2022

Enterprise Resource Planning Implementation Strategies in Small- and Medium-sized Manufacturing Enterprises

Tatianna Gilliam
Walden University

Walden University

College of Management and Technology

This is to certify that the doctoral study by

Tatianna Gilliam

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Marilyn Simon, Committee Chairperson, Doctor of Business Administration Faculty

Dr. Yvonne Doll, Committee Member, Doctor of Business Administration Faculty

Dr. Matthew Knight, University Reviewer, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2022

Abstract

Enterprise Resource Planning Implementation Strategies in Small- and Medium-sized Manufacturing Enterprises

by

Tatianna Gilliam

MBA Project Management, University of Phoenix, 2012

BS Business Marketing, University of Phoenix, 2010

Doctoral Study Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Business Administration

Walden University

April 2022

Abstract

The difficulty SME leaders of manufacturing firms experience executing enterprise resource planning (ERP) systems threatens the longevity of innovative change within firms seeking to adopt ERP systems. Grounded in the diffusion of innovation theory, the purpose of this multiple case study was to examine critical success factors used to implement ERP systems successfully. The participants were four ERP business leaders of small to medium size manufacturing firms based on the east and west coasts of the United States. Data were collected using semistructured online interviews and a review of company documents. Through thematic analysis, five themes were identified: company culture and business process strategy; diffusion of innovation theory and digital transformation strategies in ERP; planning, managing, and leading strategies; change management strategies in ERP; and methods of implementation lessons learned. A key recommendation is for business leaders to identify resistance causes to the organization-wide buy-in of new ERP systems. The implications for positive social change include the potential for successful change initiatives that impacts employment and economic health within their respective organizations and surrounding communities.

Enterprise Resource Planning Implementation Strategies in Small- and Medium-sized Manufacturing Enterprises

by

Tatianna Gilliam

MBA Project Management, University of Phoenix, 2012

BS Business Marketing, University of Phoenix, 2010

Doctoral Study Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Business Administration

Walden University

April 2022

Dedication

To the highest and my predecessor ancestors, who would not let me quit on this journey and protects my highest interest, I thank you. To my grandmother Virginia R. Thomas. My one true believer. I love you and miss you every single minute of every day and thank you for expecting so much of me. To my grandmother, Myrna L. Byrd, here's to "being still" and "keeping the end in mind." To my mother Brenda J. Richburg and father Llewellyn H. Gilliam, thank you for giving me life. To my little cousin, Ashley Lynn Carter, gone too soon. I'll get up with you later cousin. To Cathy Henderson and Micah Williams, you saw the star in me when no one else did; I fed off this energy, and I will see you in the next lifetime. To Ray Newman, you are my "get-out-of-jail free card", it is from one of the lowest points of my life I ever even conceived the notion a doctoral degree was possible. Thank you. To my son, Nahkai Amir Evans, I started this journey because of you, and by you leaving, that showed me it could not end with you and that I, could not end with you. I hope you have taken the lessons I tried my best to instill in you to heart. I hope you have become a great man in your life and are of service to others. I thank you either way. And lastly, to all who took a chance on me, however momentary, I dedicate this work to each one of you. I am nothing without your lessons, memories, and experience.

Acknowledgments

I would like to thank me, for not giving up on me. To Dr. Ron Jones, you came to me at a time when I thought I was ready to throw in the towel and helped me tremendously throughout this process; I am forever grateful. To Dr. Marilyn Simon, thank you for everything and sticking in there with me. To Mr. Michael Hibbert, Compton High School 1996 and Mr. Dean Seislove, Gardena High School 1999, you were the most influential on my path out of high school. Thank you. To Nipsey Hustle, since your departure from this earth, I feel like our meeting was no accident, and although we never got around to making music together; I always had my path directed toward connecting with you professionally once more. Thank you for showing me I have always been on the right path, and I just didn't know it yet. This journey was a marathon, and not a race. The Marathon Continues.

Table of Contents

List of Tables

List of Figures

Section 1: Foundation of the Study

Organizations in the United States have rapidly expanded their reach in providing products and services globally using enterprise resource planning (ERP) systems (Akter et al., 2017). Cloud-based ERP service providers equip small- and medium-sized enterprises (SMEs) to relinquish responsibility of creating a high financial budget, information technology (IT) infrastructure, and trained IT personnel to improve ERP solutions (Gupta et al., 2018). Business leaders and owners use ERP systems to gain increased autonomy and a more extensive span of organizational control (Bloom et al., 2014; Garicano et al., 2016). Enterprise resource planning systems are software packages that seamlessly integrate an organization's core functions providing immediate information to employees, increased transparency and accountability, and superior reports in real time (Bradley, 2004).

Leaders of SMEs face challenges in implementing ERP systems. Akter et al. (2017) stated that the services sector accounts for 80% of the gross domestic product for all the advanced economies of the world and IT is a driving force in support of this expansion. According to Pfeifer (2021), businesses will be required to move to new technology systems to remain competitive in the current business landscape, however it remains unclear how SMEs will conquer this challenge. Even so, risks involved in ERP implementation, such as long lead times, employee resistance, and frequent cost overruns, and the fact that SMEs have limited resources make the case for implementing

ERP systems in SMEs different from the case for doing so in large enterprises (Bharathi & Mandal, 2015; Garicano et al., 2016; Haddara & Zach, 2012).

Background of the Problem

Critical ERP success factors (CSFs) are necessary when an organization is implementing an ERP system project (Ram et al., 2013). Enterprise resource planning implementation is complicated, expensive, difficult to manage, and often surpasses budgeted resources initially set for the project (Ahmad & Cuenca, 2013). Business leaders use ERP software solutions to focus on the needs of the organization, configuration of the selected systems, training of staff, and strategies for customization including the development of required interfaces in consideration of ERP implementation strategies (Ahmad & Cuenca, 2013). Enterprise resource planning implementation has been the subject of journal articles and research papers; yet few authors have considered ERP implementation from a leader's perspective (Tarhini et al., 2015). Considerations such as cost overruns, long lead times, employee resistance, and legacy systems, involve risks that may negatively affect project success (Tarhini et al., 2015). Tarhini et al. (2015) recommended future researchers conduct case study research within the real world setting of SMEs regarding the strategies leaders use for the implementation of ERP systems. Aremu et al. (2018) recommended further qualitative research on the implementation of ERP systems in manufacturing companies from the perspective of the business leaders. Spraakman et al. (2018) called for further research on how leaders successfully implement ERP systems as well as the associated organizational benefits. Adequate

grounding and the need for this study regarding the strategies SME leaders use to implement ERP systems exist in the existing body of literature.

