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Strategies for Adoption of Innovative Information Technology for Business Performance Improvement

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Walden University

College of Management and Technology

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James M. Smith, Jr.

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University
2022

Abstract

Strategies for Adoption of Innovative Information Technology for

Business Performance Improvement

by

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MA, American Intercontinental University, 2003

BA, Sojourner Douglass College, 2002

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

October 2022

Abstract

Business leaders do not often consider investing in informational technology (IT) to increase performance. These business leaders lack knowledge of innovative IT adoption strategies to expand their revenue and reduce costs to sustain a competitive advantage. Grounded in the technology-organization-environment (TOE) theory, the purpose of this qualitative multiple case study was to explore IT innovation adoption strategies business leaders use to increase performance. The participants were four successful business leaders selected from finalists for international entrepreneurial awards presented annually in the Mid-Atlantic region of the United States. The data were collected using semistructured telephone interviews, media releases, and online publications. Using thematic analysis and Yin's five-stage iterative data analysis process led to four themes: to increase performance, business leaders must adopt innovative IT strategies in business operations, human capital, production, and deployment systems. A key recommendation is that business leaders focus on IT innovation to leverage technology infrastructure as part of the workplace culture, business structure, and digital services to provide end-to-end customer experiences. The implications for positive social change include the potential to increase the profitability of more businesses, enhance the worth and dignity of struggling business owners and their communities, and have a value-added effect on the study's participants as contributors back to their communities.

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Dedication

I devote this doctoral study to my wife, Terra, who supported this effort from its initiation and is a daily inspiration in my life; to my son, Alex, who, through his triumphs, continues to enlighten me; and to Madison, who brings imagination and laughter into our lives. I have been encouraged by my sister, Jennifer, and my mother, father, aunts, and uncles from whom I draw strength, wisdom, and guidance. I honor my ancestors on whose shoulders I stand in the presence of the Almighty spirit that encompasses the metaverse.

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Section 1: Foundation of the Study

Information technology (IT) investments for payoffs such as profitability and performance emerge as critical resources for firms (Mithas et al., 2016). Organizations aim to create and use information and communication technology (ICT) to achieve a competitive advantage for sustainability (Hsu et al., 2018a). The value of technology comes from the transformation of doing business differently (Westerman, 2018). This digital transformation should generate new products and services as well as affect positive social and environmental change (Hsu et al., 2018a). However, some leaders do not focus IT adoption strategically towards transformation (Hsu et al., 2018a).

Background of the Problem

The strategic use of IT is key to influence businesses' productivity, profitability, and market value (Mithas et al., 2016). Components of ICT capabilities influence internal efficiencies such as cost saving, strategic planning, and competence development (Parida et al., 2016). Adopting a successful IT strategy is a dominant objective chosen by firms to emphasize revenue expansion, cost reduction, or both (Mithas & Rust, 2016). Corporations should explore ways to adapt to the environment to succeed in the markets (Valaei et al., 2017). Girmaye (2018) stated that for firms to adopt innovative IT strategies to receive a return on investment (ROI), they must (a) assess the need for specific technology before making procurement decisions, (b) confirm that their organizational structure fits the technology, and (c) improve the use of technology through awareness creation programs. However, Singal et al. (2016) addressed the need for business owners to understand how IT adoption and integration can affect

performance metrics, organizational design, and business and management processes to get the full value of IT capabilities. Tohănean et al. (2020) found that businesses want to achieve by adopting innovative solutions, but they need to gain more digital knowledge and understand how to invest in new technologies. Researchers and decision makers should give businesses more attention to create business models and digitize processes using innovative technologies (Tohănean et al., 2020).

Problem Statement

Businesses investing in IT often do not consider contributing factors in the innovation process to increase performance (Widjaja et al., 2020). Research conducted by Tohănean et al. (2020) on business innovation using digital technologies showed that 74.4% of the business leaders showed a greater interest for strategic planning and international development to maintain the pace or sales levels. However, the results also showed that 41.9% had digitized 25% of their processes and only 20.9% of the businesses had 100% online solutions (Tohănean et al., 2020). The general business problem is that if business leaders do not invest properly in IT innovations, their businesses may not be efficient or profitable. The specific business problem is that some organizational leaders lack strategies for IT adoption to increase performance.

Purpose Statement

The purpose of this qualitative multiple case study was to explore IT innovation adoption strategies business leaders use to increase performance. The targeted population was comprised of four successful business leaders selected from hundreds of finalists for international entrepreneurial awards presented annually in the Mid-Atlantic geographical

region of the United States who have implemented successful IT innovation adoption strategies to increase performance and profitability. Lupo and Stroman (2020) found that implications of successful technology adoption affecting positive social change include supporting the growth of small businesses to provide revenue for social services in their communities. A strong small business sector improves socio-economic conditions and reduces unemployment by providing benefits to communities, especially those that are economically challenged (Schnake-Mahl et al., 2018).

Nature of the Study

I chose the qualitative research method for the study. The focus of a qualitative study is to understand the meanings and relationships derived from words and images (Saunders et al., 2019). Researchers use the quantitative method to collect and analyze numerical data by applying statistical measures to identify relationships that support or refute knowledge claims or hypotheses (Oberiri, 2017). I did not use the quantitative method because I was not seeking to explain variables' characteristics or relationships through statistical analysis. Mixed methods researchers combine qualitative and quantitative methods (Walton et al., 2020). Since the quantitative method was not necessary for addressing the study's purpose, the mixed method s unsuitable for this study. Therefore, the qualitative method was appropriate and sufficient for my study.

To explore the strategies that leaders use to adopt IT innovations, I considered four qualitative research designs: (a) ethnography, (b) narrative, (c) phenomenology, and (d) case study. Saunders et al. (2019) indicated that ethnographic researchers explore cultures or the social world of a group. Ethnography requires extended work in the field

and involves observations, recordings, and engagement in the daily life of another culture (Bougie & Sekaran, 2020; Yin, 2018). I disqualified ethnography as my study did not involve exploring one or more groups' cultures. With a narrative study, the researcher seeks in-depth personal stories of participants' accounts of personal experiences of sequenced events, personal identity, and shifting meanings (Yin, 2018). Since my study did not require focusing on participants' personal stories, I did not select a narrative design. In a phenomenological design, the researcher focuses on the personal meanings of participants' lived experiences through temporal observations and language (Saunders et al., 2019; Zlatev, 2016). Since this approach did not align with my study's purpose, I did not select a phenomenological design. A case study involves an in-depth empirical investigation of a contemporary problem using multiple data types and sources within a real-life context (Saunders et al., 2019; Yin, 2018). I chose a case study design to reveal in-depth and relevant information on a contemporary business problem from interviews and additional data sources. A single case study is analogous to a single critical experiment with specified propositions believed to be true (Yin, 2018). One organization or unit is the focus of the single-case study (Kumar & Krishnamoorthy, 2020; Saunders et al., 2019; Yin, 2018). I selected a multiple case study design rather than a single case study as my goal was to facilitate content analysis thematically by interviewing business leaders from more than one organization. There are substantial analytic benefits of a multiple case design compared to a single case design (Yin, 2018). A multiple case study facilitates more powerful conclusions than a single case design based on the analysis and comparisons of multiple cases independently selected from different organizations. I used

a holistic analysis for the multiple case study rather than embedded multiple units of analysis.

Research Question

What strategies do IT business leaders use to adopt new technologies to increase performance?

Interview Questions

1. What IT innovation adoption strategies have you found work best to increase performance?
2. What method did you find worked best to implement your IT innovation adoption strategies?
3. How do you measure success of your organization's IT innovation adoption strategies?
4. What adoption strategies for IT innovations did not work?
5. What key challenges have you had in implementing IT innovation adoption strategies?
6. What have you done to meet those key challenges effectively?
7. What opportunities have evolved as a result of using IT innovation adoption strategies?
8. Based on your organization's experience, how have these opportunities of using IT innovation adoption strategies led to increased organizational performance?

9. What additional information would you like to share about your organization's successful adoption strategies of IT innovation?

Conceptual Framework

I used the theoretical perspectives of the technology-organization-environment (TOE) framework expectancy-valence theory developed by Tornatzky and Fleisher (1990). The primary premises of the TOE framework are the contexts of the organization itself, the external environment, and new technology as factors in deciding to adopt technological innovations (Tornatzky & Fleischer, 1990). Key constructs that underlie the TOE theory include (a) technological factors, (b) organizational factors, and (c) environmental factors. Tornatzky et al. (1983) provided contextual concepts of technology innovation adoption that subsequently appeared in the three processes of the TOE framework. The TOE theory is the most recognized framework used in the scientific field for examining factors affecting the technological innovation adoption process in businesses (Stjepić et al., 2021). Based on these grounding concepts of the TOE framework and prior successful research using the TOE framework, I expected TOE to enable me to understand the strategies the participants use to adopt new technologies to increase performance and profitability.

Operational Definitions

Business Performance: Business performance is a firm's ability to achieve competitiveness in the market, long-term business excellence, productivity, financial gain, and organizational innovation (Mihalj et al., 2019).

Enterprise resource planning (ERP): ERP is an IT system used to integrate business processes, improve coordination, and provide enterprise-level, real-time financial information for decision-making operations (Guo et al., 2021).

Information and communication technology (ICT): ICT provide diffusion (spread) for innovations in software and hardware through service operations such as web-based networking, manufacturing, and platform-based operations in a digital sharing economy (Qazi et al., 2021).

Information technology (IT): Information technology refers to hardware devices, software applications, or software application environment that engages a person as an end user (Carter et al., 2020).

Innovation: Innovation refers to the process of (a) adopting new technology, (b) improving capabilities internally and externally, (c) reducing waste or increasing efficiency, and (d) enhancing customers' use and value (Ahmed et al., 2020).

Minority- and women-owned businesses: Minority- and women-owned businesses, defined by the New York State Department of Economic Department (2021), are ownerships in which women or minority individuals own 51% of the business, own at least 51% of its stock, or the management and daily operations are in the control of minorities identified as African-American, Asian-American, Hispanic American, and Native American (New York City Business, 2021; Small Business Administration, 2019).

Profitability: Profitability indicates the success of a business related to its earning power or operational performance to gain a positive ROI (Malim & Azazan, 2020).

Small- and medium-sized enterprises (SMEs): SMEs have fewer than 500

employees. Very small enterprises have one to 20 employees, small enterprises have fewer than 100 employees, and medium-sized enterprises have 100 to 499 employees (U.S. International Trade Commission, 2019).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are the disciplinary and socio-political aspects of the study that anticipate how the researcher frames valid research problems, formulates solutions, and reveals implicated truths of underlying evidence or findings (Wolgemuth et al., 2017). I assumed that successful business leaders would be willing to share intellectual capital in a highly competitive environment. Business leaders can provide an altruistic viewpoint to promote positive social change. Huang et al. (2020) stated that more firms focus on high technologies and share strategies and innovations even in a competitive business environment. Their study revealed an explanation: openness generates technology information that competitors copy and create a learning effect. Regardless of the motive, altruistic or shrewd business, this assumption, if it holds, may have a consequential impact on innovation and technological investments.

I made four assumptions. I assumed the participants would respond to the interview questions truthfully without bias. Second, I assumed that I collected measurable, valid, and reliable data from the study participants. Third, I assumed that participants were truthful in sharing their knowledge and experiences. The fourth assumption was that I could conduct the interviews, collect additional data sources, and control, reduce, or eliminate any personal bias.

Limitations

Limitations are study weaknesses outside the researcher's control (Harvard, 2021). There were three limitations. The first limitation was the sample size and generalizability of the results. The limitation of a case study is that it is not designed to generalize to theoretical propositions or a population (Yin, 2018). A second limitation was possible participant bias and knowledge. The participants in the study were business leaders who may represent their firms less objectively and base responses on recalling knowledge of their IT innovation strategies. The third limitation was researcher bias that is inherent in a study in which the researcher knows business IT and marketing strategies, as stated by Al-Surmi et al. (2020). Any personal bias is associated with the alignment of the business and IT leader and an expectation for the business leader to address an IT leader's involvement in the development of IT strategies and business profitability.

Delimitations

Delimitations are features that limit the reach and outline the study's boundaries for the researcher to manage control of the study's aims and objectives (Theofanidis & Fountouki, 2018). The delimitations of this study included the four successful business leaders in the Mid-Atlantic region who adopted IT strategies to increase profitability. Also, the study delimitations included the research question and the conceptual framework. These boundaries form this study's delimitations.

Significance of the Study

Study findings on IT and business may have significance because of the alignment between businesses' performance and adopting IT innovation (Belalcázar &

Díaz, 2016). Evans et al. (2017) stated that firms need to understand strategies for choosing and adopting new technologies to identify and assess a sustainable business model that would benefit both businesses and society. The findings of this study will be shared with the business community and may increase the success rate for business leaders as they implement IT strategies within their firms. As a result, business leaders may increase their profitability and performance and contribute to improving conditions in their local communities.

Contribution to Business Practice

This study's findings may provide practitioners with information about technology adoption strategies currently used in businesses with demonstrated success. Increasingly, businesses adopt advanced innovative technologies for a competitive advantage (Graham & Moore, 2021). Understanding why and how business leaders decide on strategies to adopt innovative IT could assist other businesses in such decisions. The results of my study could provide a knowledge base of IT innovation adoption strategies that businesses can use to mediate risk and uncertainty and offset IT adoption failures that impede performance. Sharing this information among business leaders may heighten their perceptions and increase understanding of dynamic business capabilities as contributors to sustained business profitability.

Implications for Social Change

The implications for social change of this study are in the cultural, empirical, and technological knowledge within the Mid-Atlantic region of the United States. My study was focused on exploring IT innovation strategies that can benefit business performance.

The long-term viability of these local businesses could increase job opportunities and tax revenues to improve social institutions such as schools, libraries, and neighborhood centers in their communities (Lupo, 2018).

A Review of the Professional and Academic Literature

The purpose of this qualitative multiple case study was to explore IT innovation adoption strategies business leaders use to increase performance. This literature review includes a critical analysis and synthesis of the literature pertaining to the TOE framework by Tornatzky and Fleischer (1990). Peer-reviewed journal articles, literary essays, and seminal scholarly works lay the foundation of the literature review.

Keywords used in the search process include the following: *information technology adoption, information technology in business, minority-owned businesses, entrepreneur of the year, TOE theory with expansions, profitability, and performance*. Publications from 2016 or later comprised approximately 85% of the sources cited, excluding prior published seminal works. All sources are from peer-reviewed works. I used the following databases or search engines to conduct this preliminary literature review: Academia.edu Business Source Complete, Google Scholar, ProQuest, Researchgate.net, SAGE Journals, and Thoreau Multi-Database.

I organized the review of the literature as follows. I begin with a description of the TOE framework expectancy-valance theory by Tornatzky and Fleischer (1990), the conceptual framework used for the study. I include general information on the TOE theory with elements of the framework's background, tenets, and relevance to performance and profitability. Next, I explore research that applies the conceptual

framework, TOE, to IT innovation strategies and business applications through the TOE elements. I address the TOE theory elaboration protocols and constructs for divergent perspectives. I provide elaboration and alternate theories to TOE, diffusion of innovation (DIT) theory, and technology acceptance model (TAM) and their use in research with a rationale for their exclusion as conceptual frameworks. I follow with a review of the literature on the TOE theory in adopting IT strategies and the implications for business performance and profitability. I conclude with research on strategies for implementing and managing innovative IT changes and how these strategies have helped businesses perform better in the marketplace.

The TOE Framework Expectancy-Valance Theory

Tornatzky and Fleischer (1990) described innovation from the development, adoption, and implementation within a firm. The processes presented by Tornatzky and Fleischer offer the constraints and opportunities for technological innovation and influence how firms view, search for, and adopt new technology. In the TOE framework, three processes influence a firm's decisions around IT adoption: technological context, organizational context, and the environmental context (Al-Hujran et al., 2018). The elements and descriptive measures are as follows: (a) technology – availability and characteristics; (b) organization – formal/informal linking structures, communication process, size, and slack; and (c) environment – industry characteristics and market structure, technology support infrastructure, and government regulations (Tornatzky & Fleischer, 1990).

Tornatzky et al. (1983) stated that organizations pursue multiple outcomes, but private for-profit firms focus on profitability as a primary goal; anything that does not contribute to the "bottom line" is a compromise at best. For-profit organizations seek to capture markets and improve their profit margin. Tornatzky et al. questioned if profit maximization adequately explains business decisions concerning innovative technology choices. Industries interested in commercializing products, services, and processes for profit should consider other applications, for example, those approaches found in university-industry transition research that examine structures compatible and congruent to enhance efficiency and profitability in the business sector.

Tornatzky et al. (1983) outlined definitions, approaches, and contextual concepts of technology innovation adoption that subsequently appeared in the three processes of the TOE framework. The following core constructs involve the technological process of the innovation process that affects profitability. The technological innovation process is lengthy, costly, and characterized by stages involving the producer or developer and the user or consumer who adopts, implements, and routinizes the innovation. The process involves many social units, and its users have multiple perceptions, knowledge, and efficacies related to the deployed technology. An organization's complexity, formalization, and centralization affect the successful adoption of technological innovation. Organizational size and resources are important factors affecting innovation capacities. The environment is economic, social, and significant in its effect on an organization's internal and external boundary-spanning relationships. Organizations

interact in adoption transactions affecting the norms, procedures, and dynamics of all involved in the process.

The innovation process from concept to practice involves critical effort for success. In some circumstances, changes in manufacturing or producer recommendations may reduce or enhance the effectiveness of the technology (Tornatzky et al., 1983). For effective deployment of the innovation, they encouraged face-to face-communication for knowledge transfer. Broader environmental factors also affect the adoption and implementation of innovative technology. Tornatzky et al. (1983) addressed governmental, industry, and other regulations and policies that might affect the technological infrastructure or legal and accounting units. They forewarned that it is sometimes unclear beforehand the degree that macrolevel policies can affect the adoption of innovation through constant adjustments and trade offs. Also, they asserted that technological innovation adoption and implementation are not ends of the adoption but rather a means to productivity, effectiveness, and profitability, affected by technological, organizational, and environmental elements and descriptive measures. Effective organizational personnel involved in innovation must have political astuteness and leadership skills.

Exploring the TOE Framework: IT Innovation Strategies and Business Applications

The TOE framework, an organizational-level theory, is used in technology adoption studies, including investigations of multistages of the adoption process (Kumar & Krishnamoorthy, 2020). The TOE theory is the most recognized framework used in the scientific field for examining factors affecting the technological innovation adoption

process in businesses (Stjepić et al., 2021). Researchers can detect simultaneously constraining and influencing factors within the adoption to recognize determinants in the TOE framework. Enterprises must consider potential risks for innovation like cost perceptions, benefits, and financial uncertainty, with the organization's resources of time, technical, human, fiscal, management, and IS compatibility. The TOE framework includes these determining factors contributing to a successful or failed adoption within a turbulent market. Ramanathan et al. (2017) implied that IT investments have the potential for increasing a firm's value-chain performance, in some cases, by both saving money in operation and making money in the market. Profitable businesses must invest in technological innovations to enhance their performance, secure sustainability, and contribute to their competitive advantage development (Stjepić et al., 2021).

In their study to examine the determinants of business intelligence operations (BIS) adoption, an IT innovation, Stjepić et al. (2021) focused on the TOE framework for 100 small- and medium-sized enterprises (SMEs) in Croatia. They discussed business decisions, meeting customers' needs, and higher profits. They noted that key personnel must perceive the benefits that BIS is better for achieving higher business performance than other technological innovations for successful adoption. Businesses adapt their goods and services to meet external and internal customer needs by using data sources and aligning them with business value to stabilize or improve their market position. Therefore, strategic decisions founded on quality data analysis can lead to higher financial gains for a business. The BIS mines the data to support the business in predicting financial risks and opportunities, creating client-specific solutions, and

providing a possible means for financial prosperity. Business leaders should consider internal and external risks related to the organizational and environmental dimensions.

Stjepić et al. (2021) reported findings based on the three processes of the TOE framework. The results showed that business leaders believe BIS could be adopted successfully with technology to provide better quality data and quantitative methods. The business leaders did not perceive organizational support as a threat to the successful adoption, and BIS would create new business knowledge to enhance their competitive advantage. The results showed that the business leaders had reservations related to the environment, including the infrastructure, the skill level of employees, the BIS compatibility with legacy systems, and business procedures. Therefore, they concluded the mixed results showed that SME business leaders in their study did not perceive that adopting BIS was their best choice to gain a competitive advantage. Their research did not uncover the significant effect of technological risks of innovation in the technology domain.

Awa et al. (2016) sought to gain further insight into information systems (IS) adoption by focusing on 12 factors within the TOE framework. They attempted to explain the adoption of innovative enterprise resource planning (ERP) software within SMEs. For their quantitative study, they collected data through a questionnaire administered to 373 executives from six fast service enterprises in Nigeria and found statistical support for their 12 hypothesized relationships. The ICT infrastructures, technical knowledge, perceived compatibility and values, and security were significant determinants for adoption.

The findings showed that the ERP adoption by SMEs was more significant in technological factors than organizational and environmental factors of the TOE framework (Awa et al., 2016). The results of the technology process were significantly positive between the perceived value and ERP adoption, suggesting that adopting ERP would be an advantage over the current practice. An organization's scope is critical in adoption, which was significantly negative in this study. They stated that firms with a larger scope need e-business to reduce operational costs and benefit synergy from an application and traditional business. Until full training and maintenance opportunities operationalize, an adoption cannot reach its full potential. Also, they reported that the environment, specifically external support and competitive pressure, had significant negative outcomes. The newness of the adoption had not allowed for a competitive advantage, and the support was neither transparent nor delivered without glitches. They reached these findings based on the TOE framework's statistical validation that financial and economic benefits are contingent on factors like the ERP's relative value, technical know-how of employees, firm's infrastructure, and top management predisposition.

Comparing the approaches and outcomes of the two studies adopting innovative IT strategies reveals that the TOE framework is appropriate for assessing intent technology readiness, organizational structure, and environmental factors that affect financial gain and profitability. Stjepić et al. (2021) disaggregated the mixed findings within the TOE processes based on the business leaders' perceptions of BIS adoption. Awa et al. (2016) identified areas of focus for SMEs for ERP adoption. Both parties of

researchers used the TOE framework successfully to examine the multistages of IT innovation adoption processes.

