learned, business managers and supervisors may safeguard the business before the technology becomes disruptive. Business managers and supervisors should understand disruptive technology evolves. Disruptive technology delivers opportunities; however, if business managers and supervisors are not cautious

when implementing disruptive technology, unanticipated risks may affect the business's cost and revenue (Lui, Ngai, & Lo, 2015). Business managers and supervisors neglecting to invest in disruptive technology may experience a sudden loss of market value (Yamagata-Lynch, Cowan, & Luetkehans, 2015). Moss (2014) stated companies such as Blockbuster, Nokia, Blackberry, Polaroid, Lucent, Compaq, Borland, and Kodak are companies which failed to demonstrate a proper reaction to disruptive technology.

### **Concept of Disruptive Innovation**

Innovation may be disruptive, radical, incremental, or sustaining (Souto, 2015). Regardless of the nature of innovation, businesses ought to revisit the current business model to avoid the possibility of experiencing major setbacks in adapting to innovation. According to Gandhe (2015), disruptive innovation is a form of radical innovation involving the use of technologies as a tool to improve products and services through (a) the simplification of processes, (b) user-friendly technology, and (c) less expensive technology appealing to new or less-demanding customers. Christensen (2013) explored the way in which more superior technologies displaces traditional technologies. Christensen changed the term disruptive technology to disruptive innovation and argued technology, on its own, is not disruptive unless the use of the particular technology enables the company to undertake innovation (Christensen, 2013; Nagy, Schuessler, & Dubinsky 2016).

Business managers and supervisors may use the knowledge of disruptive innovation to identify innovation strategies, assess the business's capabilities for successfully integrating technological innovation, and avoid the challenges of adoption,

acceptance, and assimilation of innovation within the business (Daidj, 2015). Disruptive innovation is not always complicated (Nagy, Schuessler, & Dubinsky 2016).

Organizational readiness for disruptive innovation depends on the business's resources, processes, and values (Govindarajan & Ramamurti, 2014). According to Christensen (2013), a business's resources can be in the form of a purchase, sale, hire, or fire. Most organizational resources are usually measurable and may include equipment, people, technology, information, funding, product design, and relations with stakeholders and customers (Wendelken, Danzinger, Rau, & Moeslein, 2014). Business managers and supervisors may be able to assess the value of their business or investment according to the resources available to the business.

The process aspect of disruptive innovation is the ability for employees to perform recurrent jobs consistently over a long period. The process includes the development of a product, the manner of conducting market research, the business's budget, allocating resources, and employee compensation and development. The most critical process is supporting investment decisions. To support investment decisions, business managers and supervisors may focus on (a) how the business conducts market research, (b) how the business converts research into financial projections, (c) how the business negotiates budgets and plans, and (d) how the business delivers results (Ballot, Fakhfakh, Galia, & Salter, 2015). Values are standards employees may use to make and prioritize decisions (Blair, 2015). The kind of decisions the company may want to judge one outcome over another or weigh the importance of one customer over another. Values

evolve; for instance, what may seem attractive at a particular juncture in the existence of the business may no longer be attractive as the business matures.

New technology influences the level of effectiveness and efficiency within a business and may have a positive impact on organizational performance and profitability (Atkin, Hunt, & Lin, 2015). Various industries experience disruptive innovation in the form of disruptive technology. For instance, mobile banking is a disruptive innovation offering customers value and benefits (Reddi, 2016). The use of mobile phones facilitate mobile internet banking in India, and was estimated to be a US\$350 billion industry in the year 2015 (Bryson, Atwal, Chaudhuri, & Dave, 2015). Countries in Africa are experiencing radical transformation as a result of mobile banking (Moser, 2015). Mobile Internet is a disruptive technology using inexpensive mobile devices with Internet capability to administer treatments of terminal illnesses via remote health examinations (You, Palmieri, & Barolli, 2015). In the past, farmers used expensive satellites to survey crops; today, farmers use less expensive technology such as drones to survey and analyze crop health and readiness (Wade, 2015).

### **Concept of Diffusion of Innovation**

One of the most dominant models within the milieu of communication in marketing is diffusion of innovation (Nemutanzhela & Iyamu, 2015). Diffusion of innovation is a process by which innovation extends across communication channels and reaches members of social systems as time progresses (Rogers, 2015). The core concepts of diffusion of innovation encompass innovation, time, communication channels, and

social systems (Rogers, 2015). Diffusion is more likely to occur when individuals have the same level of understanding about the innovation (Uchida, 2015).

Wei, Lowry, and Seedorf (2015) declared researchers use diffusion of innovation to explore how individuals react to the implementation of an innovation and the impending success of the implementation. An innovation is an idea or practice an individual interprets as new (McMullen, Griffiths, Leber, & Greenhalgh, 2015). New ideas open up opportunities for new direction and better business value (Aytekin, et al., 2015). Although diffusion theory refers to the spread of new approaches, objectives, or ideas the user may or may not accept or adopt the innovation. The tendency for a user to accept or adopt innovation is usually based on the user's organizational culture, characteristics of the particular innovation, or the indirect messages conveyed to the users by management (McMullen, Griffiths, Leber, & Greenhalgh, 2015). Innovation is the key to business growth development, and users are key players in the success of an innovation (Patnaik & Prasad, 2013). Business managers and supervisors should be mindful of the five factors, which influence the rate of technology adoption: (a) relative advantage, (b) compatibility, (c) complexity, (d) trialability, and (e) observability (Aizstrauta, Ginters, & Eroles, 2015; Rogers, 2015).

- Relative advantage is the notion of new technology being better than the technology of the past. The ability to reach and convince individuals who interact with new technology are the most important aspects of implementation. A user may hasten to accept an innovation if the user visualizes the benefits of the innovation. Harnessing the enthusiasm and



obligation of those key players to planned change is often the greatest challenge faced by management.

- Compatibility is whether individuals perceive the new technology will meet needs, current values, and is consistent with previous experience with other technology.
- Complexity refers to the perception about new technology being difficult to comprehend and navigate. This aspect of the innovation process requires learning and acquiring new skill sets.
- Trialability is the extent to which the new technology has been tried and improved upon. This is an evaluation stage to ascertain whether the innovation is deal for the business.
- Observability is whether individuals acknowledge and comprehend the benefits of the innovation. At this point users or businesses accept or do not implement the innovation (Aizstrauta, Ginters, & Eroles, 2015; Rogers, 2015).

Some researchers classify relative advantage, complexity, and compatibility as processes towards technology adoption (Mehmood, Barbieri, & Bonchi, 2015). Saenz-Royo, Gracia-Lázaro and Moreno (2015) highlighted technical elements of compatibility and complexity as perceived ease of use and relative advantage as perceived need in the adoption process.

Modeling adoptions and the stages of diffusion MASD may help ascertain how innovation or a phenomenon spreads within a population (Mehmood, Barbieri, & Bonchi, 2015). According to Rogers (2015), adopters of innovation or early adopters represent

13.5% of the population. Early adopters are usually opinion business managers and supervisors and are discrete in adoption choices (Rogers, 2003). Innovators refer to a group of individuals who are risk takers and the first to adopt an innovation. Innovators are usually in the top echelon of a social class (Christensen, 2013). Laggards represent 16% of a population and include individuals who focus on tradition, and are the last to adopt an innovation (Rogers, 2003; Triguero, Moreno-Mondéjar, & Davia, 2014). Late majority are individuals who adopt an innovation after average individuals of society and are skeptics of innovation (Aizstrauta, Ginters, & Eroles 2015; Rogers, 2003). The early majority consists of individuals who have an above average social status and typically adopt an innovation over time (Christensen, 2013). Early and late majorities believe innovation generates business value and represent 34% of the population (Christensen, 2013; Rogers, 2003).

**Communication.** The communication channels of innovation refer to the way in which innovation transmits from one individual or team to another (Aizstrauta, Ginters, & Eroles, 2015). The communication channel may be verbal, via interpersonal communication, team meetings, mass media, intranet, and so forth. The method of communication is vital in spreading innovation as the communication method may determine how users receive, accept, adopt, or reject the innovation. Business managers and supervisors may consider the culture of the business to determine the best method of transferring information about the innovation. According to Rogers (2015), time affects the diffusion of innovation in various ways:

- The length of time a user takes to accept the innovation after introducing the innovation to users.
- How open is the user to innovation in comparison to other individuals in the same environment? This means, the mentality of the user towards change or something new.
- The proportion of individuals who accept and adopt the innovation and the length of time the individuals take to accept, adopt, or reject the innovation.

According to Wei, Lowry and Seedorf (2015), the social system aspect of innovation deals with collaboration among members to resolve issues relating to the innovation. Individuals may come to a consensus quickly when those individuals understand the purpose of the innovation has one common goal. A comparison of Roger's seminal work on innovation diffusion behavior with Hofstede's culture dimensions on individualism/collectivism and uncertainty avoidance revealed both cultural dimensions influence the rate at which diffusion occurs (Desmarchelier & Fang, 2016).

Another scholar asserted the diffusion of innovation theory constitutes three main groups:

- The characteristic of the individual (leader) refers to the individual's approach to change in a business.
- The internal attributes of the business comprise qualities, which foster innovation adoption, centralization of knowledge, harnessing a high level of skills, organizational culture and social capital, the structure of interpersonal networks, and the size of the business.

- The external characteristics of the business which involves how open the business is towards innovation (Gu, Schniederjans, & Cao, 2015).

### **Strategies for Successfully Integrating Technological Innovations**

Vargas (2015) asserted during the phases of the innovation cycle, businesses may amass specific innovation competencies to grapple with managing emerging change challenges, which may inhibit the business's potential to attain a high level of efficiency and profitability. Business managers and supervisors may develop the aptitude to manage new technological innovations effectively by investing in integrative skills (Brownsword, 2016). The integration of technological innovation may require employees to perform jobs differently. Most technological innovations are in the form of software and may necessitate changes to equipment, procedures, operating systems, hardware, and service oriented changes (Shrivastava, Ivanaj, & Ivanaj, 2016).

**Change management.** The concept of managing change shifts from change control, which deals with the need for change restrictions, to change management, which describes overseeing the change process (Rose, 2015). Change management is a systematic method of organizing, coordinating, managing, and reporting system changes possibly having adverse effects on the delivery of service (Slater, Evans, & Turner, 2015). The human element of change is critical to succeed at technological innovation integration. Before change occurs, business managers and supervisors should make certain change recipients understand why the change is occurring and how stakeholders may benefit from the change. To manage change, business managers and supervisors may incorporate sound change management strategies involving every layer of the business.

The change management strategies may include conveying to change recipients how the new technology fits into the current environment and explanations and specific training regarding new functionalities of the innovation (Slater, Evans, & Turner, 2015).

According to Guisado-Gonzalez, Vila-Alonso and Guisado-Tato (2016), training may have a profound influence on a business's productivity.

To address issues or concerns relating to innovation, business managers and supervisors need various channels of communication to reach out to change recipients. The business may convince users of change through media such as meetings, bulletins, intranet, and frequent emails (Brookes, 2015). The business should respond to questions, concerns, and issues adversely affecting employee morale (Sania, Kalpina, & Javed, 2015). Business managers and supervisors should encourage an atmosphere of knowledge sharing and provide adequate training to elevate employees comfort and confidence level navigating the new technology successfully. Management should ensure individuals going through technological change understand the reason for innovation efforts. The overall change management process should include every department or stakeholder the potential change affects.

Regardless of the industry, and the type of technological innovation, change management should produce opportunities for continuous improvement. Continuous improvement is a competence to improve, grow, and develop on current products, processes, and services of the business (O'Brien, 2016). Continuous improvement is one of the elements driving innovation into scalability and sustainability, thereby creating a platform for competitive advantage. The basis of a competitive business as it relates to

technological innovation is the management of the business model and innovation (Chroner, Johansson, & Malmstrom, 2015).