Problem Statement

Several companies are unaware of ERP systems' potential because of inadequate implementation approaches (Patel, 2021). Ahmed et al. (2022) stated that some studies place the failure rate of information systems (IS) development and implementation projects as high as 70%. The general business problem is that some manufacturing SMEs experience a negative effect during ERP implementation because of the length of execution time and the significant financial investment. The specific business problem is that some manufacturing SME leaders lack strategies for implementing ERP systems.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies that some manufacturing SME leaders use for implementing ERP systems. The targeted population consisted of leaders of ERP consulting firms that specialize in ERP implementation in manufacturing SMEs in the United Stated who used successful strategies to implement ERP systems. The implication for positive social change includes the potential to strengthen SME businesses resulting in more jobs and an enhanced standard of living in local communities.

Nature of the Study

The most used methods for empirical research include inferential processes, such as inductive reasoning, explanation, and model-based reasoning (Levitt, 2021). A

researcher uses the qualitative method to engage in open discourse by asking participants open-ended questions to explore what has occurred or is occurring regarding a phenomenon (Henry & Foss, 2015). Qualitative researchers use inductive reasoning to explore a phenomenon (Smith & Betts, 2015). I used the qualitative method to explore ERP implementation strategies through open discourse and inductive reasoning, asking participants preselected, open-ended questions. Quantitative research is useful when the goal of the researcher is to statistically support or refute some testable aspect of a theory (Lund et al., 2014). Researchers conducting a quantitative method study use deductive logic to predict relationships among variables (Lund et al., 2014). The quantitative research design was not appropriate for this study because my purpose is not to statistically support or refute the testable aspects of a theory or use deductive reasoning. I intend to explore the strategies that some manufacturing SME leaders use for implementing ERP systems to develop patterns and themes through inductive methods. A researcher conducting a mixed-method study applies a combination of both quantitative and qualitative approaches (Wambugu & Njoroge, 2021). I did not collect quantitative data to statistically support or refute the testable aspects of a theory, nor did I need to combine qualitative and quantitative methods to explore the strategies some manufacturing SME leaders use for implementing ERP systems; therefore, I rejected the mixed-method approach.

Qualitative research designs include case study, narrative, phenomenology, and ethnography (Moustakas, 1994). Yin (2018) noted researchers use the qualitative multiple

case study design to collect data from multiple sources of evidence to investigate a phenomenon within a bounded contextual setting. A qualitative case study is an approach researchers use to explore the *what* and *how* of specific real-world problems within a bounded case (Hancock & Algozzine, 2015). I used a qualitative multiple case study design to collect a diversity of data from multiple organizations through semistructured interviews with participants, a review of company documents to explore a real-world phenomenon within a bounded setting.

Collecting data from the life stories of participants would not result in sufficient information because I need data from interviews, company documents, and observation during the interviews to explore the strategies SME leaders use for implementing ERP systems; therefore, the narrative design was not appropriate for this study. Researchers use the phenomenological design to study the lived experiences of participants, collecting data through interviews (Moustakas, 1994). The phenomenological design was not suitable for this study because I need rich data collected from interviews, company documents, and my observations during the interviews to answer the research question. I did not study the culture of SME manufacturing companies; therefore, I rejected the ethnographic design.

Research Question

What strategies do some manufacturing SME leaders use for implementing ERP systems?

Interview Questions

1. What strategies did you use for implementing ERP systems?
2. How do you revise the strategies over time based on changing conditions?
3. What are the critical factors for successful ERP implementation in your organization?
4. What cost saving strategies did you employ when implementing the ERP process?
5. What strategies did you use to gain organization-wide understanding and acceptance of ERP processes?
6. How did you communicate your expectations and goals to employees when implementing ERP systems?
7. What additional information can you share regarding the strategies you used for implementing ERP systems?

Conceptual Framework

The conceptual framework for this study was the diffusion of innovation theory originated by Rogers (1993). The diffusion of innovation is a social process in which subjectively perceived information about a new idea is communicated (Rogers, 1993). The key factors of diffusion of innovation or the dissemination of a new concept are the specific innovation, the channels of communicating the new concept, the time factor, and the social network of internal and external influences (Rogers, 1993). The characteristics that determine an innovation's rate of adoption are relative advantage, compatibility,

complexity, trialability, and observability to those people within the social system (Rogers & Shoemaker, 1971). The diffusion of innovations approach began with the research conducted by Rogers, who initiated the assessment of how development programs affect agriculture, family planning, public health, and nutrition. Rogers and Shoemaker (1971) stated that diffusion is the process by which the communication of innovation occurs through specific channels over time among the members of a social system. The underlying concepts of diffusion of innovation in SMEs are economic and noneconomic factors, concerning issues of motivation, perception, and knowledge (Rogers, 1993). The diffusion of innovation theory might apply to this research study because manufacturing SME leaders need effective communication channels and the proper social system to implement innovative ERP strategies in a timely manner and, therefore, diffusion of innovation theory may provide a lens through which to view and interpret the data collected.

Operational Definitions

Cloud Computing: Cloud computing is the use wide area networks (WANs) with no specific server location, which network users access to work from anywhere the network is available (Baktir et al., 2017).

Enterprise Resource Planning System: An ERP system is a cohesive software application that provisions core business processes of an organization through the handling and integration of most intra-firm business transactions in real time (Shoemaker, 2003).

Fuzzy Petri Nets (FPN): An FPN is a geographical and mathematical modeling tool that business leaders use to represent knowledge in fuzzy systems (Liu et al., 2013).

Project management: Project management is a form of management that includes clearly defined project objectives, the creation of work plans, the utilization of resources, and the identification of the equipment required to complete the project (Hilletofth & Reitsma, 2018).