Chatzoglou and Chatzoudes (2016) proposed a three-dimensional conceptual framework that included technological, organizational, and environmental contexts to investigate factors that affect the adoption of e-business in SMEs. Their proposed framework falls under the TOE framework introduced by Tornatzky and Fleischer in 1990. Chatzoglou and Chatzoudes conducted multiple regression analyses to examine the explanatory power of the framework. The organizational context had the highest impact on e-business adoption, followed by the technological context. The environmental context had a little statistically insignificant impact on e-business adoption. They concluded that firm and scope, IT infrastructure, and internet skills are most important to drive e-business adoption, and the TOE framework was suitable for the study. Their use of the TOE framework is another example that the TOE theory is still relevant and appropriate for examining e-business adoption of today's technologies. Their conclusion affirmed that organizational and technological factors are more significant for e-business implementation than environmental factors.

Exploring the TOE Framework with Elaborations

Researchers of two recent studies approached investigating the adoption of IT innovation strategies that yielded different findings. In their quantitative research, Bhattacharya and Wamba (2018) sought to study the potential use of radio frequency identification technology (RFID) following media attention on its adoption by giant retailers (e.g., Wal-Mart, Tesco, Target, and Albertsons).

Ramanathan et al. (2017) conducted a qualitative study to understand how successful adoption of business analytics (BA) can improve firm performance. Both studies focused on the adoption of IT innovation strategies, RFID and BA, involved seeking information from retailers to inform the retail sector, and used the TOE framework with elaboration beyond its scope of adoption and implementation of innovations (Bhattacharya & Wamba, 2018; Ramanathan et al., 2017). Bhattacharya and Wamba added a value chain to describe details from conception to distribution. Ramanathan et al. added key constructs defining their research as theory elaboration for divergent perspectives. Those added constructs are as follows: (a) business performance, (b) IT human assets, (c) technology assets, and (d) relationship assets (Ramanathan et al., 2017).

The elaborations identified by both researchers overlap the description of a value chain as the process of product development from conception to distribution (Zamora, 2016). One distinct difference between a value chain proposed by Bhattacharya and Wamba (2018) and the TOE theory elaboration by Ramanathan et al. (2017) is that a value chain is sequential. The studies resulted in different findings related to supporting their premises. Bhattacharya and Wamba proposed and tested the TOE framework based on the prediction that RFID would comprise 44% of its market sector. Through their findings, they suggested that the technological, environmental, and some organizational characteristics were important in adopting RFID. The costs of infrastructure, environmental upheaval, and organizational learning and transformation were obstacles business leaders

chose not to absorb. In 2006, only 29% of the retailers expected to pilot RFID. The study findings related to the TOE framework were significant in understanding the lack of widespread adoption of RFID technology.

As applied to their study, Ramanathan et al. (2017) expected the tenets of the TOE framework with elaboration to hold applied to the adoption of BA in the retail sector. The BA is a technology innovation that organizations use to make data-driven decisions to analyze organizational performance (Kumar & Krishnamoorthy, 2020). Ramanathan et al. established their aim to explore factors for the successful adoption of BA and link these factors to business performance. Further, they stated that the rationale for the study was to contribute empirical evidence on the successful adoption of BA as there are few academic studies on BA's impact on businesses. They elaborated on the TOE framework to consider additional factors beyond the TOE model. They based the need for this variation on work cited by Ketokivi and Choi (2014), who stated that theory elaboration could account for a context unknown in the logic of a general theory. Ramanathan et al. rationalized researchers had not explored the TOE framework within the unknown context of BA adoption. They concluded that their findings supported existing TOE literature, shed new insight that further elaborates the TOE theory, and extended its scope to the retail market.

Lihniash et al. (2019) provided recommendations to modify the TOE framework as today's technologies and organizations differ from those in existence at its inception. Researchers using TOE might investigate factors not previously studied such as the impact of IT and the use of computerized systems and

incorporate theoretical factors more suitable to current technologies. Additionally, researchers could explore differences between inconsistencies in organizations that generate versus adopt innovations, a distinction not included in the original TOE framework. Other researchers have suggested adding task and individual factors to the three TOE factors (see Abed, 2020). In his study, Abed identified additional factors of service quality, system quality, and trust to investigate the influence of social commerce adoption by SMEs. Gao and Sunyaev (2019) extended the TOE factors and elements to include the categories of data and stakeholders in their study of cloud computing in the health care sector.

Alternate Theories to the TOE Framework

The DIT and the TAM are alternate theories to TOE. The DIT, described by Rogers (2003), is a theoretical framework used in technology diffusion and adoption. He defined diffusion as the process in which innovation is communicated across channels over time among persons in a social system. Identified in the definition, the DIT has four elements as follows: (a) innovation, (b) communication channels, (c) time, and (d) social system (Sahin, 2006).

Chui et al. (2017) combined two theories, TOE and DIT, to conduct a quantitative study to explore critical factors for enterprises to adopt broadband mobile applications. They included the TOE framework as broadband applications integrate aspects of communication technology. Through their research using sourced literature, they identified eleven critical factors across all three of the TOE framework's categories of technology, organization, and environment and two control variables of company size

and industry type. They indicated limitations to their study to include the challenge of the following: (a) incorporating all the variables from past quantitative studies, (b) researching in-depth intensive perspectives, and (c) understanding the participants and enterprises. They concluded that follow-up studies would be useful for exploring the possibilities of different variables. Their recommendations included further in-depth research using field interviews to assess participants' perspectives, applications, and characteristics and their enterprises.

In their study focusing on mobile device usage in India, Sujatha and Sekkizhar (2019) infused DIT with TAM to include perception, intention, and actual use of mobile devices. Although TAM is a theoretical base that focuses on factors in the decision-making processes, it can represent lexical word connections (Davis, 1985; Davis, 1989; Gefen & Larsen, 2017). The TAM is used to provide researchers with an understanding of how users accept technology innovations (Sujatha & Sekkizhar, 2019). Reporting their findings, Sujatha and Sekkizhar indicated that all variables except cost showed a positive influence on the intent to use mobile devices. They predicted that m-commerce would surpass the conventional way of business, becoming widespread in the business world.

The Rationale for TOE Theory Selection over Alternate and Elaboration Theories

Researchers using TAM focus on perceptions and intent of usage, not on evidence of effective concrete outcomes of technology integration (Sujatha & Sekkizhar, 2019). Therefore, I did not consider it for my research as a theoretical model or framework. One question raised in the quantitative study by Sujatha and Sekkizhar is whether results applied to different technologies and groups from other geographical locations. In my

qualitative study, I did not seek to generalize nor transfer findings as case studies focus on an issue or unit of analysis.

Early research using DIT by Rogers (2003) conducted investigations of technology adoption in higher education and educational environment (Sahin, 2006). One tenet of DIT focuses on technology innovation as a singular concept emphasizing knowledge, persuasion, and decision (Rogers, 2003; Sahin, 2006). The DIT, as developed, addresses the uncertain consequences of technology diffusion over interpersonal communication channels such as mass media within a social system (Sahin, 2006). Aspects of DIT are applicable to provide explanations and guidance for intervention in social systems such as health care (Dearing & Cox, 2018). However, DIT is a social process with time as a variable and a more meaningful measure of change (Dearing & Cox, 2018; Sahin, 2006). Therefore, I conclude that DIT would not be best suited as a theoretical framework for a case study on innovation IT strategies and business profitability.

I used the TOE framework as developed by Tornatzky and Fleischer (1990). Based on their premises, Ramanathan et al. (2017) and Bhattacharya and Wamba (2018) found different findings using the TOE with elaborations. Stjepić et al. (2021) acknowledged the TOE framework as widely used for investigating the adoption of various technologies. They stated that technological innovation could upgrade existing products, processes, or services based on market expectations. The TOE framework includes determinants for successful technology adoption.

Moreover, the determinants within the TOE framework can be observed concurrently as constraining and influencing specific technological innovation adoption factors within the organization (Stjepić et al., 2021). Stjepić et al. cited the use of the TOE framework in businesses worldwide. Therefore, I expected the TOE framework to assess the particular adoption strategies used by the four business leaders in my study.

TOE Framework: IT Innovation Strategies and Business Performance and Profitability

Several studies have used the TOE framework to test the effect of innovation in IT on business performance and profitability. Researchers of three such studies focused on e-business and e-commerce using the TOE framework. Zhu et al. (2004) conducted research using the TOE framework to examine how economic environments influence e-business value. For their quantitative study, they analyzed samplings from 612 firms in ten countries from developed and developing countries. Soto-Acosta et al. (2016) indicated that their quantitative study using the TOE framework was an extension of previous research on the organizational impact of e-business and internet technologies. They developed an integrative research model to analyze a data set of 175 Spanish SMEs. Ocloo et al. (2020) also used the TOE framework in their quantitative study to examine the relationship among the three factors of the TOE model of business-to-business e-commerce adoption. They collected surveys from 315 manufacturing SMEs in Ghana. In 2004, Zhu et al. found within the TOE framework, technology readiness was the strongest factor for e-business value, while financial resources, global scope, and the

regulatory environment contributed to e-business value. In 2016, Soto-Acosta et al. suggested in their findings that the use of e-business comes from technological and internal organizational and does not emanate from external pressure. In 2020, Ocloo et al. reported that perceived desirability, organization readiness, and competitive pressure significantly influenced e-commerce adoption.

Soto-Acosta et al. (2016) stated that their results showed e-business is a positive factor in firm performance through organizational innovation, as indicated by the TOE framework. Zhu et al. (2004) and Ocloo et al. (2020) stated the usefulness of the TOE framework for studying e-business value and e-commerce adoption. Zhu et al. and Ocloo et al. concluded that various contextual factors affect e-business value and e-commerce adoption with insightful findings for business leaders and policymakers.

Two studies from the literature using the TOE framework that focus on IT innovation and business profitability are hospitality and SMEs. Researchers, Racherla and Clark (2008) and Bala and Feng (2019) used the TOE framework in their studies on the adoption of electronic customer relationship management (eCRM) and ICT. Racherla and Clark collected data for at least one year on major hotels in the US having eCRM systems. The purposes of the designs were as follows: (a) access databases, (b) data-mine, and (c) provide internet-based technologies to help measure customer and business partner relationships and long-term profitability. Bala and Feng conducted their study in Myanmar using data collected on surveys over a four-year timespan to assess the TOE factors on the adoption and use of ICTs, internet use, and web presence for business purposes. Researchers of both studies had similar goals of measuring profitability within

the business sector under investigation. The researchers' analysis of data in both studies revealed profitability with innovative technology adoptions.

Racherla and Clark (2008) reported that most hospitality organizations failed to achieve IT adoption and implementation successfully after one decade. This failure is because the organizations did not properly plan their IT adoption process to align with their business plans and goals. Based on previous IS research, they identified contributing factors under the TOE framework: the systems were relatively new and differed from the legacy system. They stated that this study validated the TOE framework by identifying organizational readiness and top management commitment as factors in adopting advanced IT eCRM systems.

Bala and Feng (2019) contextualized their study within the socio-political setting of Myanmar, a volatile developing country whose economy opened to the world recently. The findings showed that the country's SMEs benefited from innovative ICTs. In addition, they reported that the larger SMEs had greater success in profitability and sales, with manufacturing SMEs performing better than SMEs in other industries.

There are benefits of the findings and recommendations of both studies. In this initial study, Racherla and Clark (2008) stated that their findings are a static view of eCRM adoptions at one point in time. A longitudinal analysis could help understand the evolution of eCRM adoption. Bala and Feng (2019) recognized their study was in the early stages of ICT adoption and usage. With additional studies, researchers could understand the adoption of ICTs by SMEs in other contexts. In the conclusion of their research, Racherla and Clark posed several questions germane across business industries.

The questions are: (a) How do industries stay at pace with IT field advances? (b) How do they cope when IT systems become obsolete within short periods of time? (c) How do organizational maturity and perspective of an IT system affect the selection, implementation, and usage? They directed future studies using the TOE framework to assess the effect of IT innovation adoption on business profitability. They concluded their research with the following mindset: researchers can use case study methodology and content analysis to understand the contrast between successful cases and failures.

IT Strategies and Leadership Decisions

Viltard (2017) acknowledged that strategy, organization, and performance define a business outcome. Leadership involves strategy and management for sustainable growth. In his quantitative study, Patrick (2018) stated that IT leadership responsible for the performance of their organizations should employ strategies that help IT organizations grow and sustain that growth. Gerow et al. (2014) stated that IT executives had viewed IT and strategic business alignment as the responsibility of top leadership. Dhurkari (2017) stated that there is often insufficient information for decision making. Ideally, the IT and the business executives decide in collaboration to implement action plans to bridge the IT and business domains (Avila & Garces, 2017). IT has generated value for firms by cultivating an alignment between business practices and IT strategies (Gerow et al., 2014). Gerow et al. viewed IT as a means to increase profitability and business sustainability.

Turulja and Bajgoric (2016) asked why some firms outperform others persistently. Using survey data from managers and structural equation modeling, they

found that IT and innovation capability played an important role in greater business performance. Zhang et al. (2016) questioned the role of IT in innovation. Their bibliometric analysis of research development in IT innovation found that most of their study sources treated IT as an enabler or trigger of innovation.

Viltard (2017) found that a key focus in a business should be on research, development, and innovation. Zhang et al. (2016) cited IT innovation as a hot topic and a core competency that firms need to survive a competitive environment. They documented published papers and citations on IT and innovation research from 1989 through 2015; the number of references began at zero and escalated to approximately 19,000. There were only two references for IT connected to profit. Yet, Viltard found that a successful business needs technologies to reduce costs, provide the ability to deliver high-quality products, and build effective sales and marketing efficiently. Strategies are a path toward sustainable profitability and growth. He connected the strategy paired with operational effectiveness. A decision to select a different set of activities or approaches can be an opportunity for growth.

One research approach that connects IT innovation to business profitability considers its competitive advantage. Abdelkader and Abed (2016) noted that new technologies, innovations, competition, and increasing customer demands force organizations to reassess how IT resources can be advantageous. They wrote that some researchers claim that IT could be a source of competitive advantage with an impact that is either direct or indirect. Bilgilhan and Wang (2016) stated the importance of how organizations use technologies strategically and synergistically to create the best

performance results. How technology impacts an organization depends on its goals, mission, vision, management skills, and other integrated resources to create synergy. In other words, for an organization to create IT-induced competitive advantage, the overall IS that is adopted has to fit into the organization's strategy. Within a business, problems may exist within the strategy-organization-performance level (Viltard, 2017). Cost leadership and differentiation are two strategies to explain a firm's profitability and performance. For example, personnel choices and the internal and external business organization can influence a business's strategy. Strategies such as innovations and technologies and effective change management (CM) help operational the improvement needed for sustainable growth and performance.

Neirotti and Raguseo (2017) sought to show how externally-oriented IT-based capabilities significantly impact a firm's revenue growth and profitability. External orientation can allow some SMEs to mitigate price pressures and profit margins. For example, IT solutions using customer relationship management (CRM) capabilities could allow an SME to develop new customized services or products, increasing the willingness of a customer to pay, thus giving both provider and customer a market opportunity. However, the impact of externally oriented IT capabilities on the competitive advantage of an SME decreases as competitors adapt their IT systems and business processes to meet the increasing environmental dynamism. Expanding into new markets is a way to promote slack resources that support growth for a competitive advantage.

Chevallier et al. (2016) described competitive intelligence (CI) as including all information and knowledge in a business. A CI enables firms to create, perpetuate, and transmit knowledge from markets and stakeholders. They used the term, *coopetition*, derived from cooperation and competition, to signify a mutually beneficial alliance between rivals. In *coopetition*, firms view themselves potentially as partners synergistically sharing information and knowledge. Network-based strategies for growth foster cooperation and alignment with shared environmental and societal goals (Cyron & Zoellick, 2018). Cyron and Zoellick cited traditional, less competitive strategies to focus on niche market advantages based on product segments, services, quality, and geographic regions. Instead of detached enterprises in a value chain, firms form collaborative networks to upscale their innovations.

Al-Busaidi and Al-Muharrami (2020) focused on four perspectives of profitability Indicators: finance, customer, internal processes, and learning and growth that affect decision making. Profitability for business finances includes profit revenue due to business efficiency, employee productivity, and return on assets. The financial perspective focuses on these measures to verify profitability to shareholders (Abofaied, 2017). As a contributor to profitability, the value of ICT investment can enhance customer services, privacy, retention, and loyalty (Al-Busaidi & Al-Muharrami, 2020). As a measure, business leaders should focus on customer satisfaction, complaints, and sales from new initiatives, products, or services (Abofaied, 2017). Internal processes refer to the quality and speed of business operations and provide a means to accomplish performance expectations (Al-Busaidi & Al-Muharrami, 2020; Abofaied, 2017).

Performance measures include an enterprise's: (a) financial assets (profit margin, ROI, and equity), (b) internal processes (productivity and growth), (c) customer attraction and retention (satisfaction and growth), and (d) learning and growth (employee numbers, productivity, turnover, and participation) in development (Abofaied, 2017). The internal processes should lead to financial success and satisfied customers measured by the most effective and efficient production of goods and services.

For companies that produce and sell standardized products, Isoraité (2018) offers two strategies to create a competitive advantage as follows (a) pricing strategy to reach a vast market and audience and (b) distribution strategy in which firms dominate and promote an advantage over their competitors. A company must know its market position, goals, capacities, and resources to create a competitive advantage. A recollection strategy allows businesses to focus on a narrow market segment to create a competitive advantage. Palos-Sanchez et al. (2019) identified knowledge management (KM) as a technological strategy that has allowed companies across all industries to cope with large amounts of information and operations.

Knowledge within a company is a strategic asset for creating a competitive advantage (Palos-Sanchez et al., 2019). Ramchand et al. (2021) included KM as part of their decision-making framework and determined that stakeholders must analyze and identify the business value. KM channels corporate information and provides strategies for decision making and action based on external environmental change (Palos-Sanchez et al., 2019). The core activities of IT KM are information classification, operations monitoring, and big data storage. Palos-Sanchez et al. concluded that KM allows

innovative technologies such as cloud computing to combine with companies' organizational environment to assess the technology system and improve management and innovative processes.

Leadership must identify and respond to learning and growth measures to achieve and sustain the business's vision. To meet this perspective, managers must provide employees with learning and growth opportunities through empowerment, motivation, and IS capabilities (Abofaied, 2017). Cao et al. (2016) explained the significance of a systemic approach and the interrelationship between IT and other organizational factors. Their findings suggested that generating systemic capabilities from synergistic interrelationships enhances IT business value, impacting the organization's competitive activity. The implications of the findings reference the organizational-level factors. However, they referred to systemic capabilities underpinned by a system perspective to change the business environment. An emerging research theme implicitly references synergism between IT strategies, structure, process, and culture to improve organizational performance. In addition, managers should consider these perspectives collectively in their decisions in creating short- and long-term objectives (Abofaied, 2017). Abofaied rationalized that the attention to these perspectives forces leaders to focus on non-financial measures that impact the organization's long-term profitability.

Thye et al. (2018) stated that IT decisions made by leadership have a direct impact on the financial investment they provide. The strategic task of IT adoption decisions has innovation capabilities, risks, and potential consequences. Without considering a firm's strategic orientation or pattern to reach its goals, business leaders

cannot sustain growth (Al-Surmi et al., 2020). The chief executive officer (CEO) sets the company's vision, direction, and pace, while the chief information officer (CIO) provides data and technical solutions to keep the company moving (Worster et al., 2016). Worster et al. (2016) noted that IT leadership should be involved in the high-level creation of IT strategies. IT strategies are a driving source for all the organization's departments as IT touches every area of a successful business. For example, such decisions around outsourcing or cloud applications often require expertise that the CIO brings to the leadership table. A trusting relationship between the CIO and CEO can impact the organization's goal attainment (Thye et al., 2018). Worster et al. argued that IT advances should be evaluated on ROI and the impact the new capabilities have on sales volumes or profitability.

IT strategies and initiatives must align directly with a company's corporate mission and orientation (Al-Surmi et al., 2020). This alignment helps the IT department justify investing in technological strategies and solutions. Business leaders need expert guidance to gain optimal value for IT investments (Ali et al., 2015). As IT becomes significant in organizations, a firm's performance is more likely to be affected by IT strategies and business and marketing orientation (Al-Surmi et al., 2020). Ali et al. (2015) explained that IT investment as a strategy has a significant and positive relationship with its leadership effectiveness. Gerow et al. (2014) discussed the importance of IT strategies as a priority for top executives to invest in further innovations and opportunities to increase profitability. Imre (2016) concluded the organization's leaders, social norms, and

IT readiness are interconnected and have a major impact on the IT adoption process, contributing to a business's competitive advantage.

IT Strategies within the Organization

Worster et al. (2016) delineated IT strategies into four main areas as follows: (a) technical infrastructure, (b) strategic business decisions, (c) delivery, and (d) application platforms. Technical infrastructure involves the actual technology required to meet business needs. Ideally, IT leaders have the systems needed to support the business and the capacity to maintain the infrastructure as it evolves (Al-Hujran et al., 2018; Worster et al., 2016). Technical business decisions should be fiscally sound in accomplishing the core business objectives (Worster et al., 2016). In their qualitative exploratory study, Al-Hujran et al. indicated that decisions to adopt IT systems are significant and usually made by top management. Business leaders make major decisions on how to stay current. These decisions impact the operational cost and the demand for the timely completion of projects (Worster et al., 2016). IT delivery includes the technical and operating systems used to deliver the technology to the organization. Business leaders must examine the ROI and cost analysis of the operation to gain a competitive advantage (Al-Hujran et al., 2018; Worster et al., 2016). For example, decisions around project operation, application platforms, and design are critical in connecting personnel and data management with organizational outcomes (Al-Hujran et al., 2018; Worster et al., 2016).