**Business model alignment.** Business models are essential for innovation, thus, business managers and supervisors should develop and manage business models to capture value and deliver successful innovations for the business (Malmstrom, 2013). The alignment of the company's business model with innovation efforts is vital to generate high venture performance (Bicen & Johnson, 2015). With the use of a business model, business managers and supervisors may be able to accomplish the following:

- Express the value proposition (Aghdaie & Alimardani, 2015; Scannella, 2015; Sharma & Ghosh, 2015).
- Isolate a market segment (Aghdaie & Alimardani, 2015).
- Describe the configuration of the value chain of the business and determine the other assets business managers and supervisors may require for support to the value chain within the business (Aghdaie & Alimardani, 2015; Scannella, 2015; Sharma & Ghosh, 2015).
- Provide an estimation of the cost structure and profit potential of the new value resulting from the new technology (Aghdaie & Alimardani, 2015; Ihemeje, 2015; Scannella, 2015; Sharma & Ghosh, 2015).
- Create a value network linking suppliers and customers (Aghdaie & Alimardani, 2015; Scannella, 2015; Sharma & Ghosh, 2015; Sheehan & Bruni-Bossio, 2015).

- Formulate a competitive strategy, in which the business will build a sustaining competitive advantage over the competitors (Aghdaie & Alimardani, 2015; Lorange & Datson, 2014; Scannella, 2015; Sharma & Ghosh, 2015).

The disbursement of cash towards developing new business models by worldwide conglomerates amount to more than 10% of their total investment (Bereznoi, 2015). Integrating technological innovations provides resources to optimize decision making, which may improve the quality and efficiency of business (Bolsinger, 2014). The business may utilize practices, which may have a clear path to attaining strategic vision, goals, and provide continual product and process improvement. Excellent innovation strategies ought to include the Deming plan-do-study-act cycle PDSA analysis before implementing change (Hood, 2014). PDSA is a systematic series of steps comprising four elements, which would possibly steer businesses in achieving metrics. The Plan step of the cycle is where the business may identify organizational purpose or goal and frame a model defining success metrics the business may put into action. To obtain success metrics, the business may establish a team of forward thinking individuals knowledgeable of the issue, product, or opportunity requiring improvement. The team in charge of identifying success metrics for the business may have the mandate to identify roles, tasks, set milestones, and set up meetings to examine and describe the business's existing business context and process. The success metrics team should be aware of what the business is currently doing and how the business achieves the mission. The success metrics team should comprehend the following:

- The steps in the current business process.
- The individuals who drive the process.
- The roles of individuals in the process.
- How to improve the current process (Donnelly & Kirk, 2015).

One popular tool for visually mapping out the business process is the swim lane map which includes individuals, responsibilities, and timelines in the form of a map (Hood, 2014). Hood (2014) asserted, if roadblocks exist, the swim lane map may assist businesses in identifying where and what is wrong. According to Wolf, Doane, and Thompson, (2015), the business may want to formulate an aim statement focusing on three questions:

- What is the business trying to accomplish?
- What dictates whether the change is an improvement or not?
- What changes can the business make resulting in improvement?

The Plan phase also includes examining the business's current processes by determining whether the processes are efficient and cost effective. The Do step is where the business may implement the components of the plan and transform the success metrics into the actual product. In the Do step, the success metrics team may utilize specific tools, such as a check sheet or a run chart to document results of data occurrences over a period.

The Study step involves the changes from the improvement. The business may monitor the results of the product to assess validity as it relates to success, progress, issues, and areas requiring improvement. Utilizing the aim statement, the team may want



to determine if the plan is (a) an actual improvement, (b) if the plan is within budget, (c) whether the plan is worthy of investing, and (d) if there are any impending repercussions.

The Act step is the end of the cycle. The Act step is where the business uses the new knowledge from the entire PDSA process to adjust goals, and change or re-engineer the business model (Thompson, 2015). If the plan is successful, the plan should become a standard and the business may use the plan as an element of the business process. The dynamic nature of business and technology may propel the business to revisit the business process or plan to make improvements from lessons of previous performances. According to Kong and Kong (2013), the PDSA cycle is an effective strategy regardless of the resources available within a business. This PDSA cycle is an iteration put in motion to gauge continual improvement (Donnelly & Kirk, 2015).

**Successful innovation strategies in business.** Teoh and Cai (2015) noted the agile approach is typically used to aid in development, innovation, diffusion, and influence information technology enabled innovations. Arora and Mithas (2015) highlighted an example of technological innovation integration strategies used by a renowned Indian company (akin to the GE of India) a giant employer in the private sector in the UK and India. Arora and Mithas (2015) asserted the overall strategy of the company is to develop innovation aptitude, measure the innovation, facilitate the innovation, and foster a recognition and reward mechanism for innovation (Arora & Mithas, 2015). The company's approach was to create an innovation forum comprising CEOs and other top executives who met quarterly to discuss and fill gaps in their innovation model. The innovation forum fostered an innovative environment as they

advised the corporation on innovation improvement capabilities to champion a community of innovation evangelists (Arora & Mithas, 2015). Learning missions where site visits to renowned firms such as 3M, Raytheon, HP, Hitachi, Olympus, among other giant companies, were set up to gain an intimate appreciation of their innovation strategies (Arora & Mithas, 2015). As a drive towards innovation, business managers and supervisors may conduct low-cost experiments and focus on enhancing communication across management and incorporating innovation into their in-house business model.

An additional innovation strategy is to assess as is innovation status quo regarding the process of innovation, the innovation culture and how innovation is strategically in line with business strategy (Hao & Song, 2015). The as is strategy solicits valuable feedback detailing whether employees and management have sufficient resources, the prospects of innovation, and are empowered to innovate. Applying corporate innovation strategy allowed a renowned business to realize tremendous financial growth from being a US \$5.8 billion Indian company in 1992 to a US \$103 billion worldwide establishment in 2014 (Arora & Mithas, 2015). The company's revenue external to India is in excess of 65%. In addition, because of using these strategies, the company experienced a 20% benefit in revenue gains and 80% in innovation cost reduction (Arora & Mithas, 2015).

To enable flexibility in making decisions to foster profitability, businesses may experiment with and test new business models (Arora & Mithas, 2015). Instead of simply introducing new hardware into the market, Apple changed the company's business model to accommodate a continuous customer relationship. The decision to transform Apple's

business model afforded Apple the opportunity to expand the core of innovation from the actual product space to the business model (Nicolás, & Sanz, 2014).

Training. Technological innovation can promote diversity and inclusion. Business managers and supervisors should prepare the business to respond to disruptive technology by ensuring the business's business model captures the value of disruptive technology may produce new metrics for the business (Narasimha & Vijaya, 2015). Lack of sufficient technical skills, training and exposure to the innovation may pose a barrier to adopting an innovation. Management may invest heavily in training and have exposure to technology aiding in the successful implementation of technological innovations and improve the business's operative challenges (Dwomoh, 2015). One strategy is to provide frequent training in the form of innovation workshops with prominent innovation experts where the innovation group would discuss concepts and features of the innovation to individuals (Hamada, 2014).

Several individuals own a smartphone with Internet connectivity. Thus, business managers and supervisors should use disruptive technologies to educate individuals within the company about disruptive technologies. A key example of a disruptive technology to expedite training and continuous education is the mobile internet, which may be less expensive and more accessible to employees and stakeholders (You, Palmieri, & Barolli, 2015).

### **Failure Factors of Integrating Technological Innovations**

Attempting for integrating technological innovations may fail for a number of reasons. Some small and medium enterprises fail at innovation because of a lack of

appropriate resources, technical aptitude, and the absence of internal strategies (Bala Subrahmanya, 2015). One key reason for unsuccessful innovations is too little investment unable to produce substantial future returns (Comedy & Grama, 2016). The lack of cultural context, lack of adoption behavior, and resistance to change within the business are also failure factors of innovation (Heidenreich & Kraemer, 2015).

Business managers and supervisors have great difficulty using or managing innovations, which do not fit within the business leader's former experience. The difficulty may stem from the characteristics of the new technology, or management processes for the innovation (Nedbal, 2013). There is little empirical evidence addressing how to avoid high failure rates of innovation (Chor, Wisdom, Olin, Hoagwood, & Horwitz, 2014; Heidenreich & Kraemer, 2015). The absence of technological innovation integration strategies is an opening for pitfalls originating from poor technology adoption, lack of innovation management, cultural context evasion, lack of appropriate training, insufficient funding, management, employee resistance to change, and the absence of technology acceptance (Ahangama & Poo, 2015). Technological innovations, which do not meet the needs of the business have the potential to receive resistance during diffusion. Some huge corporations continuing to develop and launch innovations fail to integrate new business models aligning with innovations (Taran, Boer, & Lindgren, 2015).

**Absence of business model alignment.** The manner in which a product or project fits into a current business model encourages the decision to invest in the project (Kesting & Günzel-Jensen, 2015). Businesses focusing on product improvement and investing in

innovations, which do not meet the needs of employees or customers fully, limit the business's growth potential. The business neglecting to act on innovation opportunities allows other firms using more foresight to gain competitive advantage (Lucas & Goh, 2013).

The absence of business model alignment was a reason for Kodak's financial demise in 2012 (Harris, 2014). Although Kodak had brilliant engineers in digital photography in 1975, the company did not integrate the invention with the business model (Lucas & Goh, 2013). Instead, Kodak worked on improving cameras and film quality and neglecting to create a new business model to facilitate a radical disruptive innovation (Harris, 2014). Kodak did not transform the company's business model, and was unable to reach their end users. Kodak experienced a colossal financial loss because of the company's neglect to incorporate a business model in alignment with the company's vision (Pasternak, 2015).

The Xerox Corporation also experienced several innovation failures (Carayannis, Samara, & Bakouros, 2014). Xerox fell short in managing its intellectual property rights (i.e., neglecting to patent ideas and take advantage of strategically corporate secrets) (O'Regan, 2015). The absence of securing Xerox's intellectual property rights provided opportunities for other businesses of similar interests to exploit the ideas of the corporation. Another innovation failure was a lack of strategies to avoid technological and business risk, which emanated due to not understanding the culture of the business (Ye, Jha, & Desouza, 2015). Xerox also experienced failure in market strategy, as the

various divisions of the business were not culturally synchronized (Carayannis et al., 2014).

### **Technological Innovation Strategies for Profitability and Competitive Advantage**

The prevalent use of technology in business provides a window of opportunity for business managers and supervisors to gain an in-depth understanding of how to approach technological innovation investment and utilize innovation to acquire more revenue for the firm (Maiga, Nillson, & Ax, 2015). Innovation and research and development (R&D) are key drivers of high organizational performance and profitability (Segarra & Teruel, 2014). Small businesses should understand the needs of customers before integrating a technological innovation. Customer value and the integration of technological innovations go hand-in-hand. Creating customer value is important to sustainable business growth and securing a competitive advantage. To create customer value, business managers and supervisors should incorporate the right technological innovation, which may help secure a competitive edge in the business arena. Businesses need disruptive innovation to revitalize products, services and even for the entire business to gain a competitive advantage and improve profitability (Ryan, 2013). Large industrial firms have broad R&D innovation facilities to isolate disruptive technologies, which may offer a lasting competitive edge (Reddi, 2016).

The future return on investments in business process improvement is usually uncertain. Investing in one type of technological innovation does not guarantee success (Maiga et al., 2015). Commissioning technological development alone is not sufficient to realize a significant profit (Arora & Mithas, 2015). To be profitable, business managers

and supervisors should endeavor to seal the gap between the need for technological innovation to deliver, its capacity to deliver and the speed at which it may deliver (Aarnio, 2015).