SaaS model: Software as a Service (SaaS) is a software delivery paradigm in which the software is hosted off-premises and delivered via the Internet (Godse & Mulik, 2009).

Small- and medium-sized enterprise (SME): An SME is a business with 1-999 employees (Subramaniam & Islam, 2014).

Strategic decision-making: Strategic decision-making is the process leaders undertake when choosing how to allocate resources within a business to meet strategic objectives (Dąbrowski, 2017).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are expectations and presumptions of a researcher, yet no viable means of validation exists prior to conducting the study (Lips-Wiersma & Mills, 2014). Assumptions are not under the researcher's control (Yin, 2018). The first assumption was that SME leaders in the manufacturing industry in the United States would voluntarily participate in a 45–60-minute interview and a 30-minute follow-up meeting for member

checking. I assumed leaders would give complete, honest, and accurate answers to the interview questions. Another assumption was that the participants possessed the necessary knowledge to provide useful data in reference to research question. A final assumption was that I would gain access to review company documentation and that the documents would be accurate, complete, and up to date.

Limitations

Limitations are weaknesses of a study that are out of the researcher's control (Miracle, 2016). A limitation of this study was the legitimacy of interview data collected relies on the knowledge and opinions of leaders in four companies in the manufacturing industry. A second limitation was the possible lack of accuracy and completeness of the documents I reviewed regarding the implementation of ERP systems by SME leaders. Because of the limited scope of the study, there may be limited, if any, transferability of the findings by future researchers. A final limitation was that I relied on the honesty of potential participants as well as the accuracy of supporting documentation to identify SME leaders in the manufacturing industry who used successful strategies for implementing ERP systems.

Delimitations

Delimitations are constraints or boundaries that researchers incorporate to establish the scope of the study (Rusly et al., 2015). A delimitation of the study was the geographical location of the Eastern and Western states of the U.S. The sample population limitation of four companies in the manufacturing industry was another

delimitation. The participant inclusion criterion of manufacturing SME leaders who used successful strategies for implementing ERP systems limits the scope of this study. A final delimitation was answering the research question required focusing on strategies leaders used for enterprise resource planning implementation strategies in SME manufacturing enterprises; therefore, I did not address other issues that might affect leaders in the manufacturing industry.

Significance of the Study

Business owners and other leaders might find value in the finding of this study because of gaining insight into successful strategies for the implementation of ERP systems. Effective ERP systems are means for business leaders to improve their organizational control and performance (Garicano et al., 2016). Through attaining a deeper understanding of the strategies for ERP systems implementation, business leaders might improve their business practices as well as make significant contributions to positive social change.

Contribution to Business Practice

The qualitative multiple case study expands on the existing knowledge of the effects of successful ERP implementation practices for SMEs. In the qualitative case study, I focused on the exploration and identification of strategies SME leaders have used to implement ERP strategies successfully. The results of this study may serve as instruction for future SME leaders in increasing awareness of the capabilities of incorporating ERP implementation into their business systems. Leaders of SMEs that are

currently without ERP processes may seek to enact ERP implementation. The study may also offer realization of the benefits of ERP processes to SME operations. The findings of this study could enhance business process strategies and guidelines as well as increasing awareness and acceptance of such enhancements among organization employees when implementing process-oriented change initiatives. Efficacious change initiatives may improve business performance.

Implications for Social Change

Leaders might use the findings of this study to help strengthen SME business processes through innovative problem solving and enhanced implementation strategies, resulting in benefits to their local economies. Pryce (2016) stated that business leaders contribute to positive social change in their local economies and the environment by improving their organizational performance through effective strategy implementation. Kurland (2017) noted that improved organizational performance in a company is a precursor to lower local unemployment rates and an improved standard of living for residents because of the creation of jobs and the increased payment of local taxes. The implications for positive social change include the potential for SME leaders to apply strategies useful for improving their business performance, resulting in the creation of additional employment opportunities and an improved standard of living for residents in their local communities.

A Review of the Professional and Academic Literature

Exploring literature on strategies relating to ERP implementation includes an in-depth exploration of information about the research question: What strategies do some manufacturing SME leaders use for implementing ERP systems? To address this study's purpose and answer the research question, I conducted a multiple case study to identify themes originating from the ERP implementation processes exercised at each of the four SMEs located in the East and West sections of the United States. This literature review contains information pertaining to the diffusion of innovation theory as my conceptual framework followed by (a) challenges in diffusion of innovation, (b) ERP as applied to SMEs, (c) ERP as applied to information technology, (d) adoption of cloud computing, (e) information technology and innovation, (f) SMEs and innovation, (g) decision processes for selecting ERP software, (h) leadership in ERP projects, (i) ERP usage, (j) ERP processes and ERP CSFs, (k) ERP failure triggers, (l) project management of ERP implementation, (m) benefits of ERP/reasons to implement, and (n) strategies for implementation.

I researched various databases for industry articles, government data, and scholarly peer-reviewed articles. The databases included ProQuest Central, EBSCOhost, Emerald Management, and Science Direct. Keywords for my searches included *ERP for SMEs, small business performance, diffusion of innovation by Rogers, ERP implementation in SMEs, Project Management strategies, ERP implementation, ERP failure, ERP implementation failure, ERP systems within SMEs,* multiple *case study*

design research, qualitative, IT project management and ERP processes, ERP accountability, CSFs for implementing ERP, and other variations and combinations of these terms. The sources used in this study are (a) 180 peer-reviewed scholarly journal articles, (b) 10 seminal books (c) five dissertations, and (d) one government source. Of the 196 sources used, 90% are peer-reviewed sources, and 100 of the cited references are within 5 years of my anticipated Walden University chief academic officer approval date. Seventy-one sources are unique to the literature review.

Diffusion of Innovation Theory

Rogers's (1993) diffusion of innovation theory is the lens through which I explored how ERP systems implementation works. Rogers created the diffusion of innovation theory to explain the innovation curve in businesses. Researchers defined innovation as an ideas, products, and practices that are new to an individual (Hwang, 2018; Rizan et al., 2017). Central concepts of the diffusion of innovation theory are innovation, communication channels, time, and social systems (Rogers, 1993). The characteristics that determine an innovation's rate of adoption are relative advantage, compatibility, complexity, trialability, and observability of those people within the social system (Rogers & Shoemaker, 1971).