In their quantitative study, Banker and Feng (2019) looked at the negative impact of IT strategy decisions in the context of information security breach incidents. Banker and Feng found that CEO and chief financial officer (CFO) turnover happens with issues

in achieving financial expectations. However, CIO turnover can involve any IT system performance problem that impacts a company. They reported that in December 2013, Target lost 70 million customers' information and 40 million debit/credit cards, with a drop in forecasted profits due to security breaches. The result was a 148 million-dollar loss and the resignation of the CIO within 90 days. They included profitability loss as a contributing variable for a business's change in governance. Data show that \$225 is the average cost for each customer record per breach. Due to the instability in their IT leadership, firms such as Target are more likely to be targeted for more breaches. However, savvy corporate leaders know how to manage the impact of emerging technologies and minimize the adverse effects (Cascio & Montealegre, 2016). Patrick (2018) attributed profit revenue to the number of executed initiatives and resources deployed. He concluded that in IT structures, the tasks and responsibilities of all knowledge workers, those employees deemed "executives" by virtue of knowledge or position, contribute to continuous innovation and productivity.

Whyte et al. (2016) acknowledged the current era of big data during which complex projects deliver asset information. Advanced digital transformations emerged to accommodate big data across complex systems (Imran et al., 2021). Whyte et al. described asset information as structured, managing change through digital systems, and relying on hierarchical, asynchronous, and sequential processes. They aimed to uncover flexibility limits in complex projects while preserving integrity. Literature is scant to explain the complexities of digital transformation in business operations (Imran et al., 2021). Whyte et al. discussed challenges to managing change and strategies in light of the

evolution of configuration management, analytics, and implications for research and practice. They referenced up-front innovative technologies adoption and multilayered and complex project-based industries that require mobile hardware, cloud computing, and integrated software. Imran et al. addressed these innovative technology strategies to redesign tasks within multiple interdependent components within a complex system. Innovative digital-enabled approaches continue to emerge in business sectors such as consumer electronics, software development, and biotechnology (Whyte et al., 2016). Whyte et al. recognized that these industries use large data sets for analytics and visualization for flexible responses and real-time decision making.

Whyte et al. (2016) used a multiple case study to analyze, compare, and contrast CM strategies in three leading organizations that use digital technology practices to deliver complex product systems and manage large volumes of information. They collected data on the interactions among the three organizations to examine the organizations' strategies and transition from a configuration as designed to an innovative configuration as built. They used a scoping interview protocol with one or two management personnel or teams from Airbus, European Council for Nuclear Research (CERN), and Crossrail. Their questions included these probes: (a) definition of configuration management, (b) processes setting up the configuration management, (c) configuration approach control, (d) challenges to data integration and design configuration, and (e) differences between the as-built and innovative as-designed configurations.

Whyte et al. (2016) found that each organization was interested in configuration and delivery management. From their multiple case study with leaders from four global

industrial organizations, Imran et al. (2021) cited similar concerns of agile delivery, integrated solutions, and customer-centric thinking throughout the life cycle. However, They reported that the technology life-cycle responsibilities varied based on service contracts, owner-operator responsibilities, and client delivery approach. For complex projects that required big data due to increases in volume, velocity, and variety, the need for configuration management increased for several reasons: operational integrity, critical safety, time pressure, and perception of greater control. They found that CM is no longer a paper-based project. It is digital based, and digital workflows are integral to managing information integration, conformity requirements, and specifications. They summarized that technological CM is essential to project management. Yet, configuration management has had little focus in the literature on complex projects. Imran et al. offered a holistic understanding of the digital transformation process to produce clear organizational CM guidelines for researchers and practitioners. Technologies, value creation, structural changes, and financial aspects are part of organizations' digital transformation strategies. Whyte et al. concluded that there is a need to understand and address the challenges of delivering complex projects. They cited the issue that analytics potentially can reveal patterns, disrupt norms, and force innovative ways to think and re-establish strategies to manage changes in innovative digital technologies.

Imran et al. (2021) explored key enablers of digital transformation and presented an integrative framework for industrial organizations. For digital transformation to be customer centric, the organization's socio-technical system (STS) must incorporate three concepts and elements separately and jointly. For joint optimization, their framework

includes: (a) leadership's understanding of new digital technologies and data-driven decisions in an era of risk taking, (b) informal structures within the organization, and (c) sharing and transparent culture of continuous learning and improvement. Whyte et al. (2016) addressed the challenge of integrating humans and technology as configuration management. Therefore, modern management theory should interconnect with project and configuration management to mitigate the negative impact of IT innovation implementation on managing change. Both studies provided a potential impact on CM for positive business outcomes using social and technical designs that work tangentially with their identified constructs.

Innovative IT and Adoption Strategies

The rapid diffusion of IT, digitization, and advanced technologies saturate the current global economic landscape and systems (Pasmore et al., 2019). The STS strategic design is one means to enhance productivity while increasing opportunities for more meaningful work. STS strategic design is grounded in machine-driven work and is relevant to aid knowledge-based technologies. Currently, the capabilities of STS are reemerging, associated with innovative technologies that surpass the creation of organizational designs. Therefore, STS has implications for adoption and CM in socio-technical transformation.

STS in CM traces back to Lewin's idea of unfreezing, changing, and refreezing (Pasmore, 2019). They pointed out that researchers have questioned "refreezing" as a CM idea, given that change is a continuous process. They challenged unfreezing as a relevant, innovative CM strategy since organizations must design for agility and constant change.

There is no conceptualization of "to-from-to" in the future of change. Instead, they offered the terms: stimulating, reorienting, or initiating to describe the improvement process to align the system with the evolving environment. Further, traditional CM models have a linear view with a definite beginning directed toward implementing an innovation. This simplistic visual is easy for leaders to understand and consultants to design proposals, but it does not reflect today's organizational needs to apply innovative IT, digitization, and advanced technologies. Today's organizational change begins, halts, gets redirected, modified, extended, or postponed.

Pasmore et al. (2019) proposed that STS strategic design must be continuous with improved governance to oversee the alignment and priorities based on data, prototyping, and adaptation. In addition, STS's strategic design must consider the stakeholders in the internal and external environment at the conception of the change. They offered design labs as incubators for analytical strategies and prototype approaches before implementing organizational scale up. They referenced "blitz scaling," a strategy used in Silicon Valley firms to take advantage of innovative technologies. They indicated that the social and technical systems need to co-evolve for better performance. Managers of change must anticipate variances that may surface as production problems, workflow issues, or errors in operational measures. They espoused that CM must be a co-evolving core competency for leaders to use technologies that facilitate, design, and advance processes such as virtual technology, asynchronous and real-time social networks, and geographically dispersed groups. By using programs and algorithms, professionals have insights into (a) social networks and patterns of team interactions and (b) work activities within physical

spaces. They concluded that professionals implementing change would make decisions on an evidence-based strategic redesign of traditional CM by engaging a more extensive professional community and providing better data more rapidly through an STS.

An industry sector embracing STS strategic design is the nuclear energy sector (Hugo, 2021). The new generation of nuclear power plants will need to incorporate innovative technologies to include advanced controls for interaction between operators and the system for human reliability and control room safety. In addition, pioneers in the nuclear industry will introduce innovative technologies like high-resolution displays, handheld and wearable devices, and augmented reality technologies. These human-system interfaces need IT capabilities to automate the plants and minimize staff.

Incorporating human and engineering factors and implementing human-system interfaces integrates (HSI) into complex STS systems (Hugo, 2021). Integrating human and innovative technology components requires upgrading or designing a coherent and cost-effective interconnected system. The ultimate aim of STS is to integrate human and IT factors at every stage of the system life cycle. Hugo identified the phases and strategies that manage change using STS. First, the approach must consider all the human performance information to engineer the design, select the technology, and develop the processes. Second, the STS change approach must ensure the evaluation of the human factors and operations through the life cycle. Prior project case studies have shown that it is a more cost-effective strategy to integrate human requirements at the onset of the change. Third, Hugo posited that designers would use IT capabilities to improve

communication and coordination among human teams and between human and intelligent automation systems.

Open and user innovation strategies and approaches focus on leveraging external resources relevant to innovation processes (Keinz et al., 2021). They cited the shift in innovative IT CM in past decades, stating that corporations now focus on open research and development (R&D) with external players who contribute to positive change activities. Open innovation is a paradigm for organizing innovation for creating and profiting from technology (Bogers et al., 2018). Keinz et al. indicated that open and user innovation approaches help organizations reduce risk, save money, and are crucial to a company's long-term success. Conversely, outbound open innovation activities allow the organization to commercialize knowledge developed internally. They referenced Bill Joy, co-founder of Sun Microsystems, to illustrate the rationale of open and user innovation approaches. Joy said that regardless of an individual's intelligence, the most intelligent people work for another person.

Business adoptions in open IT innovation include the digital transformation of SMEs and high- and low-technology industries (Bogers et al., 2018). Keinz et al. (2021) acknowledged the literature on the benefits of open IT innovation approaches indicating only modest results and abandonment. They stated a gap between the expected and actual benefits of open innovation approaches. Open innovation processes use business models to (a) define architecture and system requirements and (b) access external and internal resources to create ideas (Bogers et al., 2018). Keinz et al. (2021) addressed corporate IT innovation activities and organizations leveraging external potential, knowledge, and

networks. They stated that cross-boundary collaboration strategies are increasing due to science-based partner integration and the development of new products. Innovative approaches include crowdsourcing, design toolkits, and customer co-creation such as corporate incubators and accelerators. They focused on two issues: (a) to strategize and organize innovation activities and (b) to develop people and values that support external cooperation. Theoretically, they interpreted open and user innovation that is sustainable with capabilities: (a) to identify and assess an opportunity (sensing), (b) to mobilize resources to capture value (seizing), and (c) to continue renewal (transforming).

Keinz et al. (2021) put forth three strategies related to the sensing function: (a) project management methods to support external collaborations; (b) project management to leverage the creativity of external partners; and (c) organizations' co-creation development and exploitation processes with users. Seizing activities, including selection and filtering processes, are relatively unexplored. Issues of concern are (a) implementing pilot projects that convince internal stakeholders of the advantages of open and user innovation and (b) transforming weak external ties into strong ones. Also relevant is using project management to align open R&D, supporting open networks and innovation, and extending the resource pool through open and user innovation. Transforming strategies center around organizations redesigning themselves. Nearly all sub-systems are affected: their strategies, business models, routines, and coordination and control mechanisms.

Open IT innovation impacts data flow and new combinations of digital and physical knowledge and resources (Bogers et al., 2018). The intent is to open global

standards for broader and faster innovation dissemination through technology. Positive transforming strategies and activities of open innovation include: (a) project evolution from practice to routine, (b) knowledge from open and user innovations for training and motivation, (c) project portfolio management to allocate R&D resources for open and user innovation projects and (d) innovation approaches for scaling within and between organizations (Keinz et al., 2021). Keinz et al. concluded that with insight, organizations could build open innovation capabilities aimed inwardly and externally. Furthermore, collaboration can maximize the positive impact of IT innovations in CM, with intermediaries involved in all phases of the open innovation initiative.

Over the last two decades, an essential strategy for IT sourcing has been outsourcing due to reduced costs and utilization of current technologies (Pour et al., 2017). IT outsourcing can lead to success in managing investments. However, with its expanding use as an innovative strategy, researchers have shown an increasing failure rate in IT outsourcing projects during the change adoption stage. Pour et al. stated that CM is a cause of many failures of the outsourcing process and adds to an organization's risks and costs. They found three criteria that lead to failure if ignored or underestimated: (a) identified change, (b) change in mentality and attitude of users, and (c) an organization's culture and complexity.

Pour et al. (2017) delineated mitigating factors for successful change: (a) superior management support, (b) participation of employees, (c) honest and timely communication, (d) a culture that motivates and supports change within the organization, and (e) an organization that pioneers change. They summarized that leaders must be

cognizant of perceptions and cultures when managing change. Leaders must plan and analyze gaps and overlaps of current changes within the organization's environment for a strategic alignment between business process, management, and operational factors.

Delen et al. (2019) researched foundations to measure IT outsourcing success and failure by identifying early warning signs. They sought to help managers and other practitioners redirect their actions toward successful determinants. Successful strategies include increasing brand awareness and market share and increasing supplier empathy for the client's position. In cases of failure, they found that the clients' losses are greater than the suppliers', and hiring intermediaries as suppliers proved to be counterproductive. They found three influencers on the success or failure of IT outsourcing: (a) adherence to a transition plan, (b) demand management, and (c) communication along the supply line. Their findings align with those of Pour et al. (2017).

Philip and Schwabe (2018) had similar findings in their research to understand early warning signs of offshore outsourced software projects. They found the need for trust between client and vendor, especially when there are gaps in technical deliverables. Vendors and clients have to share concepts to execute or transition to the project. Advanced, intervening, and ongoing communication must occur within all involved levels of the client's and supplier's organizations allowing for feedback from both parties. The studies conducted by Delen et al. (2019), Pour et al. (2017), and Philip & Schwabe, show that the negative impact of IT innovation adoption is related to human and technological factors.

Yi et al. (2017) studied how firms make a strategic change to survive when competitive advantage rapidly declines in a dynamic environment. They cited from the literature that digital technologies and IT such as peer-to-peer networks, virtualization, and cloud computing, have transformed the business environment into a complex digital ecosystem. Businesses make traditional strategic changes initiated by top managers, middle managers, and, ultimately, employees. They indicated that middle management does not always grasp top-down change, and employees trying to implement the change understand less. They addressed the bottom-up approach that is gaining an interest in the research.

Using data from 213 firms in China, Yi et al. (2017) proposed hypotheses to examine bottom-up learning and the speed of strategic change, the magnitude of strategic change, and the moderating role of resource flexibility. They found that bottom-up learning has an increasingly positive effect on the speed of strategic change. However, bottom-up learning had an inverted negative U-shaped effect on the magnitude of strategic change. Furthermore, they reported that resource flexibility weakened the influence of bottom-up learning on the speed of strategic change, but coordination flexibility strengthened this effect. They found that as the bottom-up learning increases, top management acquires real-time information and knowledge about technology trends, customer demands, and competitive changes to formulate innovative strategies that adapt to a dynamic environment.

Ogunlayi and Britton (2017) also recognized that organizations needed to go beyond their boundaries for successful innovation strategies. They conducted a case study

that combined elements of a top-down approach with principles of bottom-up employee collaboration. They aimed to embed a large-scale quality improvement program to enhance the recovery of elective surgery. They chose this alternative approach to be: (a) less directive, (b) more encouraging, and (c) empowering to achieve change locally. Top-down programs provided a structure for collaboration needed in this hybrid model. They established a formal collaborative series to share learning and data through IT and discuss challenges. They implemented several strategies such as establishing a central program team led by the program director, implementing a clinical program structure to engage the clinical community, developing agreement measures on best practices, and setting up data collection mechanisms. IT was an integral part of their website forums, reporting, collaborative learning events, and peer review visits. For example, the website was a portal for data presentation, forums for sharing tools, techniques, and documents, and celebrating successes. Ogunlayi and Britton found the collaborative sessions (a) were crucial to the bottom-up approach, (b) created a collective identity, and (c) mobilized people to take responsibility for their initiatives.

The results from these studies indicated a positive outlook for the bottom-up strategy to manage technological change. Yi et al. (2017) concluded that their research strengthened the understanding of the strategic change in the management process by increasing knowledge of the effects and extent of speed, magnitude, and flexibility using IT. Ogunlayi and Britton (2017) believed they achieved success by incorporating the advantages of a top-down methodology while incorporating elements of the bottom-up approach. They stated that future research is needed to assess the initiative's sustainability

related to innovative technology and human infrastructure, IT data collection, and ongoing decision making. Yi et al. indicated that further research is needed to examine processes at the microlevel such as (a) the use of secondary data, (b) alternative and innovative IT data collection procedures, (c) data from a single industry sector, and (d) operational flexibility. The beneficial findings from both studies provide a direction for further research in adopting bottom-up strategies, or variations, to implement an IT innovation within an organization.

The Direction of IT Innovation Strategies: Theory to Practice

Business and IT alignment is a top issue among IT executives (Maier et al., 2021). Of concern is a strategic alignment with theory, business process management, user receptivity, and technology-induced change initiatives. Growing enterprises, such as multibusiness firms, face complex challenges of rapid growth, global ventures, tightening regulations, and management changes.

Tanriverdi and Du (2020) proposed a theory to understand how and why corporate strategy changes negatively affect a multi-business firm in designing and operating IT controls, leading to the emergence of IT control material weaknesses (IT MW). Tanriverdi and Du also sought to understand the complexities and complications of internal controls material weaknesses (IC MW) and links between IC MW and IT MW. For example, strategies that alter a firm's complicated structures include diversification, mergers, and acquisitions (M&A), and divestitures (Tanriverdi & Du, 2020). Also, these strategies can modify a firm's complexity by adding or removing units and transforming how the firm relates internally.

Tanriverdi and Du (2020) grounded their hypotheses in complexity science; multibusiness firms are complex and adaptive systems that interact and exchange information and resources. The ability to handle complexity is inherent to business processes (Maier et al., 2021). Complications due to regulations, parent company acquisitions, and new divisions bring immense changes and rapid development. Tanriverdi and Du hypothesized that corporate strategy changes affecting a firm's complexity are more likely to increase IT MW than changes that affect complicatedness. Strategies that alter complexity can disrupt the three types of IT controls over technology, business processes, and people's behavior (Tanriverdi & Du, 2020). They examined the relationship among the three IT controls.

Tanriverdi and Du (2020) pulled their sample of 2,477 multibusiness firms from a published list of trading firms in the U.S. stock market. They examined eight dependent variables: (a) IC MW, (b) non-IT MW only, (c) IT MW, (d) IT MW in technology controls, (e) IT MW in people-behavior controls, (f) IT MW in-process controls, (g) material weaknesses (MW) in the design of IT controls, and (h) MW in the operation of IT controls. They identified the independent variables as related, unrelated, and total diversification. They included 11 control variables to rule out alternative explanations such as environmental concerns, corporate governance, profitability, and foreign operations. They used a reverse causality research design to mitigate risk between corporate strategy changes and IT MW and checked for bias and robustness.

The study results indicated that IC MW is due to IT MW and not non-IT MW (Tanriverdi & Du, 2020). Changes disrupt IT controls over people more than IT controls

over technology or business processes. They concluded that the study validates a new theory that is complexity based and links the effectiveness of corporate strategy changes and IT controls in multi-business firms. Maier et al. (2021) summarized that carefully designed and managed networks are effective in a complex and dynamic market. The connection between IT and CM is complicated. Complexity science theory can examine the dynamics. This explanation has a potential impact on IT innovations and CM as complexity-based and complications affect the role of business managers.

Recent research for a future direction addresses innovative technology issues and their impact on society, taking the form of technological cultures and the pervasiveness of technology in today's societies (Faik et al., (2020). Sony and Naik (2020) referred to the coming of a fourth industrial revolution of integrating the cyber and physical worlds via technology innovation. They studied the socio-technology systems theory perspective addressing architecture to implement mechanisms impacting people, infrastructure, technology, processes, and culture. The integration also includes the direction of stakeholders, economic situation, and regulatory frameworks. Faik et al. (2020) focused on the relationship between innovative IT and organizational change from a societal perspective. They drew on theory in institutional logistics to develop a model of IT and societal change.

Faik et al. (2020) viewed society as an inter-institutional system that reflects a multiplicity of logics. Their conception is that societal levels shift within these logics and relate to the technology materiality through IT properties. They referenced works on institutional logics and the view of society as multiple institutional orders defining logic

in the state, profession, corporate market, and community. In this view, management fields like IS approach IT innovation performed through material-expansive practices. They addressed the materiality of IT conceptually as establishing societal change. For example, in hospital practices, a lean management logic integrates and dominates existing services. They cited another example, enterprise system implementation at the National Aeronautics and Space Administration (NASA), which reflected the logic of managerial rationalism, contradicting scientific professionalism. A third example from the research described how IT enabled a hybrid of smallholders and value chain logics.

Faik et al. (2020) defined technology affordances as the ongoing situational dynamics between IT and institutional logics. In their proposed model, three mechanisms for IT affordance become elements of societal change: sense giving, translating and decoupling. Three carriers of IT affordance gain scale and stability through objects, networks, and platforms. They indicated that sources of authority in a corporation are top management, and sources of identity in technology affordances are bureaucratic roles. In the market, sources of authority are shareholder activism, and sources of identity are faceless or anonymous technology affordances.

Sony and Naik (2020) addressed the promises of Industry 4.0, the integration of the human-related socio system and nonhuman technical-related system for a vertical, horizontal, and end-to-end framework integration mechanism. This innovative wave to embed the cyber and physical systems utilizes technologies such as cyber-physical systems (CPS), the internet of things (IoT), and cloud computing for machine-to-machine communication. Integrating CPS and IoT for production and network connectivity

realizes Industry 4.0. Also, Industry 4.0 systems require specialized human skills and advanced technologies bound by systems perspective and open systems principles.

Sony and Naik (2020) sought to study the gap in research between the technical architectural design to integrate Industry 4.0 and the socio-technical design features for sustainability. Their model displays exterior influences from stakeholders and regulatory frameworks to financial-economic circumstances. The inter-connected interior concepts are (a) culture, (b) technology, (c) infrastructure, (d) people, (e) goals, and (f) process and procedures. Their model includes each of these concepts in a vertical, horizontal, and end-to-end framework. Vertical architectural design leads to integrating subsystems within the organization such as production, operations, and enterprise planning. Horizontal integration considers the entire value chain, and end-to-end digital integration addresses the (innovative) product life cycle from beginning to end. The current world of technological complexity manifests itself in distributed decision-making and high-risk domains. Moreover, the technological environment is fast changing, with workforce diversity, customer tastes, and ruthless competitors (Makumbe, 2016). For sustainable solutions, socio-technical systems (STSs) theory is specific and optimizes design systems to handle better environmental complexity, innovative technology, and market competition (Sony & Naik, 2020).

Sony and Naik (2020) concluded that the researchers and practitioners would benefit from this study, and guiding principles help design integration strategies while implementing Industry 4.0. A longitudinal perspective of the STSs theory on Industry 4.0 should explore different sectors to compare categorical and multisectoral relationships.

Faik et al. (2020) concluded that their model provided new insight to study strategy and policy interventions to address societal effects on IT usage and leverage IT capacities. The model can confront the entanglement of IT use beyond the individual and organization to incorporate the societal level processes that directly affect organizations and their need to change. Both studies provide different perspectives from the frameworks of prior organization change theory and explain the future direction of IT innovations and CM research in the next few upcoming years.