For a business to achieve profitability from technological innovation integration, management might place great emphasis on restructuring and aligning the business model with the business's vision and capitalizing on major breakthroughs (Maiga, 2015). A business's business processes and financial performance are determinants of the overall performance and profitability of a company (Chairoel, Widyarto, & Pujani, 2015). The results of other studies indicated both internal and external implementations of successful technological innovations are generally associated with quality and cost performance (Maryska & Doucek, 2015). For a business to accomplish ultimate operational performance, the business should have an increase in productivity and a reduction in cost (Azarenkova, Golovko, & Ponomarenko, 2015).

Variables with the propensity to generate profit and incur costs within a business are typically easy to isolate because, more often than not, management is aware of profit and cost parameters. Nonetheless, for business managers and supervisors to obtain a more profound appreciation of the relationship between cost and product, the company may perform a more extensive analysis of activities to identify cost drivers and business processes (Padula, Novelli, & Conti, 2015). The most critical corporate performance management (CPM) area is *profitability modeling and optimization*, which deals with what-if analyses, optimization costs, and product profitability (Maiga et al., 2015).

Most investigators of the nexus between innovation and profitability use the number of innovations to determine the innovation capability of a business (Saunila, Ukko, & Rantanen, 2014). Instead of relying on the number of business innovations solely, companies should examine the factors leading to profitability in small businesses (Krcal, 2014). While differing perspectives exist on how to make innovation a success, some scholars agree on the positive effects of innovation, when it occurs, and how it contributes to organizational profitability (Ghosh & Sur, 2015). Opportunities exist for businesses to maximize profits by capitalizing on disruptive innovations, which may minimize operational cost and yield high revenue. Govindarajan and Ramamurti (2014) asserted companies implementing disruptive innovations have the propensity to gain more at less cost because the innovation provides customers at the bottom of the pyramid with a package of features possessing higher significance on the customer's tier than in the mainstream market.

### **Transition**

Section 1 consisted of the focus of the study, the strategies business managers and supervisors may use for integrating technological innovations in small businesses for profitability and efficiency. The first element of Section 1 was the background of the problem with subsequent discussions on the problem and purpose statements, nature of the study, research questions and interview questions, conceptual framework, operational definitions, assumptions, limitations and delimitations, and the significance of the study. Section 1 also included a review of the professional and academic literature, which



highlighted the disruptive and diffusion of innovation models forming the conceptual framework for the study.

Section 2 includes discussions on the role of the researcher, participants, research method and research design, population and sampling, ethical research, data collection instruments and techniques, data business techniques, data analysis, and reliability and validity. Section 3 contains the findings, the study's application to professional practice, implications for social change, recommendations for action, recommendations for further research, reflections, and conclusions.

## Section 2: The Project

The purpose of this qualitative exploratory multiple case study was to explore the strategies business managers and supervisors use for integrating technological innovations in small businesses. In Section 2, I provide information on the project, including the role of the researcher, participants, research method, and research design. The section 2 also includes details about my population and sampling technique, data collection analysis procedures, issues of ethical research, and the reliability and validity of the study.

### **Purpose Statement**

The purpose of this qualitative multiple case study was to explore the strategies business managers and supervisors use for integrating technological innovations in small businesses. The target population included business managers and supervisors from two small businesses in the Caribbean island of St. Lucia. This study may contribute to positive social change by providing business managers and supervisors on the island with a broad understanding of strategies they may use, and innovative solutions for the integration of technological innovations in their business. Implementation of these strategies may result in better business practices, expansion of businesses, increases in tax revenues and employment, and a boost to the economy.

### **Role of the Researcher**

The role of the researcher is central to the data collection process. In qualitative research, the researcher plays an integral role in understanding the experiences and behaviors of participants (Bashir, Sirlin, & Reeder, 2014). The researcher listens, avoids

being judgmental, and remains focused, involved, and interested in each participant's responses. In accordance with the Belmont Protocol Report, researchers must adhere to ethical standards and guidelines for the protection of research participants (Zucker, 2014). My role was to interview 10 participants from two companies, collect and analyze data, and manage the course of the interview process while protecting the privacy of participants. I possess extensive experience in technological innovation integration, and I have played an integral role in integrating technological innovations in businesses within the public and private sectors of St. Lucia.

Bashir et al. (2014) asserted confirmation bias is one of the most common researcher biases during research. Confirmation bias occurs when there is subjectivity in the research process, which occurs when the researcher filters participants' information and use a subset of information relating to the researcher's preexisting beliefs (Wu, Xu, Wang, Ma, & Kuang, 2013). To reduce confirmation bias, I performed a series of reassessments of my interpretation of participants and sought to challenge my preexisting assumptions. An example of confirmation bias would be the issue of gun control in the United States. If an individual is a proponent of gun control, their natural tendency is to defend and deflect any negativity associated with the gun control topic. This may be construed as confirmation bias.

Culture bias occurs when researchers judge and make inferences relating to the participants' responses, and measure the participants from the influence of the researcher's personal cultural background (Sparks, Cunningham, & Kritikos, 2016; Withers & Nadarajah, 2015). To avoid culture bias, I was mindful of cultural variances

and what would be acceptable in one culture might not be acceptable in another culture. I demonstrated absolute respect for the participants' culture by disassociating aspects of my culture from the culture of the participants. I actively listened to the participants' responses and kept a journal with written notes to avoid potential cultural bias during the research.

According to Yin (2014), the use of an interview protocol is important to ensure collected data will address the initial research question. I followed an interview protocol I developed for this research (see Appendix A) to conduct the interviews. I obtained approval from Walden University's Institutional Review Board (IRB) approval number **01-13-17-0243729** before starting the semistructured interviews. I conducted semistructured interviews to gain an understanding of strategies business managers and supervisors reference when integrating technological innovations in the business. To maintain privacy and proper research decorum, I kept the participants' information confidential. I will store collected data in a bank safe for a minimum of 5 years before discarding all electronic and non-electronic transcripts.

### **Participants**

To be eligible to participate in the study, individuals had to be working in a small business in St. Luca in one of the following roles for at least 5 years: information technology manager, chief engineer, customer service manager, chief financial officer (CFO), business manager, corporate communications manager, systems control manager, chief executive officer (CEO), human resource manager, and audit manager. Participants with knowledge and experience of a phenomena are generally in a position to make

decisions associated with new ventures, and are more willing to participate in research (Marshall & Rossman, 2015; McCullagh, Sanon, & Cohen, 2014; Prior, 2014). The aforementioned participants were part of senior management who have qualifications and immediate experience integrating technological innovations in a business.

To gain access to participants, I sought authorization from Walden University's (IRB) to conduct the research. On February 22nd 2017, I notified the executives from the two interview sites via e-mail that I had received IRB approval to conduct the research. The executives of the two businesses signed letters of cooperation (see Appendix B) and scanned and e-mailed the original documents to me. They also provided a list of prospective participants, including their positions, and length of tenure.

The success of a research study is dependent in part on the relationship that is established between the researcher and the participant (Manning & Kunkel, 2014; Shuchman, 2014; Yin, 2013; Zhao & Haga, 2013). To foster a working relationship with participants, I wrote an e-mail to introduce myself and explain the reason for the research. The email included the purpose of the study, selection criteria, and the advantages of the study. I made contact with prospective participants by telephone, e-mail, and Skype.

Researchers such as Aanon (2014), Dickert (2013) and Zutlevics (2016) conducted research in which they did not compensate participants. In the same way, I did not offer compensation to participants for the study. To protect participants from harm, researchers should remain transparent with participants (Allen & Wiles, 2015; Kornbluh, 2015; Yin, 2014). I sought to avoid using any form of deception during this study. Confidentiality and anonymity are critical aspects of research (Dhai & Payne-

James, 2013; Young & Temple, 2014; Kornbluh, 2015). In order to foster confidentiality and prevent participants from being in any undesirable position, I ensured participants were anonymous by referring to them using pseudonyms.

As a guarantee of privacy, and to cultivate confidence and trust, many researchers use pseudonyms to identify participants and businesses during a research investigation (Allen & Wiles, 2015; DeFeo, 2013; Young & Temple, 2014). In the same way, I used pseudonyms to identify participants and preserve the anonymity of the business and participants in my study. I told participants they were free to discontinue participation in the study during the informed consent process. Researchers follow a research protocol where participants sign informed consent forms to participate in research (Anderson, 2015; Leung, 2015; Nalini, 2015). I ensured research participants replied *I consent* to the e-mail I sent them containing an attached informed consent form. I will store digital data on a password-protected computer and nondigital data in a bank safe, where it will be kept for a minimum of 5 years.

### **Research Method and Design**

Researchers use a variety of methods to conduct research, which includes quantitative, qualitative, and mixed methods (Chen & Liu, 2014). A researcher selects a research method that addresses adequately the research question (Hammersley, 2013). The qualitative method is appropriate when the focus of the study is on real-life human experiences in a natural environment (Elo et al., 2014). Researchers use the quantitative method when conducting deductive research to test correlations among variables

(Hafford-Letchfield, 2014). Mixed method research is used by scholars to develop a qualitative and quantitative perspective to answer the research question (Mauceri, 2015).

### **Research Method**

Qualitative research is a nonmeasurable process of inquiry, which generates data and insight from human environment (Creamer & Tendhar, 2016; Sarma, 2015; Sotiriadou, Brouwers, & Liang, 2014). Morse (2015) stated there are five types of qualitative research: phenomenology, grounded theory, narrative, ethnography, and case study. Researchers use the qualitative approach to understand participants' emotional state, and the interpretation of various events, material objects, and cultural environments (Khan, 2014; Yin, 2014). The purpose of qualitative research is to perform in-depth analyses of participants' lived experiences within the participant's natural environment (Fields, 2015).

After assessing the work of Khan (2014), Sarma (2015) and Yin (2014) I am confident the qualitative research method was most suitable for this study. The use of the qualitative method was appropriate to communicate with business managers and supervisors, engage in semistructured interviews with open-ended questions, and observe the participants in their day-to-day natural surroundings. I was able to perform a thorough investigation and gained insight into the technological innovation integration strategies business managers and supervisors use in small businesses in St. Lucia.

The quantitative method is a deductive approach of examining and measuring cause and effect phenomena in an objective, systematic, and formal manner, which quantifies and produces data in a statistical format (Bambale, 2014; Hafford-Letchfield,

2014; Salkovska & Ogsta, 2014; Stoudt, 2014). I did not use the quantitative method for this research because the objective of this study was to gain deeper insight into the strategies business managers and supervisors use for integrating technological innovations in small businesses. Also, I did not choose the quantitative method because my intention was not to perform analyses and generation of statistical data.

Researchers use the mixed methods approach for collecting, analyzing, and combining qualitative and quantitative data in one research study (Newman, Lim, & Pineda, 2013; Rice et al., 2014; Zang, 2014). A mixed method integrates qualitative and quantitative methods and is ideal for longitudinal studies (Kachouie & Sedighadeli, 2015; Podmetina, Volchek, & Smirnova, 2015; Ramlo, 2015; Rice et al., 2014; Sadan, 2014). Morse and Cheek (2014) indicated regardless of the multiple approaches within the mixed method, the research method might present challenges. I did not use the mixed methods approach for this study because I sought a profound understanding of the issues related to the integration of technological innovation and did not need the added incentive to aggregate numbers.

There is a small pool of successful innovation strategies addressing the rate of small business failure (Nguyen et al., 2013). Business managers and supervisors may reengineer their business model to synchronize with the technological innovation (Bala Subrahmanya, 2015). Adjusting the business processes to mirror the technological innovation might enhance or foster the growth and development of small businesses.