The diffusion of innovation theory has evolved from the original concepts postulated by Rogers (1993) of the dissemination of innovative ideas, processes, and products through social networks. Technological advancements, complex product design, the need to maintain proprietary information, the Internet, and the globalization of supply

chains are all factors regarding the evolution of the diffusion of innovation (Miranda et al., 2016). Building on the work of Rogers (1993), Rizan et al. (2017) advanced the idea that innovation diffusion is far more complex because of the technological aspects of 21st century processes and products. In rebuttal to Rizan et al., Barth and Koch (2019) noted that because of improved communication channels, social networks, and speed of information flow, diffusion of innovation is not a difficult process. Although dissemination of the information regarding the innovation is unproblematic, ensuring early adoption of the innovation remains a challenge for business leaders (Barth & Koch, 2019).

Rizan et al. (2017) noted the diffusion of innovation theory has proven beneficial for understanding the implementation of technological processes. The theory can also be useful for business leaders to explain why ideas appear to gain momentum but fail to affect a whole group's behavior. For example, Miranda et al. (2016) noted that determining factors are more important than any inhibiting factors when considering ERP adoption and found that innovations, practices, and structural organization for the practicing group arise through the implementation of the digital process. Miranda et al. described the adoption process, how the process relates to the diffusion of innovation and technologies of the ERPs and took into consideration the inhibiting and facilitating factors of the process, innovations, or arising benefits that occur through implementation. Through 17 structured interviews, Miranda et al. found the benefits of technology adoption far outweigh the inhibiting factors of the system. Miranda et al. highlighted an

increase in administrative innovations with the introduction of new technological processes, practices, and structural organization resulting in a more efficient approach to meeting the objectives of the practicing organization in reference to concern for the business compliance with customers which in turn provides standards for minimum quotas in hiring young apprentices.

Managers and executives should include the variables of diffusion within Rogers's diffusion of innovation theory as an adequate explanation of how ERP implementation works with the diffusion of innovation theory to provide advancements in the field of business because the theory pairs well with an organization's technological innovation and change processes (Rizan et al., 2017). Organizational leaders have accelerated the adoption of innovation regarding IT and ERP implementation projects to use the most up-to-date technological software and hardware (Aremu et al., 2018). Additionally, the diffusion of innovations theory is a means for leaders to improve the process of creating and realizing value from digital innovations. Diffusion of innovation theorists incorporate metrics to measure the performance and influence of such changes on enterprise ecosystems, establishing contingency plans to remain innovative, and acquiring knowledge of the related IT for value appropriation (Fichman et al., 2014).

Rogers and Shoemaker (1971), building on the work of Rogers (1993), summarized the diffusion of innovation theory as a model to understand the characteristics of innovators, idea adoption rates, and the decision-making process; all three factors are factors executives and managers should have foundational knowledge of

before an ERP implementation project. Multiple minute factors within the domain of diffusion of innovations theory, such as business process complexity, entrepreneurial culture, and the degree to which existing information systems embody compatibility, and application functionality significantly affect a firm's propensity to adopt cloud computing technologies (Wu et al., 2013). Low levels of success for ERP implementation projects may result in SME leaders not realizing the full potential of an ERP process-run organization. Leaders of SMEs who have successfully implemented ERP systems realized an increase in productivity within 1-2 years of implementation and have created strategic critical success factor plans for ERP implementation ensuring a successful endeavor and enhancing business development (Hsu et al., 2015).

The adoption of the diffusion of innovation theory regarding the implementation of ERP systems is beneficial for organizational leaders. The adoption of ERP systems is often the most prominent, important technological and organizational change initiative because ERP systems are a means for leaders to promote supply chain transparency and communication, expand corporate knowledge, increase technological diffusion, and improve the decision-making process (Antoniadis et al., 2015). By developing and carrying out a thorough, well-crafted ERP implementation plan through analysis of current business systems, SME leaders may ascertain the characteristics of the CSFs that affect ERP systems, thereby spurring an increase in the technological and innovative ideas produced by executives within their organizations (Antoniadis et al., 2015).

Business leaders could use the diffusion of innovation theory to help understand what occurred during ERP implementation, the cost implications, and the reasons for a failure during implementation (Makowsky et al., 2013). For example, Wu et al. (2013), extending the work of Rogers (1993), signified higher-level issues within the domain of the diffusion of innovation theory to determine the conditions that affect a firm's intent to incorporate cloud-computing technologies in support of supply chain operations. Wu et al. examined the adoption of technological innovations, using tenets of the classical diffusion theory as framed within the context of the processing information. Wu et al. suggested that different components of an organization, and the organization's culture, are both representative of information processing requirements and capacity that determine a firm's level of interest in adopting IT innovations. The need for change arises in businesses when organizational and technical challenges exist, such as pressures to increase customer satisfaction and anticipated stresses that occur despite strategic planning (Caserio & Tracco, 2018; Klaas et al., 2010). Wu et al. conducted a quantitative study using regression analysis to analyze survey data to test their theoretical model. Wu et al. explained that business process complexity, entrepreneurial culture, and the degree to which existing information systems embody compatibility and application functionality significantly affect firms with a legacy systems propensity to adopt cloud-computing technologies.