Organizations face challenges in this era of globalization, and changes within the management must position the organization to be competitive within a fluctuating environment (Zainol et al., 2021). Managing change requires skillful and effective leaders who understand the process and equip themselves to guide the organization successfully (Akinbode & Al Shuhumi, 2018; Zainol et al., 2021). The success of change initiatives depends on the leaders' preparation and ability to meet the needs of society, adopt innovative technologies, and gain a competitive advantage over competitors (Zainol et al., 2021). According to a CM review in the United Nations (U.N.) systems organizations, there is a direct relationship between key CM elements and in-depth application (U.N. Joint Inspection Unit, 2019). IT strategies link speed, scope, resources, and adoption levels of CM and influence the extent of influence of these factors for managing change. In 20% of 26 organizations, CM was not fully realized nor understood, and only 30% showed evidence of incorporating the most critical elements of CM.

Zainol et al. (2021) conducted a literature review to study factors for managing change used to steer organizational leaders in a future direction in a progressive and

vibrant economy. They discussed the role of leaders within the current pace of innovative technology implementation. The process of adopting vast IT advancements for competitive gain requires procedures and strategies administered through organizational leadership. They referenced Lewin's change model outlining processes that: (a) unfreeze to create readiness for change, (b) move forward and enable change adoption, and (c) refreeze with new norms that are widely accepted and routinized within the organization. The entire change process benefits from the leaders' awareness of the manager's role and their ability to engage all stakeholders and transform the organization.

Zainol et al. (2021) recommended the strategies of transformational leaders who change the individuals surrounding them with their knowledge, expertise, and vision. In addition, transformational leaders encourage the full participation of all stakeholders to enable sustainable change even in the leader's absence. Transformational leaders can make quick decisions and are current with the pace of innovative technologies. They act proactively to external influences of innovative technologies and technological advancements. Crucial elements of managerial proficiency for leaders involve the following: (a) delegating appropriately, (b) planning and organizing efficiently, (c) communicating clearly, (d) motivating employees, (e) adapting to change, and (f) constantly generating innovative ideas (Wanza & Nkuraru, 2016). Leaders using transformational leadership strategies can drive the stakeholders, deliver the adopted innovative technological change, and provide more than expected for the organization (Zainol et al., 2021).

In transition, Vij and Farooq (2016) looked at how investment in IT can improve the efficiency of business operations. They identified profitability as ROI and sales growth compared to a business's major competitor. Additionally, IT can be a sustainable competitive advantage by continuing the investment to achieve corporate innovation. Linton et al. (2017) elaborated on technology-intensive small business activity through innovative strategies to drive sales and grow profits. They advocated for successful adoption and technology integration for business sustainability. Vij and Farooq affirmed that investing in technological and managerial IT resources fosters creativity and innovation, increasing a firm's performance to meet its survival and stakeholders' needs.

Findings from the Literature Review

Patrick (2018) stated that IT leaders should employ strategies that help IT organizations grow, sustain growth, and maintain the performance of their organizations. IT strategies and initiatives must align with a company's corporate mission (Worster et al., 2016). Tornatzky and Fleischer (1990) outlined the TOE framework to study the adoption of technological innovations to understand how firms view, search for, and adopt new technology. I cited several studies in which the researchers use the TOE framework to test the effect of innovation in IT on business performance and profitability. Al-Hujran et al. (2018) cited the three processes of the TOE theory as a firm's context around decisions in IT adoption: the technological context, organizational context, and the environmental context.

Today's technologies and organizations differ from when Tornatzky and Fleischer developed the TOE model (Lihniash et al., 2019). Yet, the TOE framework is the most

widely used and recognized to examine factors that affect technological innovation adoption in businesses (Stjepić et al., 2021). The DIT focuses on technology diffusion over interpersonal communication channels (Sahin, 2006). The TAM emphasizes perceptions and intent, not evidence of concrete outcomes (Sujatha & Sekkizhar, 2019). Therefore, I reject the DIT and the TAM as alternate theories to TOE. In the conclusion of their study, Racherla and Clark (2008) recommended that future researchers use case study methodology and content analysis to understand the contrast between research cases. Therefore, I explored my case study using the TOE framework as the theoretical foundation.

My study aims to affect positive social change in the communities by increasing the profitability of more businesses by sharing the study's findings with other business leaders. The outcome is to impact business growth and stability to improve social institutions in neighborhoods and communities (Lupo, 2018). I established a theoretical foundation for this research and aim within the context of the literature review. The expected outcome follows the conclusion of the study.

Transition

In Section 1, the Foundation of the Study delineates the background of the problem, the growth in IT investments, and the problem statement that some business leaders lack knowledge of IT innovation strategies to increase profitability. The purpose of this qualitative multiple case study aims to explore IT innovation strategies business leaders use to increase profitability. The nature of the study identifies how the research will progress to understand why and how successful business leaders adopt IT innovation

strategies. The research questions are listed and engage participants during the semistructured interviews. The conceptual framework is the TOE framework expectancy-valence theory developed by Tornatzky and Fleischer (1990). Operational definitions, assumptions, limitations, and delineation frame the scope of the study.

The study is significant in expanding the literature on understanding how firms innovate their business strategies by identifying, designing, and assessing a sustainable business model (Evans et al., 2017). Practitioners could receive concrete IT strategies currently used in businesses with demonstrated success in the Mid-Atlantic region of the United States. This study has implications for social change as embedded in cultural, empirical, and technological knowledge within the Mid-Atlantic region of the United States. This literature review includes a critical analysis and synthesis of the literature as follows: (a) IT strategies and adoptions by businesses, (b) the TOE framework, and (c) the TOE framework IT innovation strategies and business performance and profitability.

Section 2: The Project

In this research, I explored IT innovation adoption strategies business leaders use to increase performance. In Section 2, I reiterate the purpose of the research, followed by (a) an explanation of the research project, (b) the role of the researcher, (c) the selection of the participants, (d) the research methods and design, (e) the population and sampling, (f) an explanation of ethical research, (g) the collection, organization, and analysis of data, and (h) research reliability and validity. I conclude Section 2 with a transition and introduction to Section 3.

Purpose Statement

The purpose of this qualitative multiple case study was to explore IT innovation adoption strategies business leaders use to increase performance. The targeted population was four successful business leaders selected from hundreds of finalists for international entrepreneurial awards presented annually in the Mid-Atlantic geographical region of the United States who have implemented successful IT innovation adoption strategies to increase performance and profitability. Lupo and Stroman (2020) found that implications of successful technology adoption affecting positive social change include supporting the growth of small businesses to provide revenue for social services in their communities. A strong small business sector improves socio-economic conditions and reduces unemployment by providing benefits to communities, especially those economically challenged (Schnake-Mahl et al., 2018).

Role of the Researcher

The qualitative researcher is the primary instrument to collect and analyze data (Karagiozis, 2018). The researcher uses a theoretical proposition to guide the data collection and analysis processes (Ebneyamini & Moghadam, 2018). The researcher should be knowledgeable in reviewing and refining data collection strategies, clarifying the material, checking for interpretation accuracy, and investigating outlying responses (Karagiozis, 2018). I was the primary instrument for this study. In my role as researcher, I constructed the research process to include (a) identifying and accessing the participants, (b) conducting semistructured interviews related to the phenomenon, (c) transcribing the recordings of the interview data, (d) collecting additional related data of interest to the study, (e) analyzing and interpret the data, and (f) presenting the findings.

The qualitative researcher understands the research concepts and purpose of the study to complete a case study effectively and efficiently (Rashid et al., 2019). Qualitative researchers aim to discover, hear, and document participants' stories and interpretations on an integral level (Roger et al., 2018). The degree to which the researcher is sensitive to the issues that affect the participants, the more the participants will interact and share information about the phenomenon under study (Karagiozis, 2018). The success of the qualitative study depends on the researcher's interpersonal skills and knowledge in the field of study (Ebneyamini & Moghadam, 2018; Pathiranage, 2020).

The focus of my research was to explore IT innovation adoption strategies business leaders use to increase performance. I have over 25 years of strategic leadership

and hands-on expertise in business and supporting technologies in the corporate, private, governmental, and public arenas. I have served as an enterprise-scale project, security, and IT governance manager. I worked as a director in IS and infrastructure with experiences in the financial, transportation, education, and aerospace sectors. I understand IS and management theoretically and operationally. This experience affords me a foundation to understand the focus of the study and the roles of professionals in the business and technology fields.

Ethical concerns are critical to research (Rashid et al., 2019). One of the contributions of the Belmont Report was the delineation of clear and serviceable ethical research guidelines with human subjects (Earl, 2020). The Belmont Report's significance in business research is the ethical principles, human-subject research guidelines, and goal definitions to enhance the client's well being, draw conclusions, and contribute to research knowledge (Earl, 2020). The principles provide an analytical framework to guide the resolution of ethical issues with human subjects regarding participant respect and autonomy, beneficence and well being, and justice and fairness (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978). I followed the Belmont report's guidelines and complied with Walden University's Institutional Review Board (IRB) standards. I informed participants of the phenomenon under research and the research process, provided disclosure information, and collected signed consent agreements for voluntary participation.

The researcher should be aware of cultural values and acknowledge and analyze them critically (Karagiozis, 2018). Researchers' failure to recognize their biases could

affect discriminatory behavior, disrespecting the participants' cultural identity (Karagiozis, 2018). Researchers must understand that their perspectives, shortcomings, and biases affect the interaction with the participants (Karagiozis, 2018). I am aware that I should not impose my cultural and professional background on any aspect of the study but bring knowledge and value to the experience. I avoided viewing data with a personal lens through conscious self awareness.

A qualitative researcher must be trustworthy and verify reliability and validity through data confirmability (Galdas, 2017; Pathiranage, 2020). I engaged the participants in an inquiry-based conversation using an interview protocol to avoid bias and gather reliable data. I followed a four-phase interview protocol to verify that the interview and research questions were aligned. I enhanced the reliability of the interview protocol by obtaining feedback on its trustworthiness. Feedback provides the researcher with information on how well the participants might understand the questions (Castillo-Montoya, 2016). The fourth phase of the interview protocol is to ensure the researcher has aligned the interview protocol with the purpose of the study and has finalized the process as clear and straightforward for the participants (Castillo-Montoya, 2016). I created and assessed the interview protocol for the length, timing, recording process, and consent and made revisions as needed. I scheduled a follow-up interview for member checking to ensure the accuracy of the data collected.

The researcher is transparent and reflexive in collecting data, analyzing, and presenting the findings (Galdas, 2017). Yin (2018) recommended that the researcher create a case study database and maintain a chain of evidence. Ebneyamini and

Moghadam (2018) listed journaling as a strategy, specifying valid and reliable measurement procedures and protocol, data categories, and identifying how evidence sources will be selected, assessed, and recorded. Thirsk and Clark (2017) stated that the amount of new information gathered by the researcher from various sources contributes to understanding the topic in general. I created a case study database documenting the chain of evidence, maintained a journal of procedures and protocols to follow, and gathered data from various sources for methodological triangulation.

Participants

I selected my participants using purposive sampling and willingness to participate. Researchers implement purposive sampling to match the research sample with the aims and objectives of the study (S. Campbell et al., 2020). Selecting participants through purposive sampling is more likely to yield relevant and valuable information (S. Campbell et al., 2020).

The researcher should describe the method of selection, qualifications, and the number of participants (Saunders & Townsend, 2016). I selected successful business leaders who were finalists in an international entrepreneurial awards program that includes the Mid-Atlantic geographical region of the United States. I focused on selecting available participants based on their recognized entrepreneurial leadership, technological innovation, and achievement. Such awardees receive recognition as outstanding entrepreneurs and have created and maintained growth and enterprise innovation (Hsu & Zhou, 2020). Hsu and Zhou stated that such awardees (a) focus on the competitive advantage, (b) lead the firm toward a sustainable operation, and (c) aim to improve the

economic reality of the society. I interviewed four participants. Saunders and Townsend (2016) identified the number of qualitative interview participants is contingent on the broad characteristics and indications of homogeneity of the sampling population. Guest et al. (2020) indicated that a default base size of four interviews is sufficient for case saturation and thematic analysis. Hagaman and Wutich (2017) also concluded the sufficiency of four to six interviews to identify at least three common themes.

Maramwidze-Merrison (2016) contended that rich data gathered in a qualitative research study is contingent upon the participants' seniority and experience level. However, response richness must balance the ability to access participants (Saunders & Townsend, 2016). I identified potential participants through (a) media releases, (b) social media, (c) written publications, and (d) business directories and listings. To gain access to participants, I used a gatekeeper who was a previous professional contact. I communicated the relevance and value that participants could contribute to the scientific and business fields. I targeted recent award winners to add the synergy and enthusiasm of the participants to document their success stories.

Research Method and Design

There are three basic research methods: quantitative, qualitative, and mixed methods (Pathiranage et al., 2020). I chose the qualitative method to explore IT innovation adoption strategies business leaders use to increase performance.

Research Method

The qualitative researcher interprets texts, image analysis, and themes and patterns to understand the overall results (Abutabenjeh & Jaradat, 2018). Researchers use

the qualitative method to explore the focused phenomenon of the study (Pathiranage et al., 2020). The quantitative researcher examines relationships among variables and statistical analysis. The quantitative and mixed methods are suited for quantifying causal relationships and analyzing numbers. These methods are not appropriate for explaining or exploring situations.

The focus of a qualitative study is to understand the meanings and relationships derived from words and images (Saunders et al., 2019). Qualitative methods are used in various disciplines, as cultural analyses are a strength of these methods (Belk, 2017). The qualitative method is appropriate for research in the social sciences, particularly for studying individual and group behavior and organizational functioning (Pathiranage et al., 2020; Rahman, 2017). Qualitative research involves a naturalistic approach to understanding a phenomenon by interpreting meanings from other people by analyzing the subjective meaning of issues, practices, or events from texts and images (Aspers & Corte, 2019; Rahman, 2017). Qualitative researchers study empirical materials that describe routines, dilemmas, and meanings in the lives of individuals to make sense of phenomena regarding the meaning people bring to them (Aspers & Corte, 2019).

Researchers use the quantitative methodology to collect and analyze numerical data by applying statistical measures to identify relationships that support or refute knowledge claims or hypotheses (Oberiri, 2017). Researchers implement quantitative research methods to (a) test hypotheses, (b) search for cause and effect, and (c) make predictions using inquiry strategies like experiments and surveys using predetermined instruments to yield statistical data. Researchers use structured and validated instruments

to study specific variables based on precise measurements by collecting numbers and statistics. I did not use quantitative instrumentation or measurement decisions as I identified patterns, features, and themes to explore IT innovation adoption strategies business leaders use to increase performance.

Using mixed method research, the researcher combines elements of qualitative and quantitative approaches to integrate several world views in one study (Fàbregues et al., 2021; Schooneboom & Johnson, 2017). Mixed method research aims to expand a study's conclusion using different methods and measurement decisions (Schooneboom & Johnson, 2017). The research question did not require quantitative instrumentation or measurement decisions for investigation. Therefore, the mixed methods approach was not appropriate for this study.

Research Design

Qualitative research designs include narrative, phenomenology, ethnography, and case study (Abutabenjeh & Jaradat, 2018). In narrative research design, the researcher uses inquiry to study participants' lives through their stories (Creswell & Creswell, 2018). The researcher retells the information chronologically and often views the researcher's life combined with participants' lives in a collaborative narrative. In this study, I did not seek to explore the life stories of the participants. Therefore, the narrative design was not appropriate for my research.

Researchers use phenomenology to investigate subjective phenomena to understand how individuals make meaning of their experiences through descriptions of their life world (Mohajan, 2018). For this study, I explored innovative IT strategies used

by business leaders, not lived experiences of a group of individuals. The phenomenological design was not suitable for this study.

The aim of ethnography is to understand how a community of individuals makes sense of social interactions (Asenahabi, (2019). In an ethnographic design, the researcher talks and performs functions with participants in their real-life settings over a long time. I did not use the ethnographic design because I did not interact with participants within their settings nor observe their behaviors or actions.

A qualitative case study approach allows the researcher to explore in-depth intricacies of phenomena within a specific context (Rashid et al., 2019). In-depth refers to exploring all peculiarities of the case (Asenahabi, 2019). Using a case study design, the researcher can explore in-depth a program, event, process, activity, or individual(s) (Creswell & Creswell, 2018). A case study was appropriate for my study because I explored a contemporary investigation of a real-life phenomenon.

Qualitative researchers can use a single or multiple case design (Tomaszewski et al., 2020). Yin (2018) warned that a single-case design is vulnerable unless all the major concerns are covered. Rachid et al. (2019) articulated the difficulty of investigating all facets of a phenomenon using a single-case study. The analytical benefits of a multiple case design are more substantial than a single-case design for more reliable and robust empirical evidence (Mohajan, 2018; Yin, 2018). The multiple-case study design is valuable for studying links between the organization, environment, and human factors that guide management and leadership development (Halkias & Neubert, 2020). I used a multiple case study because I sought to explore in depth the differences and similarities

of the business leaders' perspectives on IT strategies adopted to increase business performance using the TOE framework. The TOE framework focuses on the organization, environment, and human factors influenced by technology.

Data saturation is a critical component of the study's rigor, obtained when little or no new information contributes to the study's objectives (Guest et al., 2020). Researchers reach data saturation when they find no additional data to develop the category in terms of properties, dimensions, and variations (Nelson, 2017). Qualitative researchers should incorporate multiple types and sources of evidence (Yin, 2018). To achieve data saturation, I (a) gathered data from documents and multimedia communication., (b) maintained an updated reflexive journal, and (c) continued interviews with participants until their responses yielded no new information or were repetitive. At this point, further data collection and analysis add little to the conceptualization, and the researcher is confident empirically that the category or theme is saturated (Guest et al., 2020; Nelson, 2017). No additional codes emerge, nor do further insights originate from the data (Hennink et al., 2017).

Population and Sampling

The population for my study was entrepreneurial awardees from the Mid-Atlantic geographical region. Such awardees have created and led enterprises with continuous growth and innovation (Hsu & Zhou, 2020). As awardees, they are honored for their outstanding achievements, leadership capabilities, and vision (Hsu & Zhou, 2020). I selected four successful business leaders based on their documented achievements and accessibility.

Hagaman and Wutich (2017) also found that an average of four to six interviews identified at least three common themes. Compared to predictions using a statistical approach, researchers need fewer interviews for data saturation. Researchers can choose a run length of three or more interviews, generating a more conservative saturation assessment (Guest et al. 2020). A more conservative saturation assessment allows for more information if desired. Further, Hagaman and Wutich asserted that a homogeneous approach needs fewer interviews for data saturation. Nelson (2017) declared no single method to reach data saturation but aligning the research design, and the saturation process is essential.

For my study, I used purposive sampling. Purposive sampling is appropriate when the researcher knows that the target population meets the study's demands and uses additional filters to select samples (Bhardwaj, 2019). Using purposive sampling strategies, patterns that emerge from varying experiences may help identify fundamental elements of a phenomenon (Levitt, 2021).

I conducted semistructured interviews through telephone conferences. I established a convenient time for the participants to obtain their in-depth views. The use of technology allowed for time and space to purposefully plan the interview location and setting.

Ethical Research

The issue of ethics arises in qualitative research and involves complex responsibilities (Roth & von Unger, 2018). Ethical conduct in research rests on researchers as protectors of participants, reflexive practitioners, and technicians (Cumyn

et al., 2018). Researchers should articulate roles regarding the ethical conduct of the research. Cumyn et al. recommended that the participants receive the institutionally approved study protocol and consent procedures. Participants should receive and sign a copy of the study's objectives and the participatory process. I followed these procedures, including an invitational email (Appendix C) and a consent form for the participants to indicate confirmation.

The Belmont Report delineates ethical guidelines for research with human subjects (Earl, 2020). Its principles establish a framework significant foundation for studies specifically structured as research projects (Earl, 2020). Broader tenets of the Belmont Report establish a pathway for (a) establishing safety and efficacy, (b) regulating institutional and societal duty about research, and (c) informing participants on the nature of the study (Earl, 2020). Privacy laws apply when human subjects participate in research (Dragga & Voss, 2020). Researchers are ethically bound to protect the anonymity of the participants when recording, archiving, and reporting data. Cumyn et al. (2018) proposed assigning numbers to each participant to ensure anonymity. I included this information and acknowledgment in the consent form and followed the procedures according to IRB approval from Walden University. The consent form also included the Walden IRB approval number 05-19-22-1024177.

Researchers must ensure that the participants understand confidentiality issues and agree in writing to disclosure and release forms (Dragga & Voss, 2020). Participants have the right to withdraw from the study at any time in writing or verbally. Researchers should secure participants' signatures indicating their awareness of their rights.

Participants in this study volunteered without receiving any compensation. Data security is essential to ethical research practices (Mooney-Somers et al., 2017). Confidentiality of the data is crucial to protect the rights of the participants (Check et al., 2014). I adhered to these practices and will store securely all data related to this study for five years, after which I will delete all electronic files.

Data Collection Instruments

In qualitative research, the researcher is the primary instrument to collect and analyze data through interpretation (Clark & Vealé, 2018). Qualitative researchers minimize or disclose their assumptions and biases when they propose a focused research question supported by a sound conceptual framework (Clark & Vealé, 2018; Johnson et al., 2020).

Qualitative researchers collect data from individuals and organizations within everyday situations (Yin, 2018). This study included semistructured interviews along with (a) personal notes, (b) published documents, and (c) media releases from the organizations for data triangulation. The personal notes comprised (a) observational findings, (b) thoughts and reflections, (c) communications and correspondence, (d) interview notes, and (e) insights gleaned during the study's progression. Triangulation is a standard of rigor used to recognize data convergence through multiple data or methods (Johnson et al., 2020). Researchers use triangulation to minimize error or bias and optimize data collection and analysis procedures (Johnson et al., 2020).

Data Collection Technique

Majid et al. (2017) acknowledged that the interview questions are the heart of the interview process. The researcher constructs the interview questions to ensure they address the research question (Majid et al., 2017). I implemented a multiple case study and conducted semistructured interviews as part of the data gathering techniques. I audio-recorded the interviews and transcribed them for member verification and checking. For methodological triangulation, I established an electronic journal of meeting notes, communications, profiles, and media publications of the businesses and business leaders used in this study. I used these multiple sources for convergence of evidence to explore IT strategies that business leaders use to improve performance.