## Research Design

The five qualitative research designs are phenomenological, grounded theory, narrative, ethnography, and case study (Tetnowski, 2015). Research scholars use case study design to find answers to *how* and *why* research questions (Dumez, 2015; Tetnowski, 2015; Yin, 2014). I used a case study design for the study for answering *how* and *why* research questions. Researchers use the case study approach to examine phenomenon (Garcia, 2014; Zheng-yao & Qing-sen, 2013). Tetnowski (2015) asserted researchers should utilize a multiple case study design across multiple research sites to collect data.

Yin (2014) described a case study as exploratory, explanatory, and descriptive. Researchers utilize qualitative exploratory case study to explore situations where the intervention does not highlight any clear or sole set of results (Bailey, 2014; Charmaz, 2014; Yin, 2014). In a similar study, Johnson (2016) utilized an exploratory case study to conduct semistructured open-ended interviews with two individuals who experienced the integration of information technology in a business. The qualitative multiple case study was appropriate for this study because the purpose of this study was to explore strategies business managers and supervisors used for integrating technological innovations in small businesses. Researchers use multiple case study to interpret various dimensions of data (Dumez, 2015; Hott, Limberg, Ohrt, & Schmit, 2015; Yin, 2013). I used multiple case study to interpret several dimensions of data, about the phenomenon.

Scholars use explanatory case studies when the researcher wants to seek answers to questions explaining relations in real-life interventions, too complex to conduct via

survey or experiments (Garcia, 2014; Johansen, Ness, & Wennesland, 2015). According to Yin (2014), an evaluation within explanatory design would link program implementation with effects. Sfar (2013) utilized an explanatory case study to explain determinants of organizational adoption of technological innovations concerning electronic-banking. The explanatory case study did not coordinate with the purpose of this research.

Phenomenology involves discussion on current phenomena in real-life contexts (Chan et al., 2013; Davidsen, 2013; Yin, 2013). In phenomenological research, there are correlations among the internal and external perceptions of natural objects, opinions and memories (Moustakas, 1994). The objective of phenomenologists is to comprehend the lived experiences of participants as they endeavor to derive meaning from the phenomenon (Sloan & Bowe, 2013, Yin, 2013). I realized the phenomenological approach did not harmonize with the overarching research question because I evaluated strategies business managers and supervisors, used for integrating technological innovations via observations and semistructured interviews.

Another qualitative research design is ethnography, which provides an opportunity for the researcher to immerse into the lives of research participants (Davies, 2015; Shimei et al., 2016; Hamilton, 2015). An ethnographer is involved in the lives of participants and collects data in the participant's immediate environment. Researchers who use ethnography conduct on-site research and several data sources to reach triangulation (Armstrong, 2015; Shimei et al., 2016; Vernon, 2015). Ethnography involves studying participants over an extended period to explore shared norms, beliefs,

and language of a cultural group (Mannay & Morgan, 2014). Ethnography was not appropriate for this study because the focus was not on exploring the process within a group of individuals.

The grounded theory involves formulating theories for large populace, data collection guidance, and procedures for analyzing data (Cooke, 2013; Moss, Gibson, & Dollarhide, 2014; Smith, 2015). Barnsley (2015) conducted a grounded theory research to perform feminist theological enquiry. Grounded theory was not a suitable design for this study because I did not use a large population, as my sample size was 10 business managers and supervisors from two small businesses.

A narrative inquiry involves storytelling, art or autobiographies (Kuronen, 2014; Raeburn et al., 2015; Von Contzen & Alders, 2015). Penninckx, Vanhoof, De Maeyer and Van Petegem (2015) used narrative enquiry to conduct research investigating the extent to which strategic activities, disturbing effects, and emotional side effects occur in the case schools. Narrative design can lead to a figurative rather than literal interpretation of the concept of storytelling (Bjerstedt, 2015). In light of the above discovery, narrative inquiry was not appropriate for this research.

Data saturation is critical in maintaining credibility, transferability, dependability and confirmability of research (Fusch & Ness, 2015). Researchers reach data saturation when no new information, no new themes or no new codes emerge from the data collection and analysis process (Fusch & Ness, 2015; Morse, 2015; Yin, 2014). I reached data saturation after interviewing the 4th participant from BUS1 and the 3rd

participant from BUS2. I asked probing questions to all participants until there were no new ideas, no new themes or no new codes from responses.

### **Population and Sampling**

The target population of this study was 10 business managers and supervisors from various departments within two small businesses in St. Lucia. The population segment comprising of management level individuals is appropriate for a study because typically, owners and managers have a thorough and first-hand understanding of business challenges (Emmel, 2015; Fugard & Potts, 2015; Marshall et al., 2013). The population aligned with the overarching research question because the participants for this study possessed profound experience and in-depth knowledge using strategies for integrating technological innovations in small businesses.

Qualitative researchers asserted in qualitative research, purposeful criterion sampling is used when participants possess experience and knowledge about a research topic (Emmel, 2015; Fugard & Potts, 2015; Grossoehme, 2014; Marshall, Cardon, Poddar, & Fontenot, 2013). Arnold (2016) used purposeful criterion to determine strategies for reducing high turnover among information technology professionals. In a research similar to this study, Okonkwo (2016) justified the use of purposeful criterion sampling to explore innovation strategies of small businesses in Central North Carolina. Researchers conducting qualitative research use purposeful sampling to establish criteria, which qualify research participants to be part of the research (Bungay, Oliffe & Atchison, 2015; Cleary, Horsfall & Hayter, 2014; Smith, 2016). I used purposeful criterion

sampling to identify and select participants who used technological innovations in the business and met the participant criteria.

The sample size refers to the number of units the researcher will be observing (Marshall et al., 2013; Randall & Gibson, 2013). Researchers choose a sample size based on how much information power the sample holds (Morse, 2015). Arnold (2016) used a sample size of information technology leaders who were knowledgeable of the research question. Likewise, Okonkwo (2016) used a sample size which included individuals who had experience using innovation strategies for small businesses. The more information the sample holds about the research, the smaller the sample size (Malterud, Siersma, & Guassora, 2015). I interviewed 10 business managers and supervisors and performed member checking to reach data saturation. I conducted member checking by allowing the research participants to review and validate my interview notes.

Data saturation is the central concept in qualitative research (Fusch & Ness, 2015). The number of interviews a researcher conducts during research without the emergence of new themes or ideas presents a stop criterion, which is data saturation (Morse, 2015). To reach data saturation, I asked probing questions to all participants until there were no new ideas from responses. To address the overreaching interview question, every interview contained seven open-ended questions.

### **Ethical Research**

Researchers use consent forms to provide information to participants to ensure confidentiality and protection of participant rights during the data collection process (Gibson, Benson, & Brand, 2013; Koonrunsesomboon, Laothavorn, & Karbwang, 2015;

Newington & Metcalfe, 2014). The process of obtaining informed consent involves explaining to the participant (a) the purpose of study and how it may contribute to the business, (b) the procedures for conducting study, and (c) the voluntary nature of the study. The informed consent process includes clarification on (a) benefits and risks of participating in the study, (b) compensation, (c) confidentiality, (d) contact information to solicit further elaboration on the study, and participant rights. I provided the informed consent forms to participants via e-mail. The participants replied *I consent* to the e-mail with the attached informed consent form.

I informed research participants that they were free to discontinue participation in the study via e-mail and telephone. Gibson et al. (2013); Morse and Coulehan (2014); and Zhou and Nunes (2013) discussed topics such as compensation methods, ways of contacting participants, and participants' right to withdraw from research. I did not compensate research participants for taking part in the study.

To assure adequate ethical protection of participants, I adhered to the Belmont protocol for conducting the research. According to Zucker (2014), the Belmont report covers three primary ethical principles to use when conducting research: (a) autonomy, where the participant reserves the right to participate or not participate in the study; (b) beneficence, where the researcher minimizes risk or harm to participants; and (c) justice, where participants who participate in the research will likely benefit from the research. The Belmont report also serves as a guide to IRB deliberations to ensure researchers conduct ethical research (Honig, Lampel, Siegel, & Drnevich, 2014).

I determined where to conduct the research, chose the qualified participants from the list I was provided, and permission from the research sites after I received authorization from IRB. I stored digital data on a computer with a password and nondigital data in a bank safe, where it will be kept for a minimum of 5 years before shredding nondigital artifacts and deleting electronic files. Before commencement of data collection, I also obtained approval from Walden University's IRB and included the Walden University IRB approval number 01-13-17-0243729 on the final doctoral manuscript.

To ensure privacy, anonymity, confidence and trust, researchers use pseudonyms to identify participants and businesses during research (Gibson et al., 2013; Morse & Coulehan, 2014; Zhou & Nunes, 2013). I used pseudonyms such as BUS1 and BUS2 to reference the two businesses and BUS1 PT1 through PT5 to reference participants of the first business, and BUS2 PT1 through PT5 to reference participants of the second business in the study. I interviewed five participants from each small business, which was a total of 10 participants for this study. The name of participants were withheld from documentation relating to the study.

### **Data Collection Instruments**

The researcher is the primary data collection tool in research because the researcher visualizes, hears and interprets the data (Denzin, 2014; Holmes, 2014; Marshall & Rossman, 2015). Researchers use semistructured interviews as an operative instrument during the data collection phase (Denzin, 2014; Holmes, 2014; Manning & Kunkel, 2014). I was the primary data collection instrument in this study because I was

able to observe, hear and interpret data first-hand. With the use of open-ended interview questions, my aim was to obtain direct information from business managers and supervisors of small businesses who used strategies for integrating technological innovations. Participants are able to provide detail explanations when responding to open-ended questions (Manning & Kunkel, 2014). I provided a list of open-ended questions for the semistructured interviews.

Researchers use company or archival documents as an instrument for collecting data (Behr, 2014; Marshall & Rossman, 2015; Smith, 2016). I used business documents as an additional data collection instrument for this study. Using a corporate document such as the financial scorecard report, I was able to examine past trends, and gained greater insight into how the strategies business managers and supervisors use for integrating technological innovations in small businesses impacted profitability.

To enhance reliability and validity, researchers use member checking and triangulation (Anyan, 2013; Behr, 2014; Fan, 2013). I addressed reliability and validity by identifying and recording recurrent themes, and used member checking follow up interviews after the semistructured interviews. I used triangulation of multiple data collection methods by comparing information from the financial scorecard report, interviews, and interpreting the participants' reactions and voice intonations towards the interview questions during data analysis.

### **Data Collection Technique**

Researchers use data collection techniques to systematically collect information about the subject of the research (Yin, 2014). Researchers use a data collection technique



contingent on the research design approach of a study (Kornbluh, 2015; Morse & Coulehan, 2014; Smith, 2016). According to Harvey (2014), Kornbluh (2015), and Yin (2014), researchers use data collection techniques such as (a) observations, (b) interviews, (c) written questions, (d) using archival information, and (f) focus groups to obtain triangulation. Zhou and Nunes (2013) argued semistructured interviews are an excellent way for a researcher to concentrate on specific details addressing the research question. I used semistructured interviews to find out strategies business managers and supervisors used to integrate technological innovations in small businesses. I conducted interviews to obtain in-depth information about the participant's perceptions, feelings, and opinions relating the research topic. Before the commencement of data collection, I submitted an IRB application to request permission from Walden University IRB to conduct the study, and obtained written authorization in the form of a letter of cooperation, from the actual research sites for approval to carry out the study. After IRB approval, I e-mailed the invitation letter and informed consent forms to participants. The invitation letter contained a synopsis of the purpose of the study along with the informed consent form to finalize willingness to participate in the study. The invitation letter and informed consent form were combined. Participants indicated their willingness to participate in the study by replying *I consent* to the e-mail with the attached informed consent form. With the use of open-ended semistructured interview questions, I had the advantage of (a) obtaining in-depth information about the participant, (b) asking questions in detail, (c) obtaining more thorough responses from participants, and (d) recording the responses to research questions. Using interviews in research may also have

disadvantages (Harvey, 2014; Holmes, 2014; Leedy & Ormrod, 2013). Participants may tailor responses to interview questions based on their comfort level with the interviewer or may provide more information in response to the interview questions via observation (Harvey, 2014; Leedy & Ormrod, 2013; Morse & Coulehan, 2014). At the beginning of the interview, I sensed some of the participants were nervous, however, because of the way I reacted to their response of the first question, the participants eventually became comfortable and divulged more information than I anticipated. On an average, the interviews lasted 30 minutes. The longest interview was for a duration of 43 minutes. The interviews were slated to last for a maximum of one hour.