Business executives and managers use the diffusion of innovation theory to capture information on production processes and improve real-time decision making, yet

should recognize that diffusion of innovation has strengths and weakness (Barth & Koch, 2019; Miranda et al., 2016). The strengths and weaknesses of diffusion of innovation model outlined by Rogers (1993), Rogers and Shoemaker (1971), and Rizan et al. (2017) are as follows:

Strengths:

- Knowledge and awareness of the innovation improves
- As knowledge and awareness improves, adoption of innovation increases
- Marketers persuade consumers through diffusion of innovation
- Human networks have a variety of communication channels to diffuse the innovation
- Innovation is a prerequisite for business sustainability because of changing consumer demands and competitive forces in the marketplace

Organizational leaders must successfully diffuse the innovation through effective communication channels to internal and external stakeholders, consumers, third-party vendors, and transfer of knowledge agents to obtain the improvements desired from the innovation (Caiazza & Volpe, 2017; Rogers & Shoemaker, 1971)

Weaknesses:

- Diffusion networks are complex and difficult to manage
- Because human networks typically diffuse innovation, both positive and negative opinions of the innovation take place
- Measuring the rate of diffusion is difficult

- Determining the best diffusion strategy is a challenge
- Adoption of innovation occurs through a variety of causes and variables
- A single theory is inadequate for leaders to account for all the variables relevant to the diffusion process
- Widespread adoption of the innovation is a requirement for sustainability

Effective strategy implementation, upfront planning, and devotion of adequate human and financial resources are prerequisites for leaders to mitigate the weaknesses regarding the diffusion of innovation theory (Rizan et al., 2017).

The diffusion of innovation theory is a means for SME leaders to provide consistency in data, comparison analysis, and avoidance of repetition, redundancy, and bureaucracy in the use of information for decision support, leading to benefits that result in a contribution to effective organizational changes and innovations (Miranda et al., 2016). Akça and Özer (2014) conducted a quantitative correlational study, using data collected from 236 self-identified ERP experts and accountants in Turkey to reach their conclusions. Akça and Özer found positive and significant relationships between the variables of user characteristics, innovative characteristics, organizational characteristics, environmental characteristics, ERP implementation process, and perceived organizational performance and ERP implementation success (Akça & Özer, 2014). Successful ERP implementation is a result of effective processes, activities, and actors (Akça & Özer, 2014). Implementation success of ERP systems improves when managers align the user, innovative, organizational, and environmental characteristics with the desired ERP

system outcome (Akça & Özer, 2014). Akça and Özer collected evidence that determined the variables that strategic implementers use to ensure a positive ERP implementation experience for practicing organizations. Akça and Özer, in support of Rogers (1993), postulated the variables of diffusion of innovation would expedite the rate of adoption of innovation.

To grasp the concept of innovation diffusion, Caiazza and Volpe (2017) argued that existing research mainly includes procedures, actors, and activities. Additionally, Akça and Özer (2014) studied ERP systems and the organizational activities, giving particular attention to the neglected processes to understand the utilization of variables of diffusion of innovation in accomplished ERP systems. Akça and Özer argued that diffusion of innovation could be a means for leaders to provide the guidelines for a successful ERP implementation within practicing organizations, which aligns with the postulations of Antoniadis et al. (2015). Antoniadis et al. highlighted the importance of information and knowledge management, and how primarily during a crisis, many SME leaders still undervalue a strategic business intelligence strategy when implementing ERP systems and their marketing-oriented subsystems, such as customer relationship management (CRM). Caiazza and Volpe (2017) contributed to the literature on innovation diffusion by providing a comprehensive framework of factors affecting innovation diffusion between organizations. Caiazza and Volpe highlighted the phases of innovation diffusion process, clarified the role of innovators, adopters, and

intermediaries, and evidenced actions that policy-makers can implement to support diffusion of innovation.

Successful ERP implementation results in improved performance for practicing organizations (Akça & Özer, 2014; Caiazza & Volpe, 2017). Akça and Özer (2014) noted that successful ERP implementation is a function of process, actors, and activities. Caiazza and Volpe (2017) extended the research of Akça and Özer by developing a set of practicing principles consisting of process, actors, and actions that leaders can use to take a systematic approach for diffusion of innovation to implement an ERP system. An effective diffusion process consists of the innovator transferring the innovative concept to multiple adopters, overcoming technological, geographical, and cultural barriers, and establishing a trust-based relationship with multiple actors (Caiazza & Volpe, 2017). Actors within the diffusion process are the innovator, adopters, third-party mediators, transfer of knowledge agents, opinion leaders in the industry, and adoption facilitators (Akça & Özer, 2014); Caiazza & Volpe, 2017). Caiazza and Volpe noted that successful innovation diffusion consists of several actions:

- Innovators creating open channels of communication with adopters and other relevant actors
- Organizational leaders providing ample financial, human, and technological resources
- Employees receiving adequate training
- Collaboration between innovators, industry leaders, adopters, and facilitators

- Cooperation with government authorities to overcome regulatory barriers

Organizational leaders can improve the success of ERP systems implementation by incorporating the proper diffusion process, recognizing the relevant actors, and taking the appropriate actions (Akça & Özer, 2014).

Rogers (1993) noted that the adoption of the diffusion of innovation theory is a means for leaders to frame effective, innovation practices. The importance of this theory as applied to ERP implementation is that the diffusion of innovation theory is a means for leaders to harness the imperative process of innovation and is a helpful guideline when implementing innovative and structural organizational practices (Rogers & Shoemaker, 1971). Factors found in the diffusion of innovation theory are a means for leaders to create metrics to measure performance and the financial impact of changes on business. Operations from diffusion of innovation practices highlight the importance of project processes arising from digital innovations; establishing contingency plans to remain innovative and acquiring knowledge of the related IT for value appropriation (Fichman et al., 2014; Miranda et al., 2016).

Diffusion of innovation theorists takes multiple factors, such as progression intricacy, organizational culture, the compatibility of existing business systems and application functionality, and compares the factors to a firm's ability to incorporate cloud-computing technologies (Wu et al., 2013). Wu et al. (2013) conducted a quantitative correlational study, collecting data from 187 manufacturing leaders and 102 retail leaders in the United States. Wu et al. sought to discover which specific factors

contributed to the participating firms CSFs, and if these factors are similar among the firms to possibly uncover new methods that each firm may be unfamiliar with using to enhance their processes hopefully and fill in literature gaps that each firm was previously unaware. Complexity, culture, and information systems strategy are foundational components of successful ERP implementation methods that affect the innovation diffusion in ERP process applications (Wu et al., 2013). These essential characteristics of the ERP-enabled environment have mixed and varying effects on business process agility, which depend on the extent to which practicing organizations standardize and integrate implementation guidelines (Fiaz et al., 2018). These findings are essential for ERP systems because they are a means to reinforce that diffusion of innovation is a multistage process with various levels that need alignment to achieve successful ERP implementation.