The researcher should become familiar with the subject area and interview protocols for data collection by reading peer-reviewed literature (McGarth et al., 2019). This knowledge assists in constructing an interview guide. An interview guide is helpful for the researcher to (a) explore language, (b) clarify the questions, and (c) practice active listening skills. The qualitative interview guide must align with the methodological approach to understand the participants' subjective perspectives of the phenomenon. The interviewer may need to make changes to the interview guide between interview sessions (McGarth et al., 2019). Researchers often modify or refine interview protocols based on concurrent data collection (Johnson et al., 2020). I created and followed an interview guide. I did not find it necessary to modify or refine my original interview protocols.

Data Organization Technique

At the onset of the study, researchers should develop a clear organization system (Wolff et al., n.d.) Qualitative data are important and should be recorded in a data file to include dates, locations, individual, group, and interviewer characteristics. Data organization involves sorting data by categories to make them understandable (Harston & Pyla, 2019).

I developed an organizational system that includes detailed notes, a schema for coding, and software analysis as part of a database. I categorized the database using the case study protocol identified in the cited research. I used Microsoft Office 365 to organize and store the materials electronically. I used Microsoft Word for the annotated bibliography and created documents as needed. Microsoft Excel served to create spreadsheets, workbooks, and visuals. I used Microsoft OneNote as a digital notebook to catalog and label notes for access and retrieval. As computer-assisted qualitative data analysis software (CAQDAS), the researcher can use NVivo to organize, store, manage, and retrieve data (Houghton et al., 2017). I used NVivo to store electronic data during the study. An encrypted password securely protects data stored using NVivo. I will store all raw and electronic data securely for five years, subsequently shred all documents, and delete all electronic files.

Data Analysis

Yin (2018) described data analysis as pursuing a combination of procedures to search data for patterns, insights, or concepts to answer the research question.

Researchers should use a data analysis process that provides details of the analytical steps

used in the study (Lester et al., 2020). The analysis process must logically connect to the study's purpose justified by the researcher.

Methodological Triangulation and Data Analysis

Denzin (2017) delineated four types of triangulation. They are: (a) data, (b) investigator, (c) theory, (and (d) methodological. Triangulating multiple data sources can enhance the objectivity and validity of social research (Fusch et al., 2018). I explored the data using methodological triangulation for an accurate understanding of the phenomenon by collecting data that divulge consistent information or unfold more divergent perspectives.

Rebecca Campbell et al. (2020) indicated that in methodological triangulation, researchers should cross-check data for complexities and competing interests, possibly affecting data credibility and usability. I followed transparent procedures and disclosed trustworthy information throughout the data analysis process. Using methodological triangulation increases transparency, which is key to the study's accuracy, credibility, and data evaluation (Rebecca Campbell et al., 2020).

Fusch et al. (2018) described methodological triangulation of multiple data sources within one design as within-method triangulation, as opposed to a between or across method of methodological triangulation in a mixed-method study. I conducted a qualitative case study using within-method triangulation. Within-method triangulation is the most commonly known involving multiple data sources obtained with a single design (Thomas & Raheem, 2020).

Logic and Sequence of Data Analysis

Data analysis begins with the enrollment of the first participant and is a continuous process (Belotto, 2018). I conducted a logical and sequential analytical process to align the study's methodology and purpose. I familiarized myself with the data through note taking and followed an iterative data collection and analysis process. I followed a conceptual plan for coding, pattern identification, and thematic analysis. Lester et al. (2020) emphasized the importance of a detailed audit trail that connects data sources, codes, categories, and themes. I presented a transparent data analysis process supported by a comprehensive electronic audit trail to ensure the visibility of my interpretation and coding process for the readers and reviewers.

Conceptual Plan and Coding Software

The focus of coding is to provide a pointed interpretation of the phenomenon systematically and with transparency (Elliott, 2018). Elliott (2018) conceptualized coding as a decision-making process. I used the NVivo software package to assist in identifying prominent and relevant themes through codes. NVivo includes coding matrices that distribute codes across categories displaying a transparent visual output (Paulus et al., 2017). NVivo connects themes to the codes identified in the data and looks for overlapping themes using matrix coding query and word frequency analysis.

NVivo can help create a documented, evidence-based, transparent audit trail and associated implications for rigor (Dalkin et al., 2021; Maher et al., 2018). Researchers can use NVivo to build and test theories using literature and interview data (Dalkin et al.,

2021). Along with NVivo, I included traditional data analysis methods of mind and cognitive mapping as visual representations of analyzed data.

Identification and Correlation of Key Themes

Once sorted, compiled, and analyzed, themes and ideas gleaned from narrative texts can provide empirical support for the study (Yin, 2018). Saldaña (2021) defined a theme as an outcome of coding, categorizing, or reflecting analytically. Using a coding protocol, researchers convert raw data into related themes or concepts (Castleberry & Nolen, 2018). The themes relate to the research question and represent a level of meaning within the data set (Castleberry & Nolen, 2018). Researchers search for themes within the data and assign codes according to the themes (Cassell & Bishop, 2019).

I used the five-stage iterative data analysis process Yin (2018) outlined to focus on key themes to correlate to the literature and conceptual framework. This process includes compiling, disassembling, reassembling, interpreting, and drawing conclusions based on thematic analysis (Yin, 2018). I compiled the data through transcription, familiarity, and organization. NVivo software supported the compilation of documents and interview transcripts. Using NVivo, I disassembled the data and connected and analyzed the themes using matrix coding and word frequencies identified in the literature and data collected.

Codes are tags used to retrieve, categorize, and examine data across the data set (Castleberry & Nolen, 2018). I used the coded tags to rearrange and access the data for reassemblage. Researchers can use a coding strategy based on previous research or theory (Castleberry & Nolen, 2018). I used an *a priori* coding schema as a starting point based

on themes found in the recent empirical literature and the TOE conceptual framework. I made modifications as needed during the coding process.

Saldaña (2021) recommended that researchers focus on each theme individually before reflecting on how the themes interconnect. I used NVivo and thematic mapping to reassemble the evidence. Castleberry and Nolen (2018) concluded that qualitative research must adhere to detailed transparency of data analysis, iterative interpretations, and analytic decision making. I met these criteria with detailed coding procedures that led to thematic interpretation and drew conclusions rooted in empirical evidence.

Reliability and Validity

Lincoln and Guba (1985) posited four criteria to develop trustworthiness to evaluate the worth or systemic rigor of quality inquiry. Each criterion has a basis in the study's analysis (a) dependability, the consistency of the analysis, (b) credibility, a confident and believable analysis, (c) transferability, applicability of the analysis in other contexts, (d) confirmability, data-supported analysis (Lincoln & Guba, 1985; Rose & Johnson, 2020). Trustworthiness refers to the quality and worth of the study and how the findings reflect the study's aims (Alexander, 2019). The data gathered by the researchers and provided by the participants determine the study's trustworthiness. Researchers apply reliability and validity to qualitative research methods during the study's construction and post hoc evaluation (Cypress, 2017).

Reliability

For qualitative reliability, the researcher uses a consistent approach across different study projects and researchers (Creswell & Creswell, 2018). Consistent and

visible application practices, analysis, and conclusions are the basis of reliability (Cypress, 2017). Lincoln and Guba (1982) addressed the concept of dependability in qualitative research to correspond closely to reliability in quantitative studies.

I established reliability by maintaining a reflexive journal. I developed and used an interview protocol to avoid bias when gathering data and ensure alignment of the interview questions. (See Appendix B.) I obtained feedback on the interview protocol to enhance its reliability.

Dependability

The purpose of dependability is to establish confidence that the findings viewed from the participants' perspectives are true, credible, and believable (Forero et al., 2018). To show dependability, the researcher should describe multiple techniques to ensure the objectivity of the findings and the minimization of bias (Squires & Dorsen, 2018). Techniques include a detailed description of study methods, (b) a study trail, and (c) transparency of coding accuracy (Forero et al., 2018).

I adhered to research-based techniques to address the dependability of my study. I maintained a detailed audit trail of the entire research project. My documentation included the processes of data collection, data analysis, and the development of findings. I included member verification and member checking in the process. Member verification or transcript review involves a technical and objective agreement by participants on the factual accuracy represented in the interview text (Rose & Johnson, 2020). During member checking, researchers share a draft report or collected data reflected in themes with participants for feedback about the process. I used member checking to validate the

participants' responses and alleviate any misunderstandings. Member checking allows the researcher to test findings, interpretations, explanations, and cultural descriptions surrounding the study phenomenon. Participants play an active role in member checking by sometimes correcting and reorienting researchers to produce a more accurate analysis of the phenomenon. Dependability is necessary to attain credibility (Alexander, 2019).

Validity

Rose and Johnson (2020) argued that qualitative researchers should address issues of trustworthiness by tending to the reliability and validity of the research findings. For qualitative validity, researchers use specific procedures to check for the accuracy of the study findings (Creswell & Creswell, 2018). Cypress (2017) and Saunders et al. (2018) identified a link between data saturation and validity. Implementing analytical techniques for credibility, transferability, and confirmability can address a study's validity (Alexander, 2019). I maintained a database of evidence from multiple sources or methodological triangulation and a reflexive journal to mitigate personal bias.

Credibility

Credibility is a central methodological concept in social sciences and is essential for trust in the study (Abdalla et al., 2018). It refers to the level of confidence in the truth and interpretation of the data (Alexander, 2019). I ensured credibility in my study by implementing research techniques to bring clarity, rigor, and transparency. I followed credible procedures to provide truthfulness from the participants' perspective through participant transcript review and member checking for thorough data investigation and accurate reporting. The core of the qualitative study is the researcher's ability to produce

plausible insight through a deep understanding of a phenomenon (Shufutinsky, 2020).

This outcome is possible by thoroughly interpreting data collected from individuals who experienced the phenomenon under study (Shufutinsky, 2020).

I cross-checked data codes across themes generated from the participants' accounts, the TOE framework, and the literature review. I implemented procedures to allow participants to view my interpretation and provide them the opportunity to see their lived experiences through my reflection. Participants had the opportunity to modify the findings to help identify any biases or assumptions.

Transferability

In a qualitative study, external validity depends on transferability and how the knowledge gained from the study contributes to a better understanding in another context (Boot & Bosma, 2021). Strategies for transferability include purposive sampling and data saturation (Forero et al., 2018). Purposive sampling is a criterion-based strategy used to select participants purposefully. Purposive sampling can (a) provide rich data for in-depth insights into the phenomenon and (b) allow better interpretation for the researcher (Ames et al., 2019). Data saturation is related to data adequacy and richness.

I ensured data saturation based on the number of codes per interview. O'Kane et al. (2021) indicated that CAQDAS techniques assist in developing thick data. I used NVivo to identify word frequencies, code frequency, and code retrieval. Researchers can input codes into a preexisting coding framework for detailed data analysis for exploration (Nowell et al., 2017). A researcher's theoretical interest may provide a detailed analysis of some of the data but a less rich description of the overall data.

Researchers should identify the most relevant themes to build depth in understanding of the phenomenon of interest (Nowell et al., 2017). Starting with a few predefined codes helps guide thematic analysis. Thematic analysis is more iterative, and the researcher is intensely involved in interpreting the data (O'Kane et al., 2021). I began with a preexisting coding framework based on the TOE framework expectancy-valence theory. The thematic analysis allows the researcher flexibility for various ways to determine themes (Nowell et al., 2017). I conducted a thematic analysis to describe in detail for the reader how the findings are rooted in the generated data.

Confirmability

Confirmability is the extent to which the researchers influence the analysis process (Chung et al., 2020). Qualitative researchers propose confirmability to describe the degree to which other researchers can corroborate the results (Guba & Lincoln, 1981). Triangulation and reflexivity strategies help reduce researcher bias and uphold objectivity and accuracy (Forero, 2018). Using more than one approach as a data collection technique facilitates more consistent findings for verification (Ellis, 2019). I used methodological triangulation to collect data for my research to increase the possibility of others reproducing my results.

Reflexivity is the critical and ethical relational thinking a researcher practices throughout the study and includes thoughts, feelings, dialogs, and interpretations (Simon, 2018). Reflexivity is a required component of most methodological approaches (von Unger, 2021). As an analytical practice, researchers incorporate reflexivity to generate valid and trustworthy knowledge. I read and digested the data for a holistic understanding

of the phenomenon through a reflexive and open-minded approach to the participants' narratives. Throughout the research process, I maintained a reflexive journal with sufficient details to reflect thoughts, observations, and concrete or transient findings. I implemented a high level of rigor and consistency in the study methodology to establish confirmability.

Data Saturation

The concept of saturation is the premise that the researcher can identify the point at which no new data will add to the development of a concept or theory (Varpio et al., 2017). Data saturation helps the researcher mitigate bias and positively affects construct validity (Fusch et al., 2017). Data saturation occurs when the researcher has enough information to replicate the study (Fusch et al., 2017). Researchers view saturation based on data sufficiency, i.e., no further data are necessary for analysis (Saunders et al., 2018).

I ensured data saturation through several research processes, approaches, and techniques. I used purposive sampling to select four successful business leaders from a population of entrepreneurial awardees in the Mid-Atlantic region of the United States. This sample was homogeneous to represent finalists of such awardees in this geographical region. I had one objective identified in my research question: to identify strategies IT business leaders use to adopt innovative technologies to increase performance. I implemented methodological triangulation to include multiple data sources as my data collection approach. I conducted semistructured interviews and used member checking to collect rich data for analysis. I used the TOE framework expectancy-valence theory as a base for data collection and analysis. I used NVivo as my codebook

to monitor data saturation in the data collection and analysis processes. I pursued data saturation to identify net issues and understand the nuances in the information.

Transition and Summary

In Section 2, I reaffirmed the study's purpose, to explore IT innovation adoption strategies business leaders use to increase performance and stated my role as the researcher, the primary data collection instrument. I identified the eligibility of the participants as successful business leaders, selecting from finalists in an international entrepreneurial awards program in the Mid-Atlantic geographical region of the United States. I elaborated on why the qualitative research method and the multiple case study design are appropriate for this study. I discussed the population, purposive sampling, and the ethical requirements I followed in implementing the research.

Also, in Section 2, I outlined the data collection instruments, including the semistructured interview technique with the protocol that I used to capture empirical data on the study phenomenon. I provided details of my data organization system and coding process to identify and analyze key themes uncovered from the data. I concluded Section 2 with a discussion on reliability and validity as criteria for trustworthiness. I explained how I conducted a rigorous, reliable, and valid study to provide a holistic understanding of the phenomenon.

Section 3 focuses on the study's findings and applications to professional practice. I address the implications of the study for social change. I provide the recommendations for actions, including disseminating the study's findings and incorporating recommendations for further research based on the limitations and delimitations of the

study. I reflect on my research experience and the Doctor of Business Administration (DBA) process and close with a concluding statement.

Section 3: Application to Professional Practice and Implications for Change

The purpose of this qualitative multiple case study was to explore IT innovation adoption strategies business leaders use to increase performance. The targeted population for the research study was comprised of four successful business leaders selected from finalists for entrepreneurial awards presented annually in the Mid-Atlantic geographical region of the United States who have implemented successful IT innovation adoption strategies to increase performance and profitability. I collected data by (a) conducting semistructured interviews, (b) reviewing corporate documents, (c) examining the firms' websites, and (d) probing media releases to answer the research question. I used the TOE expectancy-valence theory framework to undergird this study. The TOE framework, an organization-level theory, delineates adoption decisions as affected by the three contexts of a firm: technology, organization, and environment (Elghdhan et al., 2020).

I found an alignment between four principal themes, peer-reviewed literature, and the TOE conceptual framework. I uncovered 15 emerging concepts from my initial coding. I collapsed the concepts into four themes and eight subthemes based on word analysis related to the research question and its meaning within the context of the data set. Four themes that emerged from the triangulated data encompass the strategies business leaders use to increase performance: (a) IT innovation in business operations, (b) IT innovation and human capital, (c) innovative IT for production, and (d) innovative IT deployment systems. Table 1 displays the themes and subthemes from the data analysis.

Table 1*Theme Frequency and Percentage*

Theme Frequency and Percentage	<i>n</i>	%
IT Innovation in Business Operations	96	35.8%
IT Innovation and Human Capital	66	24.6%
Innovative IT for Production	53	19.7%
Innovative IT Deployment Systems	53	19.7%

Note: *n* = ranking of frequency of primary and secondary subthemes; % = count of primary plus secondary subthemes divided by the total frequency

My data analysis showed that successful business leaders use innovative IT strategies that focus on a composite of strategies. Further, the strategies to adopt IT innovation successfully aligned with the TOE elements and descriptive measures. The themes also aligned with findings from prior peer-reviewed literature.

Presentation of the Findings

The research question for this study was as follows: What strategies do IT business leaders use to adopt new technologies to increase performance? I conducted semistructured telephone interviews, reviewed archival documents, watched and listened to media interviews, read press releases, and compiled a research journal to collect data for methodological triangulation. I followed the interview protocol shown in Appendix A. Archival documents included (a) blogs and posts from the business websites, (b) interviews of the participants on media outlets, (c) social media posts from Facebook, Instagram, and LinkedIn, and (d) online publications related to the businesses. I used

NVivo to organize, decode, collate themes, and develop an audit trail. I identified distinct patterns in the data predicated on the theoretical constructs and elements of the TOE framework. I achieved data saturation when I uncovered no new information from the interview responses, triangulated data, and found the data repetitive and discernable for exploring patterns.

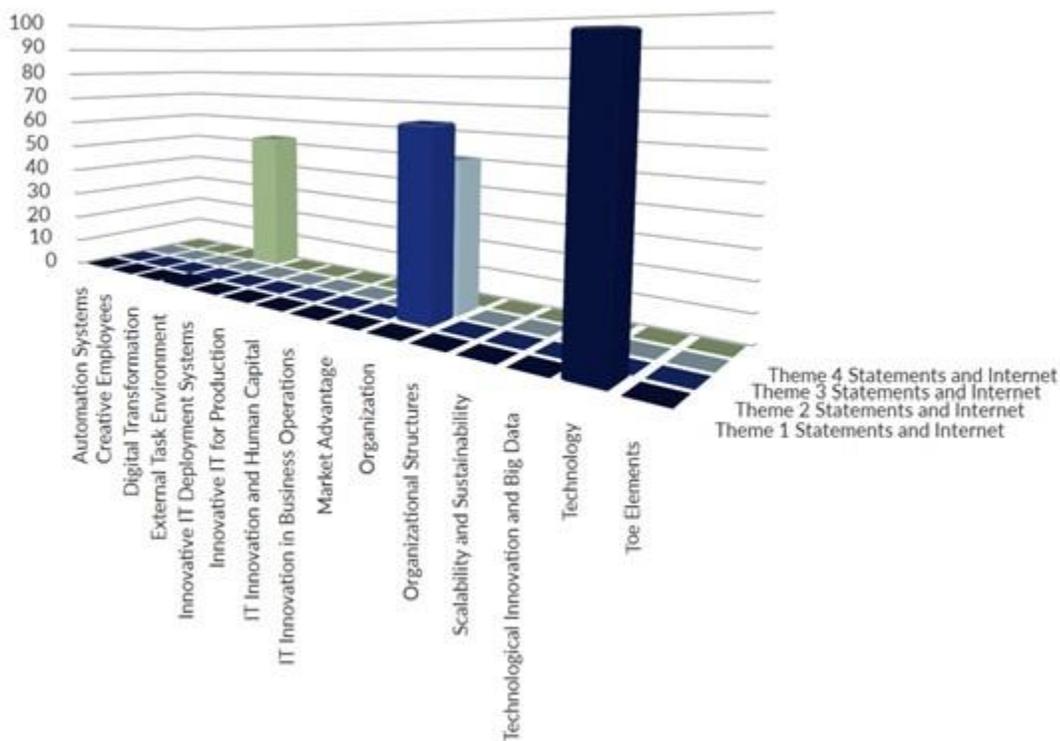
I used the TOE framework to gauge my analysis of strategies for adopting new technologies to increase performance. The TOE framework addresses one component of the adoption and implementation of innovations at the organizational level (Baker, 2011). Tornatzky and Fleisher used the TOE framework to explain three processes of a firm's context that influence its decisions to adopt technological innovation (Baker, 2011). The technological context incorporates all technologies pertinent to the firm's operations. The organizational context includes all aspects of the firm's resources, linking structures, and communications. The environmental context involves all aspects of the industry in which the firm sets. The elements and descriptive measures are as follows: (a) the firm's relevant internal and external technology – availability and characteristics; (b) organization – formal/informal linking structures, communication process, size, and internal resources slack; (c) environment – industry characteristics and market structure, technology support infrastructure, and government regulations (Tornatzky & Fleischer, 1990).

In Figure 1, I provide the level of frequency of the TOE elements based on participants' responses and internet data. Within the elements of the TOE framework, the data revealed the technological construct yielded 96 responses related to Theme 1, the

organizational construct yielded 119 responses across Themes 2 and 3, and the environmental construct generated 53 responses related to Theme 4. The technological context describes (a) internal technologies such as equipment, hardware, and software, (b) current and relevant firm practices, and (c) the pool of technologies external to the firm (Tornatzky & Fleischer, 1990). They considered technologies separate from the rest of the environment to focus attention on how technology features can influence the adoption and implementation processes.

Figure 1

TOE Framework Coded by Themes in NVivo



The findings revealed that each theme had two distinct subthemes. The analysis showed that at least one of the elements and descriptive measures of the TOE framework

undergirded each of the four themes. The responses to the interview questions identified IT strategies that business leaders use to adopt innovation mapped to the elements of the TOE conceptual framework. Table 2 shows the emergent themes and subthemes related to the TOE contexts and elements.

Table 2

TOE Elements, Themes, and Subthemes in the Data

TOE Contexts	Technology	Organization	External Task Environment
Emergent Themes	I. IT Innovation in Business Operations	II. IT Innovation and Human Capital	IV. Innovative IT Deployment Systems
Subthemes	Digital Transformation	Visionary Leadership	Technological Innovation and Big Data
Subthemes	Automation Systems	Creative Employees	Market Advantage
Emergent Theme		III. Innovative IT for Production	
Subtheme		Organizational Structure	
Subtheme		Scalability and Sustainability	

I used member checking and methodological triangulation to verify the reliability and validity to achieve data saturation. In the following subsections, I present the four emergent themes from the interview responses and triangulated data tied to professional

and academic literature findings. I delineate the alignment to the TOE theoretical framework used to explore and analyze information gleaned from the data sources.