Researchers use member checking to help improve the credibility, validity, accuracy, and applicability of research by providing an opportunity for participants to confirm data captures the accurate meaning and word choice of participants (Harvey, 2014; Houghton et al., 2013; Leedy & Ormrod, 2013; Nyhan, 2015). I conducted member checking within 24 hours after the interviews by providing participants with a succinct one paragraph synthesis of my interpretation to the responses to the interview questions and asking participants to verify if my interpretation reflects the actual participant interview responses. I noticed some participants added new information, however, I excluded the new information because the new information was not part of the original recording. Observing participants during interviews will provide a researcher the ability to gain more indepth context related information (Morse, 2015; Kornbluh, 2015; Morse & Coulehan, 2014; Smith, 2016). Being able to see the participant's body language via the telepresence, I was able to gain additional information, which did not emerge during

the interview. I also had the ability to interpret how the participant felt about a particular question based on their voice modulation. I made notes of the participant's facial expressions, voice intonations, and body movements and gained an accurate picture of responses during the interviews. The use of observations may create an avenue for ethical issues relating to confidentiality, privacy or researcher bias (Kornbluh, 2015; Morse & Coulehan, 2014; Smith, 2016).

Audio recorded interviews are accurate and can be used to revisit responses to interview questions (Heale & Forbes, 2013; Morse, 2015; Morse & Coulehan, 2014). Initially, I opted to use freeconferencecall to conduct the interviews, however, after I downloaded the app on my computer, I discovered I would have to pay for the calls because St. Lucia was not on the approved list of available islands for which the app can be used. Instead, I used skype to conduct the interviews, audio record, then examined the responses. Using that technique, I was able to see the participants and record the interviews. Researchers use methodological triangulation to obtain various perspectives of participants during a research (Harvey, 2014; Heale & Forbes, 2013; Kornbluh, 2015; Yin, 2014). By using interviews, observing the research participants body language and voice intonations, along with comparing the contents of the financial scorecard report, I was able to obtain multiple perspectives from research participants to achieve methodological triangulation.

The use of company documents proved to be very informative and interesting. I was able to get a visual on past trends and how the business performed for the fiscal year in relation to customer impact, financial management, internal processes, and learning

and growth. The business document provided great insight into the performance of the business and the business objective that drove the use of particular strategies used for integrating technological innovations in the business to achieve profitability. A pilot study is a crucial element of a good study design (Morin, 2013; Shader, 2015).

Researchers use pilot studies to determine the feasibility of the main study. Conducting a pilot study does not guarantee the success of the main study (Shader, 2015). I did not use a pilot study for the research.

To reach data saturation, the interviewing process included 10 business managers and supervisors who used strategies for integrating technological innovations in small businesses in St. Lucia. I reached data saturation using techniques from Kornbluh (2015), Morse (2015) and Smith (2016) where I asked probing questions where necessary and when themes from data became similar, and no new ideas existed after the 4th participant in BUS1 and the 3rd participant in BUS2, I knew I had reached data saturation. As previously indicated, after determining who the 10 research participants were, I provided the participants with an interview schedule from which the participants indicated a convenient time for me to conduct the interviews. I conducted the interviews after normal working hours, which made the process easier and more convenient for the participants. The participants had sufficient time to prepare for the interview and were able to respond freely to the interview questions.

### **Data Organization Technique**

To document the ideas that emerged from the participants' responses from every interview question, I used Skype to conduct the interviews, audio record, then examined

the responses. Researchers use NVivo 11 software to analyze data in research (Sarma, 2015; Woods, Paulus, Atkins, & Macklin, 2015; Yahmady, Hilal, & Al Abri, 2013). I used NVivo 11 software to upload the data from Microsoft excel and analyze data. A simplistic form of organizing data is a digital filing system. I created folders to represent different themes with the respective alphanumeric codes to protect the participants' privacy. I placed documents relating to each participant in individual folders and stored them in a password-protected directory on my computer requiring user authentication, and stored nondigital transcripts in a bank safe for a minimum of 5 years.

### **Data Analysis**

The purpose of this qualitative multiple case study was to explore strategies business managers and supervisors use for integrating technological innovations in small businesses. The overarching research question for this study was, What strategies do business managers and supervisors use for integrating technological innovations in small businesses? In this research, I analyzed data relating to facts, opinions and behaviors of individuals in a social context.

Qualitative research scholars conduct methodological triangulation by collecting and analyzing data from multiple sources such as interviews and observations (Heale & Forbes, 2013; Manganelli, et al., 2014; Yin, 2014). I ensured methodological triangulation by using interviews, observation, audio recording, and company documents for data collection. Qualitative researchers use coding to conceal the identities of research participants (Cleary, Horsfall, & Hayter, 2014; Emmel, 2015; Houghton, Casey, Shaw, & Murphy, 2013). Researchers who conduct qualitative studies also use coding to reinforce

the reliability and validity of data analysis (Stuckey, 2015; Munn, Porritt, Lockwood, Aromataris, & Pearson, 2014; Yin, 2014). First, during data analysis, I used coding to safeguard the identity of businesses and participants, and to identify major themes emerging from the interview process. I used pseudonyms such as BUS1, BUS2, to reference businesses and BUS1PT1 through PT5 to represent participants of the first business. I repeated the same process for BUS2 and labeled BUS2 PT1 through PT5 to identify participants from the second business. I interviewed a total of 10 participants.

The second step during data analysis was to transcribe data collected via recording and journaling. Some qualitative researchers use Microsoft Excel to analyze and transcribe data from research (Nassaji, 2015; Plamondon, Bottorff, & Cole, 2015; Stuckey, 2015). Other researchers use NVivo to sort, group and arrange data during the data analysis process (Thiem, 2015; Wood, Gnonhosou, & Bowling, 2015; Woods, Paulus, Atkins, & Macklin, 2015). I transcribed digital data into Microsoft Excel. I used NVivo 11 software to group, sort, and arrange information and identified relevant themes from the written research log.

I initiated the third step of the data analysis process by examining the emerging themes from both digital and written data for consistency, and identifying key themes highlighting important aspects relating to the overall purpose of the research question. I correlated key themes with the literature (including new studies published since writing the proposal) and the conceptual framework of diffusion of innovation and disruptive innovation. I analyzed the data to associate the emerging themes with the elements of diffusion of innovation and disruptive innovation.

In qualitative research, researchers use member checking to help improve the credibility, validity, accuracy, and applicability of research by providing an opportunity for participants to confirm data collected captures the accurate meaning and word choice of participants (Harvey, 2014; Holmes, 2014; Houghton et al., 2013; Leedy & Ormrod, 2013). I conducted member checking by providing participants with the interview transcripts and asking participants to verify if my interpretation reflects the actual participant interview responses.

### **Reliability and Validity**

#### **Reliability**

Reliability and validity are two vital components of research to consider during the process of designing, analyzing, and judging the quality of the study (Foley & O'Conner, 2013; Mangioni & McKerchar, 2013; Mannay, 2013). Qualitative researchers must avoid bias during research, and as such, conduct data quality validation and reliability tests (Noble & Smith, 2015; Tuck & McKenzie, 2015; Woolcock, 2013). Reliability in qualitative research refers to consistency in the research outcome, and the extent to which the research will have the same or similar results if replicated (Liang & Chia, 2014; Noble & Smith, 2015; Woolcock, 2013). Researchers who conduct qualitative research confirm reliability by: (a) recording the entire data collection and interpretation process, (b) detailing the research strategy, (c) explaining participant selection, (d) and highlighting the role, which the researcher holds in the research process (Houghton et al., 2013).

**Dependability.** Dependability refers to maintaining consistency during the research process (Bridges-Rhoads, 2015; Drisko, 2016; Munn et al., 2014). To guarantee dependability for this study, I kept an audit trail by documenting the order of the data analysis, organization, and process. Researchers use peer examinations, triangulation, dependability audit and code-recode procedure to ensure dependability of data (Houghton et al., 2013; Leedy & Ormrod, 2013). To further ensure dependability, I avoided inaccuracies when conceptualizing the study, collecting the data, and reporting the findings. To avoid inaccuracies, I used member checking approach to conduct participant data validation. I replicated and transcribed participants' interviews verbatim, paraphrased where necessary, and used NVivo 11 software to analyze and code data from participants.

### **Validity**

Validity in qualitative research involves determining the extent to which the claim set by the researcher equates to the reality of the study (Drisko, 2016; Nyhan, 2015; Wilson, 2014). To validate research, researchers conduct credibility, transferability, and confirmability tests (Noble & Smith, 2015). Additionally, researchers conduct member checking to evaluate trustworthiness, rigor, and discipline of research through a series of applicability, consistency, and neutrality tests (Nyhan, 2015; Srivastava & Misra, 2014; Woolcock, 2013). I validated the results of the study by conducting applicability, consistency and neutrality tests.

**Credibility.** Researchers perform credibility tests to ensure research findings are believable and trust worthy (Marshall & Rossman, 2015; Drisko, 2016; Woolcock,



2013). Researchers conduct negative case analysis, perform iterative questioning, triangulation, and peer scrutiny, to identify and record recurrent features forming themes, patterns, and provide value to qualitative research, as a means of establishing credibility (Leedy & Ormrod, 2013). I identified and recorded recurrent themes by asking iterative questions, triangulation, and peer scrutiny as suggested by the above researchers, to ensure validity and credibility during the research process.

Researchers conduct member checking by interviewing and disseminating research findings and interpretations to participants for validation (Drisko, 2016). Similarly, I demonstrated member checking after interviewing 10 business managers and supervisors and provided the research participants with the interpretation for validation. Using open-ended semistructured questions, I gave participants flexibility to produce in-depth information regarding strategies for integrating technological innovations in the business. Researchers use triangulation for enhancing the quality of research (Heale & Forbes, 2013; Kornbluh, 2015; Wilson, 2014). I used triangulation to cross check the data from the research and to confirm all aspects of the research question thoroughly.

**Transferability.** Transferability refers to the extent to which a research is applicable in other contexts or environments (Drisko, 2016; Mannay, 2013; Noble & Smith, 2015). Arnold (2016) substantiated the use of purposeful sampling to explore strategies for reducing high turnover among information technology professionals. Researchers also use purposive sampling to access a specific subset of individuals who fit a particular profile (Newman, Lim & Pineda, 2013; Robinson, 2014). To maintain

transferability, I used purposeful criterion sampling and reflective commentary to reevaluate the study as it developed.

**Confirmability.** Confirmability refers to how accurately the quality of the research results measure against research researcher bias (Drisko, 2016; Noble & Smith, 2015; Yin, 2013). To establish confirmability, Arnold (2016) documented the research procedures. Researchers also use reflexivity to reveal personal biases affecting a research (Arnold, 2016; Drisko, 2016). In a similar manner, I used a research log to record the progression of research events.