Challenges in Diffusion of Innovation

ERP systems adoption is a form of innovation diffusion, and similar to most other organizational changes, challenges occur during the diffusion process. The value of innovation can only be reflected in the adoption and diffusion processes (Dearing & Cox, 2018). To examine the challenges involved in the efficient diffusion of innovative technologies among SMEs, Oni and Papazafeiropoulou (2012) conducted a qualitative, multiple case study on SMEs, and the broadband diffusion process in the southeast United Kingdom, collecting data through interviews, observation, and a review of documents from 15 SMEs in the manufacturing, retail, real estate, and travel sectors. Oni

and Papazafeiropoulou examined the perceptions and actions of various businesses involved in the ERP process and applied the innovation diffusion and social construction of technology theory to create a framework for issues not previously addressed in the literature. The findings of Oni and Papazafeiropoulou (2012) Paindicated that SMEs adopting ERP technology are not using the service to its full capability, and the ERP system is not resulting in significant changes in business process. SME leaders experience difficulty implementing new technologies because of their lack of understanding of existing research on the active application of the technology (Rizan et al., 2017). Benefits from reliable data on innovation diffusions such as sales records, census data, or other metrics exist to trace a given product or practice, yet ERP systems implementers must ensure the system is working at optimum levels and employees receive adequate training to recognize the full benefits (Nelson et al., 2017).

Organizational leaders face a variety of challenges in the diffusion of innovation regarding ERP systems and other technology-based systems. Caiazza and Volpe (2017) noted that leaders must devote significant time and resources to diffuse innovation throughout the organization as well as to upstream and downstream partners and stakeholders. Rizan et al. (2017), in agreement with Caiazza and Volpe, noted that creating an adequate diffusion network is difficult because of adversity to change, a lack of employee training, and a lack of ample resources devoted to the diffusion effort. Conversely, Seethamraju (2015) found that because of vendor accessibility and support, leaders could outsource much of the diffusion process regarding ERP systems, which

results in lower costs and less need for internal training and support. Hsu et al.'s (2015) findings were consistent with the findings of Seethamraju in that leaders can overcome the challenges of diffusing innovation using expert, third-party vendors with ample resources and knowledge. Diffusing innovation in conjunction with ERP systems is a challenge for organizational leaders, yet the literature indicated that ample experts in the field exist to assist in overcoming the difficulties.

ERP as Applied to SMEs

Enterprise resource planning is an excellent strategic management tool for organizational leaders to utilize, with SMEs standing to benefit significantly from implementation. Adopting ERP processes in a global supply chain is a means for leaders to disseminate information to synchronize business processes for quick reaction to competitive pressures and market opportunities, improve flexible product configurations, reduce inventory, and enact effective supply chain communication (Aremu et al., 2018). However, according to Nisula and Pekkola (2012), many SMEs lack a properly trained workforce and managers to monitor this workforce because university education frequently refers to large enterprises. As such, researchers have explored what training for SME managers is available and how better training can affect successful ERP implementation. For example, Nisula and Pekkola assessed the skills required by large enterprises compared to those of SMEs and found that the additional skills needed by SMEs were of lesser interest to vendors because of their size and level of productivity.

Small and medium enterprises must adjust their approach and methods to ERP implementation to reach a level of success deemed appropriate for ERP systems. Haddara and Zach (2012) summarized information on ERP systems within SMEs, and the focus of ERP vendors changing to SMEs because of close-to-saturation of ERP adoption in large enterprises. Enterprise resource planning results in challenging shifts because these systems lack the proper learning environments that would enhance students' knowledge when approaching more narrow viewpoints in business phenomena (Gimmon, 2014; Nisula & Pekkola, 2012).

Nisula and Pekkola (2012) studied workforce issues regarding ERP systems using a meta-analysis of existing studies on resource planning, business simulations, and ERP models to merge the concepts into a learning model for implementing ERP systems. Nisula and Pekkola asserted that challenges in ERP systems have possible improvement capability with business simulation games and practice enterprise models because they support learning and skills that SME leaders need. Other methods that work with these actions must be in place for the applications to work. SMEs must find ways of planning strategies, such as games that praise current employee skills and work in correlation with the implementation plans (Hwang, 2018).

Nisula and Pekkola (2012) stated that ERP planning systems, business simulation games, and practice enterprise models support the learning of the practical skills SME leaders need to be successful. Hwang (2018) conducted a quantitative correlational study, collecting data from 62 teams of graduate students with ERP experience at a university in

the Midwestern United States. Hwang found similar results of those of Nisula and Pekkola in that ERP implementation improves significantly with training, practice, planning. Haddara and Zach (2012) stated that globalization, partnerships, value networks, and mass data flow across and within SMEs are the reason that vast numbers of SME leaders choose to implement ERP systems. Haddara and Zach stated the main risk of adoption for ERP implementation lies in the fact that SMEs have limited resources and characteristics that make their case different from large enterprises' networks that are more expansive. Enterprise resource planning is a means for SME leaders to increase support channels by allowing and maximizing the features and resources that SMEs have to increase productivity and profit. Nisula and Pekkola concluded their study by presenting their framework of an enhanced organizational learning environment, noting that ERP systems and SME knowledge coincide, with hopes that future employees will be better prepared when entering the labor market, ready through better training to contribute to the operation of their respective SMEs.

Haddara and Zach (2012) and Nisula and Pekkola (2012) highlighted that SMEs have multifaceted factors and reasons for implementation that differ from those of large companies, and the need for a set of guidelines particular to SMEs should have more prominence within the ERP literature. One of the reasons ERP implementation projects fail is due to inadequate training among employees (Gimmon, 2014; Nisula & Pekkola, 2012).Preparation for software implementation is continuous among larger enterprises, and this may be where SME leaders lack the necessary skills for ERP implementation to

be a successful venture, i.e., lack of emphasis on continuous process improvement and operations management functions capable of initiating, implementing, and monitoring a successful ERP implementation (Maas et al., 2018; Nisula & Pekkola, 2012). Enterprise resource planning vendors focus their efforts on SMEs because larger corporations have already adopted ERP systems (Haddara & Zach, 2012; Njualem & Smith, 2018). Incorporating training among all employees would foster organizational-wide buy-in by enhancing employee knowledge of why implementation is crucial to business success and competitive positioning (Gimmon, 2014).