Theme 1: IT Innovation in Business Operations

The first theme to emerge was IT innovation in business operations with subthemes of IT in digital transformation and automation systems. This theme is consistent with the findings from the literature. Mgunda (2019) identified IT as a relevant factor in assisting business innovation and growth. The IT revolution and the internet facilitate performance through exchanging information (Mgunda, 2019). Yan et al. (2019) also identified the interrelationships between the process of strategic e-business and IT alignment. The role of IT is to transact business online efficiently, economically, and faster for both producers and customers (Mgunda, 2019). The rapid advancement of IT innovation spurs the development of other technologies that drive economic growth and businesses to flourish. Yan et al. (2019) concluded that IT supports can be timely in the dynamic and innovative decision-making process. Companies must transform rapidly to the innovative technology in the digital era. Also, they must incorporate automation, allowing companies to conduct business in a cyber system of programmed responses. Alam et al. (2022) described digital transformation using social network platforms, innovation processes, and ICT as part of the workplace culture. They concluded that size, profitability, and digital skills do not impact significantly the perception of digital transformation. Strategically, all businesses need to transform their digital operations, including their social network and IT processes.

P1 indicated that their company could deliver critical strategic sourcing for direction, growth, and planning through IT solutions. P2 noted that leveraging technologies is a means to dive into the entrepreneurial journey. P2 stated, “Software applications like FLAGS, Jira®, and Google Drive are platforms we manage every day to increase efficiency.” P3 claimed the company's information environment dominance with solutions delivering advanced technologies and digital tradecraft. P3 acknowledged, “We’re big fans of using cloud-enabled technologies and developing and using cloud computing for most of the work we do.” P4’s business re-skills employees in data science and provides digital transformation for Fortune 500 companies and government agencies. P4 added, “Technology is only one piece of the innovation. Having the infrastructure in place without the staff that can appreciate it will not improve innovation.” According to Alam (2022), for sustainable adoption of digital technology, organizations need human and capital resources.

Solberg et al. (2020) and Verhoef et al. (2021) referred to digitization as digitizing resources to transform customer experiences and operational processes for efficiency in business processes. P1 stated they adopted "technology solutions to create transformational results through IT and other strategic sourcing solutions." For example, P1 transformed enterprise architecture from compliance-based to value-driven outcomes and revolutionized how federal customers conduct business. P2 commented on the need to build a dashboard aligned with the goals and skill sets of the new wave of customers. P2 remarked, “We’re customer centric. How our customers enjoy using the platform is the determined measurement of success.” P3 addressed having innovative programs,

methodologies, and technologies that manage digital signatures for secure navigation in the information environment. P3 acclaimed:

Digital technology is really a game changer in terms of the ability to do things faster and shorten life cycles, as opposed to additional people, particularly when unemployment is low. It's hard to find those types of technical resources.

By upskilling existing talent through training programs that create artificial intelligence (AI)-powered solutions, P4 helps to power a digital government. P4 interjected, "We build customized data science training programs for our clients. Also, we deliver custom software." P4 focuses on data-driven business strategies to digitally transform mission-critical delivery to constituents in government. All four participants use digital technology as an innovative IT strategy.

The adoption of automation systems was the second subtheme to emerge from the data analysis under the theme of IT innovation in business operations. All participants use innovative digital IT technology for supply chain management (SCM), internet marketing, electronic data exchange (EDI), automated data collection systems, or inventory management systems. P1 indicated that they face automation challenges in IT strategic planning, business intelligence and analytics, and telehealth. The company adopted performance-based and cost-savings strategies such as IT solutions for cloud storage, cybersecurity support, Agile DevOps development, and IT operations and maintenance.

P1 stated, "We're an agile DevSecOps operation." P2 explained they built an "application programming interface (API) and integration software to filter information"

from their data lake.” P2 ensures privacy practices in handling data through the application's functionality and data analytics. P2 maintained, “IT adoption is the name of the game. I mean, we’re the tech company.” P3’s company uses machine learning (ML) and other capabilities to help technically automate some traditional manually-oriented functions. P3 attested, “Artificial intelligence/machine learning (AI/ML) is critical to do more processes and getting answers quicker, without as many humans involved in the loop.” P4 interjected, “We’re able to implement new technologies that help automate more manual and tedious processes to allow us time to think at a higher level on how to make our products better.” P4’s data scientists and software engineers craft bespoke software programs for decision making, automating time-consuming manual processes, and resolving data challenges.

I compared the findings from the study to peer-reviewed studies and found confirmation in the strategies the participants expressed. Sebastian et al. (2017) named two digital strategies, customer engagement and digitized solutions, as the direction for digital transformation. They identified a set of new technologies called SMACIT (social, mobile, analytics, cloud, and the IoT). The SMACIT incorporates digital technologies like AI, blockchain, robotics, and virtual reality. Rossato and Castellani (2020) identified three components for digital transformation. First, a business needs a guiding digital strategy that creates a new value by enabling SMACIT and other digital technologies. Second, operational technology (OT) and core business operations must be scalable, reliable, predictable, and quality. Third, it needs a digital services platform to rapidly develop, facilitate, and implement digital innovations (Rossato & Castellani, 2020).

P1 indicated, "We maximized technologies and web-based intelligence tools to sustain our client support. We've been able to migrate our federal government customers to cloud capabilities and shorten the delivery cycles." P2 stated, "First, we needed to look at the customer profile. Next, we talked about the user interface and user experience (UX/IU)." P2 created a platform that makes communication affordable, and corporations and non-profit organizations would also want to contribute to this space." P2 continued. "We use social (media), databases, and partnerships to help us craft content. Our data pool allows us to communicate with our customers, learn how they need us, and serve them." P3 advised, "Build innovation into your culture from day one. It will be better for your business and better for your employees." P3's cyber innovation lab allowed the company to simulate real-world new opportunities in IoT and automation. P4 included, "Something like Bitbucket (code repository) is what we use. GitHub also allows for version control that is easy for us to track changes." P4 also uses extract, transform, load (ETL) processes to collect and build the architecture of a database to host the government's Cloud One platform.

Alam et al. (2022) found digital transformation vital in innovation and productivity growth in SMEs. Recent worldwide disorientation caused by the coronavirus disease of 2019 (COVID-19) pandemic has accelerated SMEs' adoption of digital transformation innovations. Digital transformation aims to leverage digital technologies and digitalize data creating new and revising existing business models to meet the challenges and demands of emerging markets and dynamic business environments. P1 remarked, "COVID has created a new frontier for (virtually) transforming how people are

connected and interact.” P2’s company was working remotely before COVID-19. P2 accelerated remote work during the pandemic and saw a 60% sales spike in the first month with continuous growth. COVID-19 had a disruptive nature that created multiple opportunities for innovative transformation in the business sector (Alam et al. (2022). Based on the participants' feedback, during the COVID-19 crisis, their businesses adopted and sustained IT innovations using this strategy.

Participants P3 and P4 identified the pandemic affecting digitalizing resources. P3 commented they took COVID-19 very seriously and converted traditional onsite training online using technology-managed services with capabilities that deliver training and tradecraft to customers. Additionally, according to P3, some personnel worked remotely and in certain areas can work remotely for good so we could be more efficient about our space. P3 shared, “We have kept the infrastructure for remote compute and remote work. We expect that to continue for the foreseeable future.” P3 continued, “It’s hard to make major changes in your infrastructure without creating disruption in that area. It’s getting easier with the help of the tools and capabilities.” P4 explained, “COVID has created extreme challenges for many businesses, but through this adversity, we successfully delivered and expanded our transformational offerings.” Digital transformation enables an SME to leverage better its technical and human resources (Benitez et al., 2018).

Research by J. Chen et al. (2019) confirmed that the automation of knowledge work or automation technology applies to business operations (e.g., marketing, customer services, administrative support, and technology industries). All four participants use automation in their IT applications. P1 adopted cloud-native IT strategies to provide real-

time access to transform to required regulations for design and web applications. P1 stated, "Whether it's on our side of the business or the customer side, modernizing aging systems creates more value add to reinvest into other technologies." P2 indicated, "Our ML software scans photos, messages, pre-labels, and meters postage directly." P2 affirmed, "These adoptions allowed us to build faster for increased organizational performance." P3 acknowledged that their team has extensive experience and experience in core related areas of automated spectrum sensing, signal analysis, and classification techniques. P4 premised, "The idea of innovation and ML into our processes is very much a part of who we are as a company." Innovation is a primary driver for sustainability in a competitive market for the businesses under study.

Tools for automation are a main concern for cybersecurity (Aftabjahani et al., 2021). P3 indicated the company extensive technical experience in automated cyber expertise. P3 remarked, "Investing and having a robust cyber security program is definitely something that we have and continue to work on. Every company needs to do that, whether they realize it or not, regardless of their size." P4's technical team developed an AI-powered search engine to assist government cybersecurity analysts in identifying and mitigating cyberattacks.

Health care automation streamlines ways to enhance patient care for efficiency by minimizing assistance from medical personnel (Zhang et al., 2021). Using AI imitates human intelligence and reasoning from which the system learns, predicts, and recommends the next steps. P1 adopted digital solutions for health technology and business process management. P4 assists private organizations in health care in assessing

their data literacy for innovative uses of data, AI, and ML. P4 found, “By consolidating our PowerPoints and code scripts into an automated programming script, we shortened the editing and propagating processes.” According to Bhattacharyya (2021), automation technologies offer customers better and more products and services such as additive manufacturing technology, robotics, and AI.

Abebe (2014) proposed that e-commerce adoption has a higher level of entrepreneurial orientation for SMEs and positively impacts financial performance. Managers and owners can find e-commerce competencies valuable and vital resources to improve their business performances and sustain a competitive advantage (Alam et al., 2022). All four participants have adopted firm-level digital technology beyond social media and web presence to include e-commerce automation strategies. With e-commerce automation, all payment mechanisms, procedures, and delivery of goods are in the internet computer network and distributed geographically to users who access its resources (Pursky et al., 2017). Shouborno et al. (2019) espoused that automation through e-commerce saves retraining expenses and creates a more skilled workforce.

Empirical and research literature supports adopting automation systems and IT to improve firm performance. For automation, enterprises adopt OT that interconnects with IT to converge organizational capabilities that drive collaboration between vendors and suppliers (Cisco, 2020). The OT applications automate the industrial process but require IT to maintain process stability, continuity, and integrity. Business and technical decision makers network, using enterprise-level applications such as ERP and CRM to connect customers, suppliers, and partners. All participants have adopted one or more of these

strategies in their organizations. Azarmipour et al. (2020) echoed this finding: focusing on digitization in industrial automation drives the use of innovative technologies for communication and information models. A secure interactive gateway between IT and automation systems enables plausible functioning to meet the leading market demands across various industries (Azarmipour et al., 2020; Cisco, 2020).

The following text, grounded in the TOE framework, provides a discussion of Theme 1: IT innovation in business operations, with digital transformation and automation as supporting subthemes. Data analysis indicated each participant addressed at least one TOE descriptor related to digital transformation and automation. The technological context of the TOE framework includes the availability and characteristics of internal and external technologies (Tornatzky & Fleischer, 1990). The decision to adopt technology depends on two factors: (a) the technology available and (b) how the available technology fits the firm's current technology capability. Firms in emerging industries rapidly change their technological base and continually reevaluate innovative techniques and equipment. Tornatzky and Fleischer (1990) indicated that an innovation's characteristics also affect a business's information-processing or technology-scanning function before adoption.

P1 adopts strategies that provide "scientific and technology solutions with proven results that create transformational change." P1 stated, "You're either part of the change, or you're going to have a career-changing moment." P2 maintained, "Our tech platform is transformative, and others will leverage our data and AI technologies... We build the airplane as we fly it. Tech evolves so quickly that we need to be thoughtful about the

kinds of integration.” P3 leads a growing technology business that includes cyber security and information operations. P3 asserted the company evolves to leverage changes into new opportunities. P4 emphasized the importance of a vendor understanding the industry's skyrocketed technology, exponential data, and landscape to build road maps to meet evolving needs. P4's business uses Google Drive as its storage system. P4 pointed out, “It allows us to ensure that there is control and we can access all the information we need. We don't want silos across the organization.” One conceptualization and measurement of innovation effectiveness is the output determined by those who set the standard (Tornatzky et al., 1983). Each participant included digital transformation as an IT strategy to increase performance.

Early interest in automation focused on replacing human knowledge skills and processes with hardware (Tornatzky & Fleischer, 1990). However, there is a critical human role in automation systems. P1 uses data visualization based on machine and deep learning for cyber threat management. P1 espoused, “Our whole model is about blending mature processes, technology, and human capital with exceptional leadership.” P2 continues virtual learning from tech-accelerator mentors about hardware, enterprise software, IoT, and robotics to expand the business. P3 aims to support customers with security challenges by availing expertise in cyber and virtual operations, AI, and ML. P3 contended combining technology and human activity is a compromise for operational success. P4 addressed empowering learners with machine-driven technology such as AI virtual assistants and AI-driven assessments. Researchers have tried to capture human and social components through AI in technology, yet a pendulum shift swings back for

readjustment affecting the decision making in the innovative process (Tornatzky & Fleischer, 1990).

Tornatzky and Fleischer (1990) identified the technological context of the TOE framework as relevant to the firm's current practices and equipment along with the firm's external available pool of technologies. Technological factors of TOE include the perceived importance of standards compliance, interoperability, and interconnectivity (Baker, 2011). Firms need a level of technology competence composed of IT infrastructure, internet skills, and the know-how of e-business. Tornatzky and Fleischer considered these technologies separate from the rest of the environment to consider how these features affect innovation adoption and implementation. They concluded that social and material technologies will always tend to intimate interaction shifting the balance of automation. IT capabilities improve the coordination and communication between human and intelligent automation systems (Hugo, 2021). The findings based on the study and research and founded in the TOE processes concur that organizational and technological elements and descriptors affect the performance of innovation IT adoption in business operations, supported by digital transformation and automation systems.

Theme 2: IT Innovation and Human Capital

The second theme emerging from the data analysis was IT innovation and human capital, with subthemes of visionary leadership and creative employees. All four business leaders adopted innovative IT strategies and capitalized on the creativity of their employees. Visionary leadership, a form of transformational leadership, is the ability to create and communicate a visualized idea, providing purpose and meaning to the

organization's work and empowering employees to act (Khoiri, 2020). P1 affirmed, "Leadership is critical in an innovational project. You've got to lead it and communicate it." As a visionary leader, P1 had adopted virtual work and a performance-based work culture before the remote-work business model took hold in 2020. P2 held a vision to create a simple mobile application to connect isolated individuals. P2 reinvested revenue from an existing business to found an innovative firm that enables communication using social media.

P3 and P4 addressed the human and technological aspects of innovation and change. P3 vocalized the vision to secure the nation by defending, operating, and exploiting the information environment. P3 stated the intent to "stay laser focused on our customers' needs not only now, but we try to predict the future as best we can." Additional to solving current challenges, P3 seeks to help customers address the question: What's next? P3 contended, "This strategy includes better customer and employee engagement to ensure we're not disrupting their business or the outcomes they're expecting." P4 used a passion for education to create an organization that leverages ML, customizes data science training, and delivers courses to help professionals learn to adapt to a technology ecosystem. P4 conveyed:

It's important to understand that you can have all of the technology in the world, but if you don't have staff who understand what you're asking and who see the vision with you, it's difficult to implement substantive changes. It's important to really build out that vision.

P4 asserted, “Our leadership sets the strategic vision. We set out to change the nature of professional education regarding data skills.” Visionary leaders shape their vision to create unique organizational identities (Khoiri, 2020).

All four leaders hold a mission to elevate industry talent through inclusionary practices. P1 is an experienced executive seeking talent and cultivating minority entrepreneurs with capabilities and experience. P1 stated, “I would suggest integrating the *Diversity, Equity, and Inclusion Action Plan* (DEI) objectives into all leadership-performance assessment and incentive plans.” P1 assembled high-performing teams that have created IT solutions in federal health, homeland security, and the defense department. P2 stated the belief that innovative technology solutions are often hiding in underserved communities. P2 articulated, “Our business partnership is a catalyst for a tech development component of digital literacy, leveraging technologies and launching a business in a gig economy.” P2 continued, “The talent is there. It’s just that access is not. We have to create pathways to transform lives in building tech solutions.” P3 offered, “I found things to be innovative under the construct such as outsourcing management, devices, or endpoints. You might find somebody who can do it better, cheaper, or more efficiently. That’s more of a business answer than technical.” P4 noted, “It can be harder for women and minorities to get relevant experience. Hire on potential, not just past performance. You can ask questions about their problem-solving process and their passion projects.” P4 affirmed, “If someone’s self taught in a programming language or technique, they’re more likely to learn other skills quickly.” Khoiri (2020) referred to

vision guiding as the process in which a leader's vision guides individual and collective performance outcomes.

The second subtheme emerging from the data supporting the IT innovation and human capital theme was creative employees. P3 expressed the expectation for employees to deliver excellence rapidly and eagerly, verbalizing, "Innovation is not something employees hear about a year before it gets dropped in their laps." P3's teams have created products that address the mission's requirements and needs and changed the way customers interact in the information environment. P4 hailed, "A lot of the innovation that we've had in our company came from our staff. They have identified key challenges at the operational level and felt comfortable enough to bring it to our attention." P4 acknowledged, "Our employees created the first online learning platform that catered to professionals without a background in math or programming." P4 expressed, "It is important to create a data-sharing culture, empowering employees to use data to their full advantage confidently. If not, you're going to miss a lot of innovative ideas that can move your organization forward." Medal leaders can challenge and encourage organizational members and empower and involve them in decision making (Khoiri, 2020). Each participant articulated a vision and IT strategies adopted into the organization.

Creative employees have intrinsic motivation and interest in the job task leading to their creative performance (Ye et al., 2020). All four participants expressed a value for creativity within the workplace. P1 stipulated vetting experts in digital solutions where needed most and placing them strategically in the environment to provide full-service

sourcing, comprehensive staffing, and clinical services nationwide. P1 voiced, “I think first and foremost is integrating functional, stakeholder, and technical teams.” P4’s data scientists and instructional designers’ teams work together to build all courses. P4’s teams continue to create innovative offerings, including an AI-powered software-as-a-service (SaaS) learning platform to build internal skill-practice communities.

Researchers of peer-reviewed literature confirmed the participants' statements about visionary leaders identifying creative employees. Rediawan and Neneng (2021) named visionary leadership an element that assesses company performance, establishes relationships, and influences employee performance. Visionary leaders are change agents, spokespersons, and coaches. They encourage followers by empowering them to use their capabilities for the organization's central direction, purpose, and objectives (Khoiri, 2020). Vision-based leaders anticipate, understand, and manage the future by transforming the organization's vision and mission into achievable goals (Khoiri, 2020). The skills for leadership's visionary future are digital smartness and adeptness at technology (Khoiri, 2020). They are innovative, transformative, and adapt to the reality created by the state of change, i.e., volatile, uncertain, complex, and ambiguous (VUCA) (Khoiri, 2020).

Siangchokyoo et al. (2020) stated that transformational leaders inspire future visions and use collaboration, empowerment, and two-way communication as strategies. P4’s business approach is transformative: integrating data analytics to transform organizations around the globe into future-ready workforces and exponentially improving business operations. P2 expressed a mission to increase the social impact footprint by

keeping families connected, leveraging technologies, and providing educational resources. Fostering technology-based development requires leadership at all levels (Sharif, 2021). Leaders should strive to become effective transformation agents knowing that organizational change affects individuals' roles and identities (Heichler, 2021).

Leaders must be practical, visionaries, and purpose driven (Kanter, 2020). An advanced leader's scope is the power needed to conquer organizational paralysis and generate innovation (Kanter, 2020). Managers should include employees in a consultative capacity to facilitate reflection throughout the organization and promote creativity and the flow of new ideas (Heichler, 2021). P3 addressed leadership and employees resistant to changes indicating, "Involve resistant users early and often, so they understand why you're making a change and that you have a sound plan. Usually, you can get that in the past." P3 vocalized, "You've proven that you thought out the innovation. It's intended to improve their daily job so they can do it better." P4 concurred, "Adopting and implementing IT innovation is difficult because you are asking folks to change their behavior. If the change comes from the top, that's one thing. If it comes from colleagues, there tends to be faster adoption." Kanter encouraged leaders to broaden their thoughts and overcome restrictions that inhibit creativity. Based on their statements, the participants expressed adherence to this strategy when adopting IT innovations.

P1 found that bringing together "brainpower, insightful research, quantitative benchmarking, and innovation aligns problem-solving methodologies that improve clients' business environments." P1 avowed, "I think everybody has an opportunity to participate and feel secure in their communications, in a culture of innovation,

excitement, and problem-solving. I mean, they're included in the decision process." P3 communicated the company's creative value, transparent integrity, and open mindedness in search of innovative ideas and new solutions. Silva et al. (2019) agreed that businesses engaged in collaborative innovation networks improve their product performance. Cheung and Zhang (2020) found that employees with diverse ideologies and intrinsic motivation positively influence their level of creativity. Sharing ideas influences team members to view challenges from varying perspectives, contributing to creativity (Ye et al., 2020).

The performance of creative employees is contingent on cooperation and (a) information sharing, (b) task dependence, and (c) job characteristics and boundary conditions. Creative employees use their leaders' vision to guide their performance and daily operation (Khoiri, 2020; Ye et al., 2020). P2 turned the vision to connect family members into entrepreneurial technology innovation. P2's data analysts and relationship manager created ways to operationalize that vision. P2 admitted, "We did not have enough technology personnel and supplemented by bringing on 1099 (contracted) developers." Creative employees must understand the leaders' behavior as transformative in a dynamic workplace (Ye et al., 2020). They welcome opportunities for job feedback and provide creative ideas, especially on customers' changing and varied needs. P3 stated that everyone in the organization engages in sharing and promoting innovations, and the teams conceive thoughtful, creative, and high-impact solutions. P4 noted, "We empower our workforce and team members to think differently. We have an exciting and passionate team, and they love being creative about solving challenges." The new

generation of self-focused and individualistic employees fosters creativity (Ye et al., 2020).