**Data Saturation.** Researchers reach data saturation when themes from data become similar and no new ideas emerge (Kornbluh, 2015; Morse, 2015; Smith, 2016). I reached data saturation after interviewing the 4<sup>th</sup> participant from BUS1 and the 3<sup>rd</sup> participant from BUS2. I interviewed 10 business managers and supervisors who use strategies for integrating technological innovations in small businesses in St. Lucia, and when themes from data became similar and no new ideas emerged, I became aware I had reached data saturation. I provided 10 participants with an interview schedule from which the participants agreed the interviews could be conducted.

### **Transition and Summary**

Section 2 of this study included information on the role of the researcher, participants, research method and design, population and sampling, ethical research, data collection technique, data business techniques, data analysis, and reliability and validity. Section 2 of this study also contained the rationalizations for choosing to use the qualitative exploratory multiple case study design, purposive sampling technique, and

semistructured open-ended interview questions. Section 3, contains the research findings, the application to professional practice, the implications for social change, recommendations for action and future research, reflections, and a conclusion.

### Section 3: Application to Professional Practice and Implications for Change

The purpose of this qualitative exploratory multiple case study was to explore the strategies business leaders use for integrating technological innovations in small businesses. From the interviews with business managers and supervisors of two small businesses in St. Lucia, I identified one overarching theme and seven subthemes. The overarching theme was collaboration, planning, and guidance. The seven subthemes included integration challenges, technology cost, effective use of technology, profitability, training, flexibility in work schedule, and remaining up-to-date with technology. Results from this study confirm that collaboration, planning, and guidance is the most common element from the data collected. Section 3 includes presentation of my findings, discussion of applications for professional practice and implications for social change, recommendations for action and future research, my reflections, and a conclusion to the study.

#### **Presentation of the Findings**

The overarching research question of this study was, What strategies do business managers and supervisors use for integrating technological innovations in small businesses. One overarching theme (collaboration, planning, and guidance) and seven subthemes emerged from analysis of interview responses and business documents.

#### **Overarching Theme: Collaboration, Planning, and Communication**

Collaboration, planning, and communication was the primary theme, which emerged from the interviews with business managers and supervisors. In their responses to Interview Questions 1, 2, 3, and 5, PT1 through PT5 from BUS1, indicated the

collaboration, planning, and communication among key players from all operational departments was necessary for business managers and supervisors to successfully acquire and integrate the technological innovation. Participants said they needed to conduct thorough planning for the new technological innovation. Nambisan (2013) asserted a business's ability to cultivate and contribute to new firm competence is dependent on management's level of collaboration, planning, and communication with a technical committee central to the business. The level of planning, communication, and collaboration among key players should center on the business's innovation strategies as this is central to the success of any technological innovation (Ganter & Hecker, 2013). Planning includes determining *why* and *how* the integration of technological innovation can enhance business processes and profitability. Having this knowledge may aid business managers and supervisors in developing strategies and objectives to gain positive results.

The success of a technical committee is dependent on the knowledge and experience of individuals and their interaction with the new innovation. All participants from BUS1 indicated, during the planning phase, a technical committee was formed to analyze the new procurement; however, key players were absent from the committee and the decision making process. The participants of BUS1 also indicated this was the sole strategy put in place to embark on the new acquisition and technological integration. A study by Arora and Mithas (2015) indicated the overall strategy of a business is to develop innovation aptitude, measure the innovation, facilitate the innovation, and foster a recognition and reward mechanism for innovation. Using technological innovation

within the business may increase organizational performance and decrease transaction related costs of doing business.

BUS2 PT4 indicated the absence of a technology implementation plan and the decision makers assessing the new technology in the participant's organization were not knowledgeable of all the business processes. PT1, PT2, and PT5 from BUS2 reported that the planning involved two presentations by the software company, which was attended by select members of management. PT2 said, "some of the individuals who attended the presentation had nothing to do with the new technology." Purna (2013) asserted a technology implementation plan is a crucial element for business leaders when implementing new technology to improve business performance and profitability. As the landscape of business and technology changes, business managers and supervisors should ensure the technology which they acquire is adequate to meet the daily demands of the business.

Govindarajan and Ramamurti (2014) stated, to enable the successful implementation of technological innovation in a business, all members of a team must understand the business model and business objectives. Abdallah, Phan, and Matsui (2016) asserted, before any new implementation, thorough planning is required to minimize issues such as lack of technology synchronization. For a business to attain profitability, the business should have an increase in productivity and a reduction in cost (Azarenkova, Golovko, & Ponomarenko, 2015). An increase in productivity may yield business growth and cash flow increase.

Other researchers have found that both internal and external implementations of successful technological innovations are generally associated with proper planning, collaboration, communication, quality, and proper budgeting (Maryska & Doucek, 2015). The literature in Section 1 relating to communication, diffusion of innovation, and successful integration of technological innovations, coincide with the overarching theme that emerged from the data collected in this research. The inclusion of key stakeholders in the decision making process of a business is vital in achieving business success.

### **Subtheme 1: Integration Challenges**

In response to Interview Question 5 concerning the challenges participants experienced using the strategies for integrating technological innovations, all participants said the integration of the technological innovation was very complex and time consuming. All the participants from BUS1 reported, although their business had a team of individuals from various departments to analyze software before acquiring it, the software was not fully integrated. For instance, BUS1 PT1 explained,

after releasing the integration, key individuals from numerous departments could not perform needed tasks, and the business sourced and purchased other software from another vendor to make up for the inefficiencies of the previous technological integration.

BUS1 PT2, PT4, PT5, stated unanimously, the performance of the new technological integration was overrated because individuals had to perform some key job duties manually alongside the new integration. BUS1 PT2, PT3, and PT4 reported users were unable to use several features of the new technology as the features did not apply to

the business. BUS2 PT3, PT4, and PT5 echoed the experiences of BUS1 as they stated the new technology did not synchronize with the old technology which caused ongoing issues. Abdallah, Phan, and Matsui (2016) asserted that, before initiating an integration process, leaders need to undertake detailed planning to minimize issues such as technology synchronization problems. Management should ensure individuals undergoing technological change understand the reason for innovation and how it will benefit individuals and the business as a unit.

The other theory used as part of the conceptual framework for this study, disruptive innovation, is consistent with the results of my study. Disruptive innovation is not always complicated (Nagy, Schuessler, & Dubinsky 2016). Disruptive innovation is a form of radical innovation, which involves the use of technologies as a tool to improve products and services. This is done through (a) simplification of processes, (b) user-friendly technology, and (c) less expensive technology appealing to new or less-demanding customers (Gandhe, 2015). Business managers and supervisors may experience high revenue and low operational costs if they invest in disruptive technology.

Confirmation from the literature review regarding, failure factors of integrating technological innovations and absence of business model alignment, support the theme of integration challenges. Some small businesses fail at integrating technological innovation because of a lack of appropriate resources, technical aptitude, and the absence of internal strategies (Bala Subrahmanya, 2015). Business managers and supervisors may experience integration issues due to a lack of standards in the business practices.



## **Subtheme 2: Technology Cost**

The second subtheme within this study was technology cost. All participants were primarily concerned with the budget to procure software, hardware, perform upgrades, and sustain the overall disruptive innovation. Findings of other studies confirmed the results of my study by indicating both internal and external implementations of successful technological innovations are generally associated with quality and cost performance (Maryska & Doucek, 2015). Businesses need disruptive innovation to revitalize products, services and to also gain a competitive advantage, and improve profitability (Ryan, 2013). BUS1, PT1, stated,

too much of the budget was spent on implementation and the business had to increase the initial budget to accommodate the procurement of hardware, upgrades, and long term maintenance.

Kinuthia and Chung (2017), asserted imprecise budget or poor investment decisions can cause drastic financial consequences for small businesses, and may result in integration failure or bankruptcy, confirms the findings of this study. However, the opinion of Hungund and Kiran (2017) that cost is not a major factor hindering the integration of technological innovation in small businesses failed to confirm the results of my study. Business managers who have no budgetary constraints are better positioned to accomplish a successful technological integration (Bowen, Chen, Eraslan, & Zapal, 2017). BUS2 PT1 through PT5 stated the business experienced cost overruns because the applications in various departments were not coordinated and as a result, the business

purchased another software from another vendor to perform the functions the previous technological integration could not accomplish.

Disruptive innovation, part of the conceptual framework for this study, matched the results of this study. Disruptive innovation provides opportunities; however, if not cautious when implementing, the innovation may result in unanticipated risks, which may affect cost and revenue (Lui, Ngai, & Lo, 2015). According to Gandhe (2015), disruptive innovation is a form of radical innovation that (a) simplifies processes, (b) are user-friendly, and (c) are less expensive technology.

Evidence from the literature review, which discussed technological innovation strategies for profitability and competitive advantage was supportive of the technology cost theme. A firm's business processes and financial performance are determinants of the overall performance and profitability of a company (Chairoel, Widarto, & Pujani, 2015). Ultimate operational performance is achieved when productivity increases and cost diminishes (Azarenkova, Golovko, & Ponomarenko, 2015).

### **Subtheme 3: Effective use of Technology**

The subtheme, effective use of technology relates to Interview Question 5. All of the participants from BUS1 noted "the new technology either hangs or crashes when users attempt to utilize the system simultaneously." Also, BUS1 PT1 declared "for most persons the system sometimes has delays in opening the main program as well as other areas within the program." BUS1 PT1 continued to note that "there are times the program just closes and the user may need to reopen it." PT1 also said, "it took a few years for the

business to turn a profit because after all the glitches were corrected and streamlined then the business saw the efficiency of the software that they acquired.”

Participants from BUS2 stated that the current technological innovation which was in place for approximately six years was not fully utilized by employees because “employees perform payment transactions manually as the system is not setup to process electronic payment transactions.” BUS2 PT1, PT2, PT3 and PT4 reported, the new technology did not provide real time data. PT4 explained that users from one department who performed tasks that should be synchronized with other tasks from other departments, resorted to completing one transaction utilizing several methods, which included sending hard copy documents to other departments to be completed on another part on the system. PT4 also said, users experienced latency while accomplishing tasks. Rogers (2015) reference to relative advantage includes innovation that introduces improvements. Better technology may result in higher productivity, which may lead to higher profitability.

Disruptive innovation, and diffusion of innovation formed the conceptual framework for this study and anchored the study results. A comparison of Roger’s seminal work on innovation diffusion behavior with Hofstede’s culture dimensions on individualism/collectivism and uncertainty avoidance revealed cultural dimensions influence the rate at which diffusion occurs (Desmarchelier & Fang, 2016). Disruptive innovation presents opportunities, however, unexpected threats may surface, which may affect profitability and productivity (Lui, Ngai, & Lo, 2015). According to Gandhe (2015), disruptive innovation is known to simplify processes using user-friendly and less

expensive technology. The need for easy to use technology follows Rogers (2015) diffusion of innovation theory about the technology ease of use and users' perception of the technology. Diffusion of innovation occurs among individuals of the same mindset who are at the same level of understanding about the innovation (Uchida, 2015). This level of communication is key for a business to integrate technological innovations successfully.

Studies discussed in the literature review regarding successful innovation strategies in business, were supportive of the effective use of technology theme. Business process and financial performance are key determinants of a business's overall performance (Chairoel, Widyarto, & Pujani, 2015). Business managers and supervisors constantly seek the most effective methods and efficient systems at a reasonable cost and value, to improve efficiency and performance (Allen & Johnson, 2017). For a business to accomplish operational performance, the business should have an increase in productivity and a reduction in cost (Azarenkova, Golovko, & Ponomarenko, 2015).