ERP as Applied to Information Technology

Enterprise resource planning systems are firmly entrenched in some firms and are the mainstay of managing business processes within these respective businesses (Seethamraju, 2015). As such, the use of IT continues to change and transform relationships between various stakeholders in the same business markets, fostering an understanding of the influence these systems have on process agility within organizations (Fosso Wamba & Ngai, 2015; Olson et al., 2018). Enterprise resource planning has two functions. First, ERP is a general use software developed to serve the needs of a broad range of industries (Yoshihara & Okabe, 2015). Second, most ERP software creators cater to Western companies' business practices in areas such as human resource management, accounting, sales, and production (Yoshihara & Okabe, 2015). Ravi and Diatha Krishna (2013) conducted a qualitative, multiple case study, collecting data from 11 participants who were senior managers overseeing ERP systems in six Fortune 500

companies. Evidence from Ravi and Diatha Krishna's study indicated that their ERP systems were a crucial component of IT-related business operations and were the primary means for managing all business processes within the companies represented in the study.

Research on the economic value of IT has mainly centered on firm-specific metrics; however, researchers have begun incorporating industry-level metrics and variables to examine the benefit of IT investments (Wimble & Singh, 2015). For example, Bloom et al. (2014) conducted an empirical quantitative study of information communication technologies (ICT), collecting data through surveying leaders, IT managers, and ERP systems analysts from 1000 companies in the United States and seven European countries. Bloom et al. found that IT technologies improve when ERP systems link with computer-aided design and computer-aided manufacturing, resulting in production workers with more autonomy and organizational leaders with an improved span of control. Organizational leaders wishing to remain innovative using IT and information systems would fare well to incorporate ERP processes into their business processes (Bloom et al., 2014; Ravi & Diatha Krishna, 2013). Bloom et al. built on the findings of Garg (2010) who explored the negative consequences that follow high-priced technological implementations when companies fail to accomplish expected benefits, resulting in business interruptions, lost revenue, and unsatisfied and defeated users.

Garg (2010) conducted a quantitative correlational study, collected data from 74 participants with experience in ERP systems using a cross-sectional survey, and concluded that the implementation of ERP systems improves when managers incorporate

sociotechnical systems principles in the planning and implementation phases. Trist and Bamforth (1951) introduced the concept of a sociotechnical system in their research of coal mining in England, noting how organizational performance remained dependent on the effectiveness of link between the social structure and the technological aspects of the work. A sociotechnical system within a company is an organizational structure the leader uses to combine social and technological aspects of the work to gain synergy, improved performance, and sustainability (Savaget et al., 2019).

Garg (2010) noted that leaders and managers should recognize the social elements within their organization to achieve full potential, strategic advantages, and the best possible benefits when implementing an ERP system. Garg highlighted the variables of the underlying sociotechnical system, including management support, organizational structure, information sharing corporate culture, process improvements, and customer and employee satisfaction as factors that will enhance an ERP system implementation and maintenance. Business elements, such as communication, entrepreneurial culture, creating a training framework and training employees on the proficiency of use, accessibility of resources, and enhancing current characteristics should be the primary facets SMEs focus on when implementing ERP systems (Barth & Koch, 2019).

Garg (2010) also highlighted that adequately implemented ERP systems offer increased capabilities and productivity benefits to organizations that invest in such regimes; providing evidence that shows ERP implementation is, in fact, beneficial for SME leaders in manufacturing seeking to gain more from their technological

investments. Organizations and customers may benefit from properly implemented ERP systems by applying the findings of Garg to increase performance and productivity the ERP systems use because the practicing organizational leaders will adopt cooperative attitudes and behaviors across all internal divisions and work groups. Implementing an ERP system with a focus on sociotechnical system principles is a means for leaders to promote positive social change by improving the working atmosphere that ultimately results in higher productivity. Bloom et al. (2014) noted the need for communication technologies to decrease autonomy for workers and plant managers. Bloom et al. and Garg provided further support for the notion of using ERP systems as an attempt to improve the operations processes of an organization and positively impact productivity.

Enterprise resource planning processes consist of a variety of software programs that leaders use to benchmark the best practices of companies in a range of areas, such as human resource management, accounting, sales, and production, and provides a general use software to accommodate the needs of most western companies (Paredes & Wheatley, 2018; Yoshihara & Okabe, 2015). Cloud ERP is a system that leaders use to streamline their processes in the areas of human resources, accounting, production, distribution, and sales to further enhance business operations and thrive in a competitive business environment (Chen et al., 2015; Sağnak & Kazançoğlu, 2019). ERP systems solve the problems of data diffusion and disintegration in businesses by using integrated client-server technology and setting up large databases that drastically change the organization's provision and flow of information (Chatti et al., 2021).

Distinguished researchers note that the flexibility cloud ERP adoption offers is a significant benefit to SME processes and may further enhance business operations by opening various channels to conduct business with multiple vendors; also increasing productivity among employees and outside vendors (Chen et al., 2015; Garg, 2010). The findings underscore the idea that since cloud computing is critical to technology in the 21st century business climate, the software is a means to increase the number of productive processes an SME leader may undertake to streamline these processes more efficiently. These findings are essential to ERP implementation as there is a pattern of the application of cloud computing software use among SMEs, which reoccurrs as a necessary part of successful organizational software adoption.

IT continues to change and transform relationships between various stakeholders in the same business markets fostering an understanding of the influence these systems have on process agility within organizations (Fosso Wamba & Ngai, 2015; Ravi & Diatha Krishna, 2013). Enterprise resource planning is a general use software developed to serve the needs of a broad range of industries (Yoshihara & Okabe, 2015). Business owners and leaders use ERP software to improve their companies' business practices in a variety of areas, such as human resource management, accounting, sales, and production (Yoshihara & Okabe, 2015). A targeted design of ERP system implementation is a crucial component of many IT-related business operations; however, although ERPs are essential to current IT infrastructures having delivered cost efficiencies, control, and

consistent execution in several organizations, enabling agility and innovation remain ambiguous factors of the process (Ravi & Diatha Krishna, 2013; Temur & Bolat, 2018).