There is a positive relationship between visionary leader behavior, employee creativity, and organizational innovation (Shafi et al., 2020; Ye et al., 2020). Shafi et al. (2020) found that employee creativity is intrinsically motivated, and a creative environment enhances the organization's competitive advantage. Creative employees think outside the box and are vocal within their team, generating additional creative ideas (Ye et al., 2020). Employee creativity relates positively to openness to experiences and extraversion (Guo et al., 2017). Individual knowledge sharing mediates these effects, and diversity moderates the dynamic of creativity (Guo et al., 2017).

Tornatzky and Fleischer (1990) posited that leaders foster creative behaviors that encourage innovation when they (a) plan and communicate about change and (b) develop policies and goals to support innovation. They provided recommendations for leaders to foster innovation. The leader should develop and communicate a clear image of the organization's (a) strategy, (b) core values, and (c) innovation's role in meeting this strategy. P1 communicated "strong diversity" and "core values" in all internal and external communications. According to P1, "Communication and training accelerate any innovation." P2 demonstrates digital practices by prioritizing empathy and communication aimed at building customer trust using its mobile applications.

P2 shared:

My strategy was to increase the performance and build what I intended for our success. I figured out a way to bring on full time the output of engineers and

contractors at the same time by adding contractors to supplement their work.

P3 affirmed, “People are attracted by the good work we do. We’re really big on work-life balance. We have a culture of innovation. We have a culture of disruption. People are attracted to that.” P4 remarked, “Value must be recognized as an ongoing endeavor to grow as a data-forward company. Give staff time and space to be innovative, learn from mistakes, reflect on areas for improvement, and celebrate successful analytics projects.” According to P4, “Leaders allow people to understand the transformative nature of what we’re introducing to encourage them to keep working through it.” The leader builds awareness of innovative aspects of the organization's history to create an organizational culture based on innovation (Tornatzky & Fleischer, 1990).

The leader must serve as a role model, send consistent signs of the importance of innovation to the subordinates, and reward behaviors that reinforce the innovation (Tornatzky & Fleischer, 1990). P1 includes in the executive team a strategist to direct growth, planning, and performance for IT solutions and leads teams to deliver strategic sourcing and ERP practices. P2’s business grew from personal experiences, and the firm’s team created the path and blueprint to success. P2 related the need to “take some time to ideate field strategy and map out the intent before deploying any implementations, whether a new software platform or traveling down the road with a new idea path.” P3 cited transparent opportunities going forward to absorb companies that fit culturally and strategically into the mix for *cross-pollinisation*, focusing on growth and execution. P4 added, “To gain support, it’s helpful for a team member who is passionate about a particular tool to demonstrate to colleagues early some key wins, the value of the

innovation, and why using these types of innovations is successful.” By building an executive team with the technical, social, and conceptual skills to execute diverse tasks, the leader works toward envisioning the organization's future test as credible and exciting (Tornatzky & Fleischer, 1990).

Tornatzky and Fleischer (1990) stated that the number of employees with occupational specialties and professionalism aids adoption. The adoption process is creative by nature, as processing new ideas is a creative decision. Technical innovations often result from bottom-up organizational pressure, while administrative innovations are often top down. P1 focused on recruiting experienced professionals with capabilities and recognized nationally as subject matter experts. P1’s business philosophy is, “Bright minds produce brilliant solutions.” P2 employs like-minded professionals who have experienced isolation and have the skillsets to “collaborate, coach, grow, and scale the business, attracting customers, advisors, and investors.” P2 considered, “They can allow for our team to be able to build support of other team members.” P3 referenced the teams’ multidomain backgrounds, real-world operations experience, and educational backgrounds, looking at problems differently with a mission focused on finding disruptive ways to do things. P4 commented, “Many people on our team come from ‘unconventional’ professional backgrounds, and their diversity has only strengthened our company.” P4 contended, “Give your team members, colleagues, and staff the opportunity to be creative and create a culture where they feel comfortable coming to you with new ideas.” High employee professionalism often generates technical ideas in

organic systems with low formalization and centralization structures (Tornatzky and Fleischer, 1990).

The implication, stated by Tornatzky and Fleischer (1990), is that organizations' leaders and employees can design and create processes to advance adoption and implementation. Data analysis revealed that the visionary leadership decisions and the employees' creativity as strategies support the organizational premise of the TOE theory that formal and informal linking structures positively affect business performance in innovation IT adoption.

Theme 3: Innovative IT for Production

The third theme emerging from the coded data was the innovative IT for production. Two subthemes surfaced: (a) organizational structure and (b) scalability and sustainability. All of the participants commented on the use of IT innovations to improve the efficacy of the organizational structure. P1 expounded, "There are two phases of our business: (a) internal processes and delivery, and (b) customer-facing capacities." P1 stated the firm is structured to provide comprehensive technology and business process solutions through its headquarters and five satellite sites in the US. P1 modified the organizational structure to provide more efficient IT solutions to address cybersecurity and big data. P2 includes educational, nonprofit, and corporate outreach structures under the organization's platform. P2 has a leadership structure, including engineering, operations, and relationship management. P2 partners with financial institutions and social support organizations to increase their corporate responsibility, impact, and footprint. P2 promotes support for social justice through social media. There are a few

hundred companies in P3's corporate family. P3 acknowledged the strategy of finding a partner to work, grow with, and converge in cyber networks and information operations.

P3 stressed:

Being a private company or a for-profit company, we're proactively investing in new technologies and new approaches so we can grow. Also, we are looking to improve our profits. If we make an investment and support the growth without additional investment, we improve our top line and bottom line as well.

P3 explained this strategy, "In a for-profit company, we do something that increases productivity by doing something faster. As we grow a business, we don't have to invest in other resources, so we save money along the way." Businesses must have sufficient financial and technology resources for absorptive capacity to adopt innovations (Y. Chen et al., 2019)

P4 started as a business-to-customer (B2C) using Facebook marketing, Google AdWords, Twitter, and LinkedIn. P4 expressed, "We found our product difficult to market to the types of clients we wanted." P4 runs a small business with a flat hierarchy and open communication culture and structure, using cross-functioning teams when developing new technology. P4 has assembled an executive team to include non-traditional functions such as a vice president of solutions and chief solution architect.

The adoption of strategies for scalability and sustainability was the second subtheme to emerge from Theme 3: Innovative IT for Production. P1 disclosed, "We adopted scalable serverless solutions using code and software-defined infrastructure for

compliance and quality management.” The firm aims to sustain this vantage point by implementing enterprise-wide management applications. P1 continued:

Because of our capability maturity model integration (CMMI), we’re focused on optimizing any process through innovation by baselining and benchmarking. Measuring the maturity of a process has been critical to our ability to sustain our existing customers and attract new customers.

P2 indicated that, being a start-up company, they have to fundraise to support the company. However, the company has leveraged its database of over 165K individual users for 550K repeated usage of its mobile application to attract individual and corporate investors. P2 responded that the firm’s success is its ability to raise capital, build systems around business models, and leverage social media to help contribute to its CRM. P3 noted the convergence with a larger company as an acquisition that allowed mutual growth and capabilities in a higher class to create opportunities on a larger scale. P3 rationalized:

Running and growing a business can make unaffordable disruptive changes. One of our biggest innovations was to scale to the next level. As we grow the business, we want to have the capacity to continue growing. We want to be an enabler, not a disrupter to growing.

P4 expanded the firm’s services by launching an innovative social learning platform designed to facilitate internal communication between organizations and its health care and life sciences learning and development (L&D) teams. P4 indicated the first-of-a-kind platform responds to health care’s L&D departments increasing demands

to upskill employees in data science learning. P4 stated, “We didn’t use any investments; we bootstrapped spending in marketing out of our pockets.” Now, P4 builds strategic partnerships as a leading provider of customized industry-tailored data science training and AI solutions. The four participants developed their businesses from different perspectives yet identified the need to scale and sustain their enterprises by adopting IT innovations strategically.

An environmentally sustainable business model aims its focus on (a) creating and providing economic and social value and (b) regenerating or maintaining the environment (Baldegger, (2020). P1’s business receives revenue from IT health solutions and provides opportunities for health and clinical care personnel within the organization. P1 recognizes society’s inequalities and provides mentorship opportunities for minority entrepreneurs through transformational leadership. P2 functions with partners implementing digital services to build transformative programs, including environmental, social, and governance (ESG) leadership. P3 indicated the company’s teams create a positive impact on society and communities through their philanthropy and volunteerism. P4 declared, “Incorporating AI into fighting climate change has a massive potential to reduce our impact on the environment from predicting wildfire risk to optimizing energy efficiency. Data literacy is important to help everyone speak the same language, make AI and ML accessible to all, and solve critical challenges.” Businesses adopt innovative technologies that create an environment perceived as an opportunity or threat based on stakeholder perceptions (Alam, 2022). The four participants aimed to exploit opportunities to benefit the environment.

Previous research on organizational structure, scalability, and sustainability supported the participants' statements. Edwards-Schachter (2018) explained that organizational innovations focus on improving the organization's structure, learning processes, and environmental adaption. Chaurasia et al. (2020) referenced the openness of the organizational structure as an antecedent to creating a shared value for sustainability. An organization's structure is pertinent for developing management competence and product innovation (Hsiao & Wu, 2019). Effective organizational structures can promote innovation through formal systems and processes that better coordinate work functions (Imran & Kantola, 2019). All participants regarded IT innovations in business operations as a strategy for improving the firm's performance through big data analytics. Each approached an open team structure to strategically adopt, develop, and monitor software platforms to reduce costs and increase efficiency. Additionally, P1 has an IT business unit and aligned technical solutions for modernization and cost reduction.

Open innovation develops more in organic structures than mechanic structures, and a shared value is visible from the organizational structure and its openness (Kharub & Sharma, 2020; Hsiao & Wu, 2019). Avila & Garces (2017) argued that IT and business executives collaborate on decisions for implementing action plans. Such collaborations connect the IT and business domains to increase profitability and sustainability (Avila & Garces, 2017; Gerow et al., 2014). Each participant included IT professionals in the executive cabinet.

P1 included chief-level executives responsible for strategic IT solutions and team performances in the organizational structure. P1 added, “Stakeholders, coders, or the IT folks together typically work extraordinarily well because you’re gathering requirements and deploying workable solutions all at the same time.” P4 stressed that executives communicate “the importance of using data to drive decisions across their departments.”

P4 verbalized:

Anytime we implement a new system, I assume it to take three to six months to be fully integrated. Individuals who find the product or innovation most helpful will adopt it, starting lightly and with how the software is integrated, then building out in stages.

P4 finds that knowledge, collaboration, and communication are crucial to developing a community of practice that fosters innovation.

Edwards-Schachter (2018) identified innovation as an interactive learning process and should be the core of IS. Employees engage in information exchange, problem solving, and mutual learning within the innovation process (Edwards-Schachter, 2018).

P2 collaborated with developers for an agile process to design and build the firm’s interface. P3’s company aims to empower its customers through scenario- and computer-based training modules. P3’s teams support their customers’ IT security requirements and business objectives to deliver at-scale technology solutions in the information environment. P3 emphasized:

Invest in security even if you are a five-person company. It is important to host things securely, both internally and for customers. There are financial realities.

However, if you come up short on investment and innovation in cyber security, you will regret it.

An organization's capabilities, work quality and efficiency, and information exchange affect its ability to learn knowledge and innovative technologies (Edwards-Schachter, 2018).

Scalability is the dissemination of change across various contexts, and sustainability is the ongoing change of an innovation (Howard et al., 2021). For an innovation to be scalable, it needs a sustainable context (Howard et al., 2021). An efficient, sustainable innovation process occurs in a knowledge-based environment of co-creation and reuse (Saidahmedova, 2020). P1 remarked, "We are leveraging our mature capabilities, building scalable, resilient, high-performance business solutions. We are building next-generation grants-management applications by underlying IT systems, organizational structure, and business processes." P3 expressed the business is reinventing the future of cybersecurity with cyber ability, the ability to switch quickly to an alternative cyber graphic without changing the infrastructure. For scalability and sustainability, business model components evolve over development phases (Bigdeli et al., 2016).

Neilson and Lund (2018) identified enlisting strategic partners and sharing activities and resources for business scalability. Partners can assume multiple roles that free the business from capacity restraints. Partnerships can include key stakeholders, producers, or consumers in the public or private sector who can communicate the business's ability to deliver sustainable interventions (Gupta et al., 2022). Also, by

outsourcing capital investments, partners become business model participants (Neilson & Lund, 2018). Business leaders must factor in scalability when designing business model innovation to create, deliver, and capture value. P1 recognized, “Where stakeholders are not involved in the selection process, their requirements are not considered. There are shortcomings in the integration of new tools because they don’t encompass the entire customer base or enterprise.” P1 described the firm as a “cost-conscious and competitively priced partner, delivering solutions through people-focused practices.” P3 partners for negotiations to build sustainable capacity through grant financing, donor funds, and technical work. P3 acknowledged partnerships with enterprises having similar cultures and missions focusing on cybersecurity. P4 is scaling the organization through online training, assessment, and recruitment while building strategic partnerships.

Business model innovations are the core of disruptive innovations (Edwards-Schachter, 2018). Edwards-Schachter named digitization a crucial role in business model innovation, especially in transforming the value chain and marketing. Some examples of green and eco-innovations present business model innovations occurring in fundamentally different social, economic, and cultural environments. P3 contends legacy programs and aging technology are burdens. The disruptive capabilities of the next generation focus on the information warfare sector for the future fight.

Frugal innovation is a technology-based strategy of scalable disruption to provide goods or services to environments with limited resources (Santos et al., 2020). Strategic frugality is a means of innovation that caters to consumers with low spending power (Santos et al., 2020). P2’s disruptive technology provides a means of communication to

isolated individuals at a minimal cost. P2 put together a small development team to study the customer profile: what they look like and how to identify them. P2 pointed out that the platform pulls customers from the “billion-dollar telephone businesses” to provide a market for “constant, affordable communication.” With frugal innovation, the company focuses on the target market and understanding the target customers through development R&D (Santos et al., 2020).

Businesses express interest through sustainable production and consumption or supply chains (Baldegger, (2020). They intend to influence pollution or climate change and extend limited resources. Such businesses face the challenge of scalability for economic, social, and environmental improvement. However, financial markets have a notable proliferation of responsible investment markets for incentives to improve a firm's (environmental) sustainability performance (Slager et al., 2021). Acquier et al. (2019) addressed a business model for scalability and sustainability: a peer-to-peer exchange for creating economic, environmental, or social value. Societal impact and building a value-based company were criteria for all four business awardees. P1 works to bridge the health care and wealth gaps of minorities. P2 partners with other organizations to connect their technology resources to citizens in urban neighborhoods. P3 recognizes employees who volunteer and donate to their communities. P4 explained, “We are developing the workforce of the future and making data literacy attainable to professionals at all levels.” Environmental sustainability has a context of businesses creating value by reducing negative environmental, economic, and social impacts (Eslami et al., 2021).

From the perspective of the TOE framework, Theme 3, innovative IT for

production and subthemes of organizational structure and scalability and sustainability have a basis in all three framework contexts. Each participant identified the implementation of IT in business operations as an effective, innovative strategy.

Tornatzky and Fleischer (1990) included formal structures in the organizational context, considering the linkages and transactions between employees. They considered a firm's size, centralization, formalization, and complexity of the management structure in their description of the organizational context. The organizational context includes the extent of internal slack resources, decision-making processes, and communications with the external environment. All four participants included IT adoptions within their organizational structures to improve internal transmission.

The debate over the general characteristic of organizational structures focuses on organic (nonbureaucratic) versus mechanistic (bureaucratic) structures (Tornatzky & Fleischer, 1990). An organic organizational system structure has a higher association with frequent adoption of innovation than a mechanistic structure. They cited research by Aiken and Hage (1971) that found the organic structure had (a) frequent lateral communication between people and subunits, (b) decentralized leadership and control, and (c) a high degree of networking between individuals and units that facilitate more success in introducing innovations.

P1 acknowledged the focus on organizational structures and underlying IT systems. P1 found, "It has worked to put the innovations in the hands of the users as quickly as possible, and many of the users will explore, integrate, and enhance the adoption." The organization's structural design should be a balance of people, processes,

and technology, i.e., authority and coordination, control of information flow, and technical variances (Tornatzky & Fleischer, 1990). P2 indicated, “The way we’re thinking about advocating for affordable communications will force companies to shift around building software and hardware for a common mission using social connections.” Tornatzky and Fleischer stated that other studies showed this advantage evident at the introductory stage of the adoption but not conducive throughout the implementation of the innovation. Organizational complexity, i.e., the number of specialists and professional employees, along with a centralized decision-making process, benefits a mechanistic structure during the implementation of an innovation.

Tornatzky and Fleischer listed three levels of change innovations may have within the organizational context impacting adoption influenced by its slack, i.e., internal resources and linking structures. They can be (a) incremental, which enhances or adds features to an existing product or process, (b) synthetic, which combines existing ideas or technologies to create new products or processes, or (c) discontinuous, which results in developing significantly-new products or processes. There is a constant search for improvement and the ability to capture the benefits through licensing, product sales, or service fees (Tornatzky & Lemer, 1992).

P1 began the consulting business in the health care sector and expanded to business processes and digital solutions. P2 began as solo entrepreneurship before hiring around deficiencies and partnering with others “to accelerate in a world where fast means everything.” Further, P2’s company has developed a non-profit component, driven digitally to offset customers’ service fees. P3 addressed the company’s multiple

intelligence (-INT) fusion capabilities for next-generation analysis, visualization, and decision making. P4's business provides "custom software solutions and consulting services driven by client requests and research." All four participants sell products or collect service fees based on strategies grounded in one or more of the three levels of change innovation.

Organizations must contend with the external environment of industry members, knowledge producers, regulators, customers, and suppliers (Tornatzky & Fleischer, 1990). These influencers affect the firm's ability to provide innovation-related information and financial and human resources when adopting innovations. Moreover, businesses need to consider the environmental, energy, and workplace regulation that is part of the government's technology policy.

Businesses should contemplate scalability and sustainability when planning innovation adoption. They must plan and connect the innovation to larger systems for maintenance, part of a single technology stream, or a radical new generation (Tornatzky & Fleischer, 1990). Scale, the number of repetitive events over time, is an indicator of the amount of work done in an organization rather than its size or inputs and outputs (Tornatzky et al., 1983). Production and marketing lead to commercial success and broader adoption in the marketplace (Tornatzky & Lemer, 1992). Innovation required to accomplish an end can improve productivity and growth while redirecting the workforce. Tornatzky and Lemer (1992) addressed sustained innovation requiring individuals willing to absorb risks and often wait for years for a payoff. This process draws on knowledge to (a) respond to newly perceived needs, (b) modify earlier concepts of innovation, (c)

understand the environment, and (d) interact with complex social forces (Tornatzky & Lemer, 1992; Tornatzky & Fleischer, 1990).

P1 shared that the company could maximize technologies to sustain its client support by adopting and integrating new web-based logistics intelligence tools. P2 referenced using Google and YouTube to “learn how to build a tech business that would allow us to create impact in the world.” P2 conveyed, “Our team expects technology. They look forward to it. They get excited about it, and I think that performance shows.” P3 cited internal research and strategic investments to prototype and build capabilities ahead of government customers’ acquisitions, enabling speedy delivery. P3 interjected, “We certainly do a lot of prototyping. We pilot almost everything we do. We have a core set of users who put prototypes together.” P4 offered, “We’ve been around for a while, and as we’ve grown, we’ve found ways to become more efficient in the content creation process.” P4 explained further:

It’s important to enable your workforce to think independently and have leeway in designing processes they think are more efficient. Leaders need to ensure that employees understand how to use the potential tools introduced to the organization.

Tornatzky and Fleischer (1990) found that competitive industry characteristics, relevant technology support infrastructure, and government regulation can retard or stimulate innovation adoption.

The study findings aligned with empirical research that the TOE processes and elements affect innovative IT for production. The subthemes of (a) organizational

structure and (b) scalability and sustainability related to the TOE elements. The data analysis confirmed the TOE framework's technological, organizational, and environmental contexts are appropriate for identifying IT innovation strategies that improve business performance.

Theme 4: Innovative IT Deployment Systems

The fourth theme emerging from the data analysis was innovative IT deployment systems with (a) technological innovation and big data and (b) market advantage as subthemes. Deployment is a communication process embedded in complex legal, financial, and logistical transactions (Tornatzky and Fleischer, 1990). Deployment systems can be single or multiple abstracted interactions called markets. All four businesses exhibited the influence of IT deployment systems in their external communication processes.

Technological business innovation involves big data across multiple platforms to maximize performance. Organizations capitalize on cloud-based data distribution for computing performance (Bhattacharya et al., 2021). P1 accreted "Openness, effective communication, and a focus on the change to measure how well we're performing." P1 uses software-defined networks for data visualization, enterprise architecture, and cyber threat management across all facets of solution delivery. P2 designs interactive and data visualization applications using low- or no-code platforms to write web content and UX copy. P2 faced a logistical challenge "to deploy the product at one time and needed to alleviate each deployment by supplementing with additional software engineers." P3 voiced, "We're big fans of cloud-enabled technologies and developing using cloud

computing for most of the work we do." P4 created a rapid deployment model to assist L&D teams with a learning experience communication platform (LXCP). P4 explained, "We've been doing this business for eight years. While we teach folks about technology, what we really teach is a framework for thinking." Business processes deploy big data as an innovative adoption strategy for exploration and exploitation opportunities (Dezi et al., 2018).

Integrating big data deployment and business intelligence tools can assist organizational processes (Dezi et al., 2018). P1 began the business by outsourcing to medical facilities and using software-defined networks and infrastructure as code. P1's firm is now nationally leveraging big data for results affecting health, IT, the federal government, and national security. P1 pointed out. "To compete in the 21st century, you have to become more efficient, more effective, and committed to continuous improvement as part of your DNA." P2 noted that they have a massive opportunity to use collected data with a user base of 20 unique data points. However, they include security features to ensure no security such as disclosing identifying information to third parties. P2's business pursues security or technical issues through investigations, legal processes, or governmental requests.

P3 recognized that large volumes of dynamic data are everywhere and critical to planning, monitoring, and assessing operations. P3's company attacks data problems from multiple angles: the source, aggregation, availability, and analytics. P3 mentioned, "We use big data platforms for our work. That's just a necessary thing for AI/ML." P4 addresses big data using supervised or unsupervised ML data analysis. P4 stressed, "Data

management is important for any industry because you're talking about large volumes of data that need to be secured, cleaned, and collected. Having that infrastructure in order empowers everybody else to use that data." P4 iterated, "We set out to change the nature of professional education regarding data skills." Caputo et al. (2020) described big data as a disruptive innovation capable of changing the relationship between a business and the market.