#### **Subtheme 4: Profitability**

The subtheme, profitability, emerged from Interview Question 4, when the participants were asked, How do you measure the effect of using the strategies for integrating technological innovations on the business in terms of profitability? Vargas (2015) asserted, during the phases of the innovation cycle, businesses may amass specific innovation competencies to grapple with managing emerging change challenges, which may inhibit the business's potential to attain a high level of efficiency and profitability. The response from BUS1 PT3 stated,

periodically we carry out business process review to determine whether our processes are in line with our business corporate strategy. In areas where improvements are required, we do a thorough analysis to determine whether technological integration can assist in improving the process to bring about increased profitability. From the last technological integration, although we had major issues, profitability has increased. In many cases there are technology that can assist and in such cases we develop a budget to drive the improvement that we deem necessary.

All of the participants from BUS1 noted the business used the system for a number of years before realizing a profit. BUS2 PT1 endorsed the sentiments of PT3 from Bus1 by reporting that,

after all the glitches were corrected and streamlined then the business saw the efficiency of the software that they acquired. It improved profitability because for the past 4 or 5 years, the profitability margin has been going up. Currently, the business has a profit margin of approximately 123% for the fiscal year.

Disruptive innovation, and diffusion of innovation formed the conceptual framework for this study and endorsed the study results on profitability. Disruptive innovation presents opportunities, however, unanticipated risks may emerge if not cautiously implemented, and may affect the business's profitability (Lui, Ngai, & Lo, 2015). According to Gandhe (2015), disruptive innovation is a form of radical innovation that (a) simplifies processes, (b) are user-friendly, and (c) are less expensive technology. Diffusion of innovation also resonated with the results of the study. Diffusion is more

likely to occur when individuals have the same level of understanding about the innovation (Uchida, 2015).

Studies from the literature review, which discussed technological innovation strategies for profitability and competitive advantage. Those topics were in direct relation to the profitability theme. Chairuel, Widyarto and Pujani (2015) anchored this study indicating a firm's business processes and financial performance are determinants of the overall performance and profitability of a business.

### **Subtheme 5: Training**

Training emerged from Interview Question 1. Matching human resource skills to the technology may be very costly if the users were not included in the implementation process. Responses from all participants from BUS1 indicated business managers and supervisors utilized individuals from the software company to perform a two month training, which cost the business unanticipated budgetary constraints. BUS1, PT2, PT3, and PT4 said, business leaders provided training opportunities for employees before the system was fully integrated. Participants also noted a select group of individuals were trained, then the trained individuals were required to conduct in house training for the remaining users. Lee, Kim and Shin (2017), advised, business leaders to fill the knowledge gap by engaging with external experts and receiving assistance from technology vendors during a technology integration. According to Guisado-Gonzalez, Vila-Alonso and Guisado-Tato (2016), training may have a profound influence on a business's overall performance.

The results of this study were endorsed by (Dwomoh, 2015) who indicated business leaders should invest heavily in training and provide exposure to technology that may aid in the successful implementation of technological innovations, and improve the business's operative challenges. Business leaders should be committed to building a work environment that supports learning and continuous transition to a new technology as users have a drastic influence on adoption and successful integration of new technology (Narasimha Murthy & Kumar, 2015). However, all of the participants from BUS2, indicated, although business leaders provided training opportunities for users to utilize the new technology, the training was not timely. The participants from BUS2 also noted unanimously that training was not a priority for the business as business leaders focused primarily on getting the new system in place, and as a result, some of the users became frustrated with the new integration.

The conceptual framework for this study was built on (Christensen, 2013) disruptive innovation and (Rogers, 2015) diffusion of innovation theory. Business managers and supervisors may use the knowledge of disruptive innovation to identify innovation techniques, assess the business's capabilities for integrating technological innovation successfully, and avoid the challenges of adoption, acceptance, and assimilation of innovation within the business (Daidj, 2015). Technological innovation may promote diversity and inclusion. Business managers and supervisors should prepare the business to respond to disruptive innovation by ensuring the business model captures the value of disruptive technology that may produce new metrics for the business (Narasimha & Vijaya, 2015). New ideas open up opportunities for new direction and

better business value (Aytekin, et al., 2015). Diffusion theory refers to the spread of new approaches, objectives, or ideas the user may or may not accept or adopt the innovation. The tendency for a user to accept or adopt innovation is usually based on the user's organizational culture, characteristics of the particular innovation, or the indirect messages conveyed to the users by management (McMullen, Griffiths, Leber, & Greenhalgh, 2015). Diffusion is more likely to occur when individuals have the same level of understanding about the innovation (Uchida, 2015).

Research findings from the literature review, which discussed training, was supportive of the training theme that emerged from the study. The integration of technological innovations require specific technology skills. Studies by Bokhonko (2017) confirmed, changes in technology requires the replacement of obsolete skills with new skills, as current skills may no longer apply to the new technology. Business managers and supervisors may amplify the awareness of users experiencing the change of new technology through improved education and adequate training.

The human element of change is critical to succeed at technological innovation integration. Before change occurs, business managers and supervisors should make certain change recipients understand why the change occurred and how stakeholders may benefit from the change. To manage change, business managers and supervisors may incorporate sound change management strategies involving every layer of the business. The change management strategies may include conveying to change recipients, how the new technology fits into the current environment and explanations and specific training as it relates to new functionalities of the innovation (Slater, Evans, & Turner, 2015).



According to Guisado-Gonzalez, Vila-Alonso and Guisado-Tato (2016), training is an important aspect of integrating new technology in a business. Training may be rewarding if it is relevant to everyone who has to use the new technological innovation.

### **Subtheme 6: Flexibility in Work Schedule**

During the interview, the subtheme, flexibility in work schedule emerged from Interview Question 7. All of the participants noted the business should incorporate flexi time or the ability to work remotely. For instance, BUS1 PT1 said,

some technological advances allow for work to be performed effectively out of the work site and therefore enables the introduction of flexi time which help improve morale, by allowing in some cases, mothers or fathers to work from home when there is a need for parenting care in the home.

PT1 also said, the business should have a Virtual Private Network (VPN) to allow employees flexibility in the work schedule, to avoid working late hours on the work site. Lozano, Hamplova and Le Bourdais (2016) discovered that business managers and supervisors who provide employees flexi time may observe an increase in productivity and employees may extract more intrinsic value from their jobs. Flexibility in work schedules may assist employees in balancing their personal and work life. A flexible work schedule may also allow employees to participate in social activities such as volunteering in the community (Lozano, et al.). BUS1 PT1, PT2, and PT3 indicated flexibility in work schedule may provide avenues for parents to attend their children's school functions or attend to a sick child. PT4 also stated, work from home be instituted in the business because this may allow employees to perform their jobs uninterrupted and

employees may be more productive. PT1 through PT5 of BUS2 also suggested a work from home program and indicated employees may be more productive, as the program may help improve business performance. The participants also noted, a work from home program may help the business reduce operating cost such as space and solve other staffing issues.

However, findings from other research dismiss some of the participants' suggestions relating to flexibility in work schedules or working remotely to improve productivity. A study by Wadsworth and Facer, (2016), revealed working remotely or telecommuting has disadvantages. Some employees may become withdrawn from the business or immediate work counterparts. Wadsworth and Facer also indicated, the absence or infrequency of face to face interaction with direct managers may affect opportunities for future advancement. A flexible work schedule may have adverse effects on team-building and knowledge sharing, and may affect the proper execution of Rogers, 2015, diffusion of innovation theory.

#### **Subtheme 7: Remaining Up-To-Date with Technology**

The subtheme remaining up-to-date with technology emerged from Interview Question 6. Using the internet to keep abreast with technology was a common denominator among the participants from both of the businesses. The participants from BUS1 added they also conduct research from most recent trade journals and magazines, for which the business has yearly subscriptions. BUS2 PT3 indicated, "we usually go online and visit different sites that discuss technology trends and we assess the technology that relate to our business." Other participants from BUS2 stated they keep

informed on technology trends by either observing how other businesses of similar background are doing regarding technology use, or receive fresh insight from news channels.

Prior research findings from the literature review in section 1 discussed common technology trends. Business managers and supervisors were advised against acquiring technology simply because it is new and trending. To remain buoyant, business managers and supervisors must invest in sound strategies that will help achieve the objective of the business. According to Bokhonko, 2017, several business managers and supervisors are motivated to integrate technological innovations because businesses from similar industries implemented the technology. Bokhonko opined against such practice, as this may lead to technological integration failure.

### **Applications to Professional Practice**

The strategies highlighted in this study for integrating technological innovation might help business managers and supervisors improve profitability across any small business. The objective of the study was to explore the strategies business managers and supervisors used for integrating technological innovations in small businesses. Findings of the study were valuable to business leaders and other community partners seeking to understand and use strategies for integrating technological innovations in small businesses. The results of the study may also help business leaders and managers gain a better understanding of business practices, which may help them detect why some strategies for integrating technological innovations are not viable options if the intention is to improve profitability in small businesses.

Business leaders can incorporate strategies relating to collaboration, planning and guidance to achieve business objectives (Persichitte, 2016). The creation of a technical committee for integrating technological innovations identified by participants of BUS1, was necessary for integrating new technology successfully. Lindgren and Munch (2016) suggested, user involvement is one of the most important elements of successful implementation. Silban (2016) urged business leaders assign the best people to support technology efforts and not individuals the business can most easily spare. Having a technology committee is key, however, the caliber of individuals that constitute the committee is crucial to the success of any business.

Lee, Kim and Shin (2017), purported a technology opportunity should be viewed and interpreted as a research and development (R&D) plan before considering implementation. Business managers and supervisors should be knowledgeable of various types of technology, and how the technology opportunity may add value for the business (Lee, et al.). Prior research on technological innovation integration revealed the motivation of many businesses to integrate technological innovations is because businesses from similar industries implemented the technology (Bokhonko, 2017). Bokhonko counseled against this approach as lack of definition or strategy of adopting the new technology may lead to financial ruin. Business managers and supervisors may incorporate proper strategic planning for achieving overall business success.

Training was another subtheme that emerged from the study. Almost all of the participants expressed concern regarding user training and confirmed previous research by Dwomoh (2015), encouraging business leaders to invest heavily in training and

providing exposure to technology that may aid in the successful implementation of technological innovations, thereby improving the business's operational issues.

Narasimha, Murthy and Kumar (2015) indicated business leaders should be committed in cultivating a work environment that supports learning and seamless transition to a new system because users have an effect on adoption and successful integration of new technology.

Technology cost was another subtheme that surfaced from the results of this study. Kinuthia and Chung (2017), purported inaccurate budget or poor judgement during investments could effect radical financial consequences for small businesses. The consequences may range from integration failure to bankruptcy. Vilorio (2016) asserted, technological innovation investments are affected immensely by their strategic context relating to cost reduction versus benefit of valuable strategies. Bowen, Chen, Eraslan and Zapal (2017) added, business leaders who have no budgetary constraints are better positioned to accomplish a successful technological integration. Allen and Johnson (2017) discussed business leaders constantly seeking the most effective methods and efficient systems at a reasonable cost and value to improve efficiency and performance.

Effective use of technology and profitability were other elements, which developed from the study results. BUS1 PT1 noted "choosing the right technology for the business can be very challenging". Technology is a salient proponent for growth in many businesses. Users interact with technology on a daily basis to accomplish tasks. Gottlieb, Chan, Sherbino and Yarris (2017) asserted, using technology with functionality issues or technology that does not meet the demands of the business, makes it difficult for users to

be productive, be invested or increase their output. Proper integration of technology eradicates negative nuances and may provide for an environment of growth and profitability. Maiga (2017) purported that profitability is dependent on the efficacy of technology on the business. Strategically, technological innovations are integrated into small businesses to achieve pre-set business objectives and profitability.

### **Implications for Social Change**

The results of the study contribute to social change by providing additional information on strategies for integrating technological innovations in small businesses. Business managers and supervisors may gain a deeper understanding of the systematic and strategic processes involved in acquiring, sustaining, and integrating technological innovations to improve profitability. The findings of the study also provided innovative solutions to minimize the cost of doing business, and develop a standard for better business practice, which may foster healthier decisions that would drive education and employment for the youth of the community, which may positively influence the crime rate plaguing members of society.

### **Recommendations for Action**

Findings and recommendations from this study may apply to any business manager and supervisor considering strategies for integrating technological innovations in the business to improve profitability. The adoption of effective technological innovation strategies may help business managers and supervisors use profound and structured techniques to integrate technological innovations for improving profitability.

The findings of this study may interest all individuals involved from the procurement stage to maintenance stage of the technological integration process.

As a standard for better business practice, business managers and supervisors of small businesses should create defined processes and methodologies to identify and assess their technology maturity for determining technology readiness. Drawing from the suggestions of Toro-Jarrín, Ponce-Jaramillo and Güemes-Castorena (2016), the identification of requirements, prioritization of innovative solutions, and effective management of the integration of new technologies are critical elements to consider when creating defined processes and methodologies. Specific examples of these processes may include realistic information technology budgeting, vendor selection, project management, portfolio management, and risk reviews (Toro-Jarrin, et al.).

Management should ensure the most talented and devoted individuals are assigned to the technical committee for analyzing the new technology. The individuals who form the technical committee should be invested in the business's objectives. All assumptions about how the functionalities of the proposed technology connect with the business model and processes should be addressed in the planning phase. The following are other recommendations for action business leaders can use as a precursor to integrating technological innovations:

1. Treat the integration of any technological innovation as a project with a beginning and end date.

2. Install a project manager specifically responsible for guiding the integration process. This individual will conduct regular meetings to ensure the project is on track and everyone on the committee is accomplishing their tasks on time.
3. Extensive research and development should be conducted before initiating the development of a sound technology implementation plan. According to Lee, et al. (2017), a technology opportunity should be viewed and interpreted as a research and development (R&D) plan before considering implementation. Business managers and supervisors should be knowledgeable of various types of technology, and how the technology opportunity may add value for the business (Lee, et al.).
4. Create a technology implementation and backout plan. Be sure to simplify the business processes and objectives. The backout plan will state processes to restore the system should there be any failure. The backup steps should be outlined in the backout plan.
5. Ensure your current business model is aligned with the strategic objectives of the business. This will serve as a platform for good business practice.
6. Create a risk assessment plan or template. Identify risks of the potential technological integration and provide a risk assessment level or rank for each element of the risk assessment plan. This would include information regarding the firewall, server, network, loadbalancer, storage, application etc.
7. Assign the best people to support technology efforts and not individuals the business can most easily spare. Having a technology committee is key,



however, the caliber of individuals that constitute the committee is crucial to the success of any project.

8. Ensure all stakeholders are included at the appropriate time for collaboration and communication. The inclusion and various expertise and experiences of all stakeholders possessing a clear understanding of the business processes and objectives, produces faster, less expensive and better results. This way, the potential new technology will get a well-deserved scrutiny.
9. Ensure that all collaborators and users are knowledgeable of the new technology, understand the need for the new technology, and are well trained.
10. Document the entire technological integration process.

Business managers and supervisors may use the results of this study to transform the approach used by the business community and society towards technological integration. The results of this study might be disseminated via peer reviewed electronic media, literature conferences, and scholarly, professional and business journals.

Educators and business consultants may find the results of this study extremely beneficial for conducting training workshops and seminars that relate to strategies for integrating technological innovations in small businesses.

### **Recommendations for Further Research**

While exploring strategies business managers and supervisors use for integrating technological innovations in small businesses, I realized more empirical research on technological innovation integration success is needed. One of the limitations of this study was the focus on integrating technological innovations in only small businesses.

Further research should be conducted on integrating technological innovations in all business types, using a comprehensive model specifically for businesses in the context of developing countries. The general measures of successful integration of technological innovation diffusion in small businesses, considering the actual characteristics of businesses in developing countries such as St. Lucia, seems to be lacking. Future research should be focused on the use of various tailored models to assess the effects of technology resources on business performance in small businesses of developing countries.

The second limitation of this study was the use of a small group of 10 business managers and supervisors. Future research can address the limitations of this study to include larger groups from other developing countries in the Caribbean region. Authors such as Robinson (2014) and Royset (2013) with vast knowledge of research asserted, research results vary based on the proportion of the sample size. Therefore, conducting further research on a grander scale regarding strategies for integrating technological innovations in businesses of developing countries would add to the knowledge base of strategies for integrating technological innovations in businesses from developing countries.

### **Reflections**

The objective of this study was to explore strategies business managers and supervisors used for integrating technological innovations in small businesses in St. Lucia. As I reflect on this DBA journey, my approach to the entire process was one of optimism. Regardless of how difficult the task seemed, I fixed my eyes on the end result.

Of all the rigors I endured, I thought getting the literature review completed was the most overwhelming. I struggled to get the literature review together because my initial research topic was changed from educational technology to business technology, a topic more aligned with the DBA program. This posed a tremendous setback, and as a result, I became very discouraged. Over time, I recalibrated my efforts and embarked on a new topic to complete the DBA journey. Now that my DBA journey is nearing an end, I look back at the lessons learned from this adventure. I am happy I did not give up. The crude lesson is: not equipping one's self with the right information from the inception of a process can have adverse effects on one's personal life.

### **Conclusion**

Small businesses foster economic growth and create employment in every country (Buchwald, Urbach, & Ahlemann, 2014). The findings of this study revealed business managers and supervisors of small businesses must understand the business and the capabilities of various technology, to make informed decisions when considering integrating technological innovations in the business. Business managers and supervisors must understand fully the nature of the business and use techniques that will cement standards to foster better business practice. Preliminary work such as thorough planning, R&D, business objective alignment should be the precursor for integrating technological innovations to realize a profit. Lee, et al. (2017) advised business leaders to create an R&D plan, and incorporate a detailed strategic proposal as a guide to acquiring and integrating technological innovations for improving profitability. Business managers and supervisors must utilize strategies that complement the nature of their business and

encourage the use of lessons learned from similar businesses on a global scale. Business managers and supervisors must transform their business processes to align with the business's technological innovations (Srivastava & Misra, 2014). Failing to do so may result in a loss of productivity and revenue for the business, and may further exacerbate social issues such as unemployment and poverty (Kim & Min, 2015).

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## Appendix A: Interview Protocol

<b>Interview Protocol</b>	
<b>What I will do</b>	<b>What I will say – the script</b>
<p>Start with Script - Introduce the interview and set the stage: e.g. in a room at a library to produce quality recording.</p> <ul style="list-style-type: none"> <li>• Collect Consent</li> <li>• Use audio recorders and brief note taking</li> </ul>	<p>First, I thank you for agreeing to participate in this study. My name is Petra Samuel and I am a graduate student at Walden University.</p> <p>You were invited to participate in this study because you are a senior level manager, business manager or supervisor in your company who make decisions associated with strategies for integrating technological innovations in the business.</p> <p>The interview will last between 30 to 45 minutes. During this time, I will ask you a few questions. The purpose of this study is to find out what strategies business managers and supervisors use for integrating technological innovations in the business. The aim of this study is not to evaluate your experiences or techniques.</p> <p>I would like to audio record this discourse today to broaden my note taking. Is that okay with you? If so, can you read and sign the consent form? Feel free to ask as many questions as you want. I assure you this interview is confidential and you are free to withdraw from the study at any time. I am the only one who will have access to this recording, and it will be destroyed after 5 years along with other data I will collect. Do you have any questions for me? Okay, if not we can begin.</p>
<ul style="list-style-type: none"> <li>• Identify non-verbal queues</li> <li>• Paraphrase as required</li> <li>• Ask follow-up questions to probe for more indepth information</li> </ul>	<ol style="list-style-type: none"> <li>1. What strategies are you using for integrating technological innovations in the business to improve profitability?</li> <li>2. How do you select and implement the strategies for integrating technological innovations in the business to improve profitability?</li> <li>3. How do you determine the most effective strategy for integrating technological innovations in your</li> </ol>

	<p>business?</p> <ol style="list-style-type: none"> <li>4. How do you measure the effect of using the strategies for integrating technological innovations on the business in terms of profitability?</li> <li>5. How would you describe the challenges you experience using the strategies for integrating technological innovations?</li> <li>6. How do you remain up-to-date with strategies for integrating technological innovations and changes in technology?</li> <li>7. What additional information would you like to add regarding strategies for integrating technological innovations to improve profitability, which was not included in the interview?</li> </ol>
End interview with script: Let participant know how I will proceed from here and what to expect after the interview.	Thank you for allowing me the time to interview you today. Your perspective was very helpful in understanding better the strategies business managers and supervisors use for integrating technological innovations in the business. I will synthesize your responses and schedule a follow-up interview in the next few days for you to verify the data and my interpretations.
Schedule member checking interview	When will you be available to review your responses?
Member Checking Follow-up Interview	
Introduce follow-up interview - handshake	Nice to see you again and thanks for your time. As stated at our last interview, the purpose of this interview is to ensure I interpreted your responses accurately. This interview will be no longer than 20 minutes. Let us begin.
Provide participant a copy of the synthesized individual questions	<p>These are the questions and synthesis of interpretations Please feel free to elaborate or change as needed.</p> <ul style="list-style-type: none"> <li>• Question 2 and succinct synthesis of interpretation 1</li> </ul>
Information must be related and in accordance with the IRB approval. I	paragraph or more if required

<p>will go through each question, provide my interpretation and ask the following: Did I leave out any information? Or, Is there anything you would like to add?</p>	<ul style="list-style-type: none"><li>• Question 3 and succinct synthesis of interpretation 1 paragraph or more if required</li><li>• Question 4 and succinct synthesis of interpretation 1 paragraph or more if required</li><li>• Question 5 and succinct synthesis of interpretation 1 paragraph or more if required</li><li>• Question 6 and succinct synthesis of interpretation 1 paragraph or more if required</li><li>• Question 7 and succinct synthesis of interpretation 1 paragraph or more if required</li></ul>
<p>Provide participant with copy of research results</p>	<p>Thank you again. Upon completion, I will provide you a copy of the research results.</p>

## Appendix B: Letters of Cooperation From Research Partner

Community Research Partner Name: [REDACTED]

Contact Information: [REDACTED]

Date: 23 Feb 17

Dear Petra Samuel,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Strategies for Integrating Technological Innovations in Small Businesses within the [REDACTED]. As part of this study, I authorize you to conduct interviews with potential participants, perform member checking and provide us with a copy of your research results. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include:

- Provide the researcher with contact information for the potential participants
- Participate voluntarily in an interview with the researcher regarding Strategies for Integrating Technological Innovations in Small Businesses
- Duration of interview will be 30-45 minutes
- The interview will be audio recorded to ensure data accuracy
- Participate voluntarily in a follow-up interview to ensure researcher's interpretation of data are accurate. The duration of this interview will be no longer than 20 minutes
- Voluntarily provide hard copy and digital company documents relating to technological integration process

We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising faculty/staff without permission from the Walden University IRB.

Sincerely,  
\_\_\_\_\_  
Contact Information

[REDACTED]



Community Research Partner Name: [REDACTED]

Contact Information: [REDACTED]

Date: February 27<sup>th</sup> 2017

Dear Petra Samuel,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Strategies for Integrating Technological Innovations in Small Businesses within the [REDACTED]. As part of this study, I authorize you to conduct interviews with potential participants, perform member checking and provide us with a copy of your research results. Individuals' participation will be voluntary and at their own discretion.

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- Providing the researcher with contact information for the potential participants
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I confirm that I am authorized to approve research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising faculty/staff without permission from the Walden University IRB.

Signature: [REDACTED]

Contact Information: [REDACTED]