The second subtheme under innovative IT deployment systems is market advantage. P1 established a strategy to "create a niche in the military health care and the technology transformation marketplace." P2 has a unique communication service with a market advantage and deployment strategies that reach the general population. P2 stated that agencies could use its app to send consistent notifications and save millions of dollars in building data-driven campaigns. P3 holds a contract with the US General Service Administration (GSA) Advantage®. The GSA Advantage® is a Federal Marketplace (FMP) strategy program for transactions that includes acquisition professionals (U.S. General Services Administration, n.d.). P3 commented that the company has provided technology solutions in commercial, federal, state, and local government markets. P3 government customers can purchase via GSA Multiple Awards Schedule (MAS).

P4 contended that teaching data literacy empowers employees to use data to their advantage. P4 referenced the report, *The Human Impact of Data Literacy* (Data Literacy Project, 2020). P4 asserted, "Organizations with higher data literacy levels produce 3% to 5% more market capitalization, generating about \$500 million in enterprise value." P4

offered, "First, we are a data science company. We develop unique content in the market, which has allowed us to differentiate ourselves in the space." Investment in data literacy training to build a data-driven culture can empower the workforce and increase productivity significantly (The Data Literacy Project, 2020).

An increase in online transactions moved the market toward mobile or m-commerce and the evolution of fifth-generation (5G) technologies in the aftermath of the COVID-19 pandemic (Galhotra, 2021). P1 moved to digitize solutions and business practices that transform and modernize practices. P1 indicated, "The COVID-19 pandemic accelerated our remote-work business model." P1 asserted, "I don't believe any organization will be successful in a global market unless it is dominant and out in front on the innovation." P2 adjusted the operations due to the COVID-19 pandemic to increase clients' digital services for continued communication access. P3 revealed:

We dabble in 5G. We invest in and work with our customers to leverage 5G to operate in specific environments. We use many more AI/ML and non-technical strategies for better customer and employee engagement to assure we are not disrupting their business or the expected outcomes."

Further, P3 voiced related to COVID:

We already had remote capabilities. We added capability because we went from half a dozen people working remotely to over one hundred for a short time. We kept the infrastructure for remote computing and remote work in place. Some people stayed remote for good.

P4 remarked, "Our response to COVID-19 included critical support to government initiatives. We're developing data-driven employees with skills to predict COVID outbreaks in nursing homes." The connection of IT systems by networking technologies uses innovative communication protocols and is expanding rapidly in organizations globally (Saher, 2021).

Peer-reviewed literature supported the findings that technological innovations, big data, and market advantages affect innovative IT deployment systems. Soni et al. (2020) cited three forces driving Neo-Schumpeterian economics: innovation, knowledge, and entrepreneurship. Businesses in technologically advanced industries have moved to innovatory forms of ICT (Grant & Yeo, 2018). For instance, Dahiya and Sayyad (2021) predicted telehealth systems to become a \$175 billion market in 2026. Past studies show that high levels of ICT investment and strategies, as well as financial factors and the capacity of ICT, can improve performance (Grant & Yeo, 2018). In m-commerce, customers use personal digital assistants (PDAs) or smartphones to exchange goods and services through the internet (Galhotra, 2021).

The current era of big data transformation requires next-generation technologies to affect the organization's performance positively and address the dimensions of process, talent, and management (Al-Sai et al., 2019). Adopting big data helps businesses acquire a competitive advantage in the market. The power of big data for predictability and data information processing affects the economic performance of data subjects (Ma, 2017). Innovation for managing big data includes integrating market economy resources. Ma

specified big data by category: military, scientific, network, and other such as market and finance transactions.

Dezi et al. (2018) found advantages and opportunities of big data deployment to exploit and explore business operations. Firms can exploit their capabilities while exploring innovative competencies and knowledge. Effectively exploiting big data deployment mechanisms requires strategies to rapidly detect new loads (Gorton & Klein, 2015). Exploring big data can reveal innovative opportunities for novel values hidden in the data (Dezi et al., 2018).

Big data deployment systems and the massive data they manage require low-overhead, scalable solutions (Gorton & Klein, 2015). Additionally, big data technology affects innovations across fields, increasing risks (Hong et al., 2020). The big data environment requires more security protection technology for information communication. All participants provide products or services in these industries and have implemented IT innovation strategies to benefit from big data networks such as ERP, cloud computing, customer relationship planning (CRP), and SCM.

If managed innovatively, big data has the potential for a business to gain and keep a competitive advantage in the market through cost reduction, quality improvement, and reduction in time to market (Al-Sai et al., 2019). Big data analytics and management permeate value chains and business models that affect efficiencies, sales, and market strategies (Dezi et al., 2018). Cloud-based deployment is an innovative option for processing big data (Bhattacharya et al., 2021).

Businesses attempt to meet customers' needs, benefit consumers' requirements,

and increase profits (Galhotra, 2021). Companies across industries deploy application programming interfaces (APIs) for transaction services or provide technological capabilities (Zapadka et al., 2022). The deployment of APIs can increase a firm's performance if the firm has high market power. Fitriani (2016) found that businesses that focus on proactive business power and competitive advantage positively impact market performance.

Soni et al. (2020) stated business opportunities in technological and process-oriented innovations would be responsible for technologically transforming the global market. P1 indicated, "We use metrics-driven processes and emerging technologies to build next-generation applications." From P1, "Metrics-driven innovation balances the scorecard. It is a tool to benchmark internally and how we are compared in the industry and to the marketplace." Similarly, P2 stated, "Over the coming years, you're going to see more solutions being driven and built by innovative founders coming out of underserved communities." P3 admitted they invested a lot in AI and ML and were mission enablers years ago. P3 revealed, "We tend to be disruptive in our market to either get or maintain that competitive advantage. That is one reason you continue innovating in your IT environment." P4 asserted, "We have matured in the market space, and we are creating products that will revolutionize our industry." Integrating the cyber and physical worlds through socio-technical systems impacts stakeholders, economic systems, and regulatory frameworks (Soni et al., 2020).

Innovation involves thinking of unique and creative ideas to implement that produce effective results to solve a problem (Asghar et al., 2021). Potential digital

innovations drive resource deployment to benefit a firm's performance based on the firm's market power (Zapadka et al., 2022). P4 cited the impact and innovation of its data science programs on clients' employees such as "developing comprehensive dashboards for executives, identifying sentiments and behavioral trends in stakeholders, and creating new revenue streams for their organizations." P4 conveyed, "Our approach allowed us to pursue new revenue and new clients that we wouldn't have previously." Liu & Atuahene-Gima (2018) found that firms should emphasize creative marketing rather than product innovation performance to maximize organizational factors. An untapped market represents opportunities for businesses to serve customers, profit, and make a social impact (Edwards-Schachter, 2018).

Caputo et al. (2020) and Asghar et al. (2021) focused on the need for creative technology investment, specifically for managers and entrepreneurs, to understand how to align market strategies, expectations, and needs. Organizations rely on innovative information technologies for a competitive advantage (Sykes, 2020). The benefit of these technologies can be substantial if there is a fit between the technology and the organizational culture. A creative culture can transform imaginative thoughts into reality (Asghar et al., 2021).

All technology deployment includes communication systems specializing in IT that connect people between organizations (e.g., salesperson/customer and consultant/client) (Tornatzky & Fleischer, 1990). With sophisticated computer information processing, theoretically, users can find their way through large databases efficiently (Tornatzky et al., 1983). Through external communication channels, firms

connect with knowledge producers, suppliers, and additional environmental sources of information (Tornatzky & Fleischer, 1990). Two types of communication for (a) task coordination and (b) access to current developments in the field require well-specified roles. Tornatzky and Fleischer cited two design features for successful innovations (a) remove structural barriers impeding change and (b) create structures facilitating coordination of information exchange within and between the organizational hierarchy.

P1 created dramatic change by implementing IT strategies gained after years of experience at the technical, operational, and financial management executive level. P1 outlined, "When looking at innovation, you are looking at efficiency. You align key performance indicators (KPIs) with whatever you are measuring. Footstep anyone who is a naysayer. They're not part of the change process." P2 is helping individuals "get ahead of barriers by teaching entrepreneurship through coding and software development." P3 addressed the suite of holistic training for customers to understand and exploit the information environment safely and with advanced techniques. P4 adduced, "We see an opportunity to use our AI/ML to create products that will streamline delivery, community, communications, and course production time." Decisions to adopt involve communication channels, adopter roles, and innovation characteristics (Tornatzky et al., 1983).

The environmental context is the sector in which an organization conducts its business (Tornatzky & Fleischer, 1990). The environment includes the industry, competitors, suppliers, and governmental influences and regulations. A firm's links with the environmental players are essential to capacity building for adoption and

implementation decisions. Organizations need to scan the external environment (a) for information and opportunities for technological innovation and (b) to process and move the information for decision making about adoption. Increasing information acquisition and deploying technological innovation involves links between strategic planners, researchers or internal managers, and external knowledge producers.

In the deployment of advanced technological innovation, the developer conceives the idea of an apparatus and possible uses by the developer and user rather than inserting a tool in an appointed slot (Tornatzky & Fleischer, 1990). The context of technological innovation deployment balances the (a) nature of the technology, (b) developer and user characteristics and boundaries, (c) communication characteristics, and (d) transaction mechanisms. The scope or magnitude of these elements will alter the deployed technology's operation, underpinning, or expected effects.

Tornatzky and Fleischer (1990) stated that businesses need to understand R&D strategies, market structure, and competition patterns to reap market rewards. The R&D strategies for adopting IT innovation depend on (a) industry structure and maturity, (b) market characteristics, (c) the firm's technical sophistication, and (d) the backdrop of public policy. An additional factor is the organization's expectation of gaining the industry's largest legal market share.

P1 synthesizes medical research and operates within federal health care and health policy regulations to provide comprehensive health management. P1 included, "Our goal, wherever we compete in the marketplace, we want to be recognized as the leader. We've gotten new opportunities, follow-on opportunities, and new engagements because of our

response and overall performance." P2 approaches research through ongoing iterative designs and tests other processes that branch to settings with isolated populations. P3 established an R&D strategy that includes teams of cyber researchers and engineers who deploy quick reaction capability (QRC) and provide tailored end-to-end solutions for the customers' mission. P3 measures the company's performance in the marketplace by "user adoption and post-adoption surveys." P4 offered, "If you're looking to launch to market, our data scientists can guide you through the R&D process to build the AI tool if you don't have enough hands on deck." The R&D strategies are paramount in turbulent and dynamic environments where technological innovations occur rapidly and compete for recognition and use (Tornatzky and Fleischer, 1990).

Tornatzky and Fleischer (1990) indicated that business leaders look to basic and applied research and R&D to implement technological innovation strategies to build organizational structures. They also identify the R&D strategies for technical and commercial success in adopting innovation. The findings from the analyzed data showed that all three contexts of the TOE framework support technological innovation decision making for innovative IT deployment systems and market advantage as strategies to improve business performance.

Applications to Professional Practice

Nasiri (2016) indicated that innovation goes beyond planning new products, services, and processes; it involves imagining, mobilizing, and competing in the market in novel ways. Innovation could provide (a) economic or social gain, (b) renewal or expansion of products, services, or markets, (c) development of new production methods,

and (d) establishment of new systems of management. The purpose of this study was to explore IT innovation adoption strategies that business leaders use to increase performance. The findings of this study indicated that successful business leaders adopt IT strategies to improve business performance based on the themes and subthemes uncovered in this multiple case study. Business leaders should focus on IT in their operations, transforming them digitally and upgrading automated systems. All participants focused on IT innovation to leverage technology infrastructure as part of the workplace culture and digital services to provide end-to-end experiences for their customers. Successful business leaders adopt innovative IT strategies to structure the organization for flexibility and establish a foundation to scale for sustainability through R&D. Participants structured their organizations to facilitate internal communication for production using IT capabilities that connect to customers through network-based platforms.

Visionary business leadership benefits from creative, diverse, and technologically knowledgeable employees to actualize the organization's vision and mission. Innovative IT deployment systems could manage technological innovations and big data to gain a market advantage. The participants' perceptions gauged through the themes and subthemes align with the TOE theory's technology, organization, and environment tenets. The academic literature supports the input from the participants. Business leaders may apply these findings of IT innovation strategies to improve business operations, production, and outcomes, leading to increased business performance.

Implications for Social Change

Sharif (2021) stated that technology provides value in a globalized socio-economic setting yet, establishes a widening prosperity gap between those with access and those without technology's advantages. Future social change of IT management in numerous industry arenas has implications for altering power relations and ethical practices through collaborative relationships and community pilot projects (Augustinus, 2020). The broader business sector would include relations with individuals from low socio-economic standing and draw attention to social change (Augustinus, 2020). Each participant adopted strategies that affect social change within the IT sector, including (a) an increased virtual performance-based culture, (b) an inclusive and diverse work environment, and (c) mentoring and outreach designed for equity in technology access. P1 maintains a revolving portfolio of aspiring entrepreneurs and has mentored successful self-made minority business persons. P1 adopted this strategy to expand business diversity and inclusion and transform the technology marketplace. P2 partners with corporations and nonprofits to leverage collective strategies to increase the number of underserved individuals in the technology ecosystem. This strategy provides SMEs access to more resources for market advantage. P3 professed the company's leadership in AI/ML and the fusion with other advanced technologies. P3's company includes philanthropic outreach volunteerism. P4 specified, "Our solutions have helped track vaccine development and created vaccine awareness for minority communities. They helped solve issues relating to food deserts and identified community resources and services." Moreover, P4 expressed the need to "understand governance, ethics, and biases

before you build. Utilizing AI/ML technologies will revolutionize how we interact with the world.” These adoption strategies have profound implications for social and economic change as incubator projects and mature businesses with potential foresight and technological breakthroughs. Each business leader expressed implications for positive social change to increase the number of sustainable start-up businesses.

Nieves & Osorio (2017) noted the need to solve social interaction problems allowing knowledge integration within and across organizational boundaries. Pasmore et al. (2019) indicated that the social and technical systems need to coevolve for better performance. Understanding IT innovation strategies could enhance the worth and dignity of struggling business owners and have a value-added effect on the study's participants as contributors back into their communities. Ramani et al. (2017) found that technology entrepreneurship must join with social entrepreneurship to address the social problems attributed to lack of access to resources.

Recommendations for Action

Technologies constantly change, creating challenges and opportunities for product innovation that must be seized effectively and transformed using technology management (Liu et al., 2020). Hsu et al. (2018b) found the openness of technology adoption enhances service and social innovation. Support from top management promotes open technology adoption and service innovation. Individual knowledge sharing mediates these effects, and diversity moderates the dynamic of creativity (Guo et al., 2017).

The insular nature of the technology field must change to keep abreast of changing diversity and openness within society. Based on the innovation adoption

strategies uncovered in this study, I make the following recommendations for action. First, business leaders must (a) innovate digital transformation to include social network platforms and ICT processes, (b) embed these structures into the work culture, and (c) upgrade automation systems for marketing, customer service, and administrative functions to improve internal operations. Second, business leaders need to (a) build agile and flexible organizational structures, (b) promote open and equitable interactions among company leaders and employees, and (c) establish incubator-like projects, start-up spinoffs, or collaborations to scale for business sustainability. Third, leaders must act on an idea or vision that has sound merit based on the vetting or forecasting of technological needs or consumer demand. Fourth, they should (a) surround themselves with technologically competent, creative, and diverse individuals, including through mentor relationships, at the executive, collaborative, and subordinate levels, and (b) promote a culture of change and inclusion throughout the organization. Fifth, leaders must shepherd the organization during dynamic environmental change and preemptively promote technological innovation for market advantage.

Individuals can enhance technical innovation through creativity based on their knowledge of technology, skills, experience, and abilities (Bettencourt et al., 2017). I recommend sharing these findings with businesses in and out of the Mid-Atlantic region through printed publications, electronic media, academic settings, professional associations, or community forums. Business leaders who have successfully adopted innovative IT strategies to improve profitability could provide a pathway for smaller

businesses that might otherwise fail in their efforts to adopt untested or unsupported technological innovations.

This study explored innovation strategies that four IT business leaders adopted to increase performance. The study revealed four domains for IT innovations: (a) business operations, (b) human capital, (c) production, and (d) deployment systems. Qualitative research using a multiple case study design lacks generalizability. This study explored IT adoption strategies to increase performance based on responses to semistructured interviews of four participants and methodological triangulation. The limits of this study were successful IT business leaders who were awardees recognized internationally within the Mid-Atlantic region. I recommend further qualitative research involving more participants across additional geographic areas.

Qualitative research involves an interpretive approach to analyzing the subjective meaning of a phenomenon (Aspers & Corte, 2019; Rahman, 2017). The foundation of this qualitative multiple case study was a synthesis of the (a) TOE framework, (b) peer-reviewed literature, (c) methodological triangulation, and (d) interviews with four highly-performing business executives. Methodological triangulation included (a) information on the businesses' websites, (b) blogs, press releases, and media publications, and (c) online interviews or video presentations with the participants. Participants in qualitative studies provide a subjective perspective using a qualitative approach (McGarth et al., 2019). I took measures that minimized bias by collecting evidence from multiple data sources and developing an interview protocol. However, I recommend follow-up research using quantitative analysis to reveal numerical data for the generalizability of the results.

Reflections

I became interested in this research after decades of experience in the application of technology in the public and private business sectors. My exposure provided insight into decision-making strategies that business leaders used to adopt and implement IT. I developed a mindset of objectivity in my approach to allow the data to reveal itself without predication.

During this exploration, I learned how an academic foundation could provide a basis for business leaders to be selective in adopting IT strategies. The interview process brought clarity to the importance of all procedural steps in academic peer-reviewed research. It was exhilarating and exhausting. I gained an appreciation for academicians and practitioners researching business problems that could have a profound impact in an entrepreneurial setting and, aimfully, change the trajectory for positive social change. I hope to apply my learning for social change within the technology field, accessing minorities and women and encouraging them to seek leadership roles.

Conclusion

Business leaders adopting innovative IT strategies encounter dynamic internal and external business environments. Yet there is a research and knowledge gap within the technology fields. Guertler et al. (2019) conducted a qualitative literature analysis and cited that in cross-disciplinary studies, only 21% account for business research and 15% and 8% in computer science and engineering, respectively. Information and knowledge are foundations for aligning a company's market strategies, expectations, and needs (Caputo et al., 2020). Business leaders adopt IT strategies despite clear broad-based

guidance or support from academia. The participants in this study all expressed the benefit of mentors within the technology industry, prior business experience, or academic preparation for IT business leadership.

The findings of this qualitative multiple case study, undergirded in the TOE framework, indicated areas of focus for the successful adoption of IT innovation strategies. Business leaders should adopt and implement IT innovation in (a) digital and automated systems and (b) organization and production structures. They must manage innovative technological deployment systems for market advantage and sustainability. Ultimately, successful IT business leaders are visionaries and surround themselves with creative and technologically savvy individuals from diverse backgrounds.

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Appendix A: Interview Protocol

The purpose of this interview is to obtain answers to the research question: What strategies do IT business leaders use to adopt new technologies to increase performance?

I will implement the following procedures to interview each participant. I will:

1. Begin each interview by providing an overview of the research study's purpose, research question, and importance of the participant's contribution;
2. Explain that participation is voluntary, and I respect the decision to participate or not;
3. Thank the participant for granting the interview;
4. Ask the participants to review the consent form and grant permission for me to audio-record the interview;
5. Inform the interviewee that I will email the written transcript of the audio recording to verify the responses and send a copy of the research study summary to check for the accuracy of the findings;
6. Indicate the time lengths for the interview and two previous follow-up procedures;
7. Verify that the interviewee has agreed to participate as indicated on the consent form;
8. Remind the participant to keep a copy of the consent form for personal records;
9. Use alphanumeric codes (P1, P2, P3, P4) to identify the participants in the data collection process, and while recording, I will refrain from using the participant's name.

10. Explain that I will be the only person with information to connect the alphanumeric code to each participant's name.
11. I will ask the interviewee to be in a private location for the interview.
12. Audio-record the interview, consisting of nine open-ended questions and follow-up queries, as needed to expand any responses.
13. Remind the participant of the follow-up procedures and express thanks for participating in the study.

Appendix B: Interview Questions

1. What IT innovation adoption strategies have you found work best to increase performance?
2. What method did you find worked best to implement your IT innovation adoption strategies?
3. How do you measure success of your organization's IT innovation adoption strategies?
4. What adoption strategies for IT innovations did not work?
5. What key challenges have you had in implementing IT innovation adoption strategies?
6. What have you done to meet those key challenges effectively?
7. What opportunities have evolved as a result of using IT innovation adoption strategies?
8. Based on your organization's experience, how have these opportunities of using IT innovation adoption strategies led to increased organizational performance?
9. What additional information would you like to share about your organization's successful adoption strategies of IT innovation?

Appendix C: Invitational Email

Hello, my name is James M. Smith, Jr., and I am conducting research as a doctoral candidate in business administration at Walden University. I am interviewing four recent recipients of entrepreneur awards in the Mid-Atlantic region of the United States. Congratulations on your achieving this prestigious honor.

In prior interviews, you have expressed support for novice entrepreneurs. The title of this study is “*Strategies for Adoption of Innovative Information Technology for Business Performance Improvement.*” I will share the study’s recommendations to help business owners choose successful strategies for information technology adoption. I am excited about this study as I have not encountered any academic research on entrepreneurial awardees and their success strategies.

As a research volunteer, I am requesting you to:

- Consent to a 30-minute telephone interview that will be audio-recorded,
- Review the interview transcript within two weeks to confirm your answers (15 minutes),
- Read the research summary for accuracy of the findings (15 minutes).

My obligations are to:

- Obtain your written consent on the attached form,
- Respect your decision to join or not, or withdraw at any time without consequences,
- Maintain confidentiality and your privacy,
- Dispose of all research data after five years.

If you consent to volunteer for this study, please read the attached consent form, provide an electronic signature and return it to me by email. You can reach me at _____ if you have any questions.

I appreciate your consideration.