Using an original dataset of firms from the United States and seven European countries, Bloom et al. (2014) studied the effect of ICT on worker autonomy, plant manager autonomy, and span of control. Bloom et al. found that improved IT, such as the use of ERP systems, resulted in increased manager autonomy and control, whereas improved communications systems, such as organizational intranets, resulted in decreased autonomy for managers. Bloom et al. compared theoretical and empirical research on ICTs and found evidence that easy access to information pushes decisions downline and concluded that using ICT is a means for leaders to allow for superior decentralized decision-making without an undue cognitive burden on those lower in the hierarchy. Bloom et al. stated that if organizations hope to remain innovative, the use of information technologies and information systems should infiltrate business processes. Business elements such as communication, entrepreneurial culture, creating a training framework and training employees on the proficiency of use, accessibility of resources, and enhancing current characteristics should be the primary facets SME leaders focus on when implementing ERP systems.

Adoption of Cloud Computing

The utilization of cloud computing can benefit an SME in several ways during ERP systems implementation, such as easier installation versus installing IT hardware, replacing or modernizing legacy systems, reducing the need for maintenance of an IT

workforce, and defraying upfront cost as the SME only pays for services rendered (Gupta et al., 2018). Cloud computing is a means for organizational leaders to use various applications of Web services providing organizations the ability to offer ERP services through the Internet (Al-Isma'ili et al., 2016). Cloud ERP is necessary for most organizations conducting business because ERP delivered through SaaS will outperform traditional IT platforms (Chen et al., 2015). Alkawsi et al. (2016) conducted a meta-analysis of 22 existing studies and analyzed conference proceedings that pertained to cloud-computing adoption, acceptance, and diffusion. Alkawsi et al. examined the various factors regarding the adoption of cloud-ERP systems, and how the process results in improvements in traditional IT platforms, noting that factors are contingent on the acceptance and diffusion of technological innovations, such as the individual, organization, technology, and environment. Similar to the findings of Alkawsi et al., Chen et al. (2015) found that through cloud ERP platforms, SME leaders could choose and customize Web services specific to their needs, customize the cloud services to improve their ERP system's performance, and increase the usability and flexibility of their ERP system. Adopting ERP processes through cloud computing is a means to improve enterprise users flexibility by allowing interaction with multiple vendors (Hsu et al., 2015).

Al-Isma'ili et al. (2016) conducted a qualitative study on the emerging trend of SMEs incorporating cloud-computing services into traditional business practices by collecting and analyzing data from interviews with 15 SME leaders in Australia. Al-

Isma'ili et al. concluded that the factors influencing cloud adoption are security concerns, cost savings, and privacy issues. Alkawsi et al. (2016) and Al-Isma'ili et al. noted that organization-wide acceptance of cloud computing adoption is another factor SME supply chain managers and chief information officers must consider when implementing ERP systems, as steep learning curves and difficulty of use are the primary factors of failure. As noted by Alkawsi et al., some of the factors of successful adoption of cloud ERP computing are organizational culture, technological ability, employee buy-in, and effective leadership. These factors are essential to implementing SaaS software to legacy systems because they connect the diffusion of innovation theory because it is an integrative theory through guidelines needed to enhance technological advances within businesses. Chen et al. (2015), in concert with Hsu et al. (2015), observed that cloud ERP computing is a means for SME leaders to improve the flexibility with business operations because of the improvement made on traditional legacy systems by converting to a cloud-based format for ERP operations. Al-Isma'ili et al. noted how cloud computing benefits SMEs in various ways, such as creating employment opportunities, enhancing their economic contributions, and improving their competitive edge through cloud ERP adoption.

Cloud-ERP systems offer innovative options for companies and make ERP systems more accessible to smaller companies beyond large enterprises (Haddara et al., 2022). Gupta et al. (2017) noted that a variety of challenges exists in adopting cloud-based ERP systems. Gupta et al. conducted a quantitative study, collecting data through

surveys from 45 SME leaders and 48 large company leaders in India. Gupta et al. concluded the following:

- Customization of the cloud services is necessary but difficult
- SME leaders experience reluctance to outsource ERP processes
- The complexity of the business is a significant factor for leaders to consider
- Security and privacy issues arise because of placing information on the cloud
- Data integration from internal systems to the cloud typically involves a heavy reliance on the cloud provider, resulting in a potential internal loss of control
- The SME becomes dependent on the reliability of the cloud network

Although the preponderance of the literature reviewed indicated that cloud-based ERP systems are a significant benefit to SME leaders, Gupta et al. revealed that the implementation process is not free of risks or challenges.

Information Technology and Innovation

Prior information systems' researchers examined the crucial part information technology plays for innovation in firms. Also, the innovation literature findings indicated that integration of knowledge from sources that reside outside the firm, such as customers, competitors, universities, or consultants, is critical to a firm's innovative success (Pigues & Alderman, 2010; Trantopoulos et al., 2017). Fichman et al. (2014) conducted a meta-analysis of existing literature, reviewing 130 scholarly articles, and concluded that because technology advancements double approximately every 2 years, all business students must have a strong foundation in IT and digital innovation in order to

manage, lead, and improve existing business practices and processes. Fichman et al. stated that the lack of updated core data for information systems courses is leaving business executives unprepared for an ever-changing technological platform. Fichman et al. (2014) applied a broad conceptualization of digital innovation that allows for a variety of teaching styles and topical emphasis on information systems. Fichman et al.'s conceptualization included three types of innovation:

- Process: digitally enabled processes to improve existing capabilities and strategies
- Product: digitally enabled products with high switching cost for consumers
- Business model innovation: digitally enabled way to capture more value

Furthermore, Fichman et al. noted four unique innovation process that are vital to effective implementation of IT-enabled innovation:

- Discovery: the discovery of new ideas with the potential for development
- Development: development of the new idea into an innovative technology
- Diffusion: spreading the innovative technology across the spectrum of organizational users
- Impact: the intended and unintended effects of the innovative technology on the organization, stakeholders, markets, and society

Fichman et al. prompted further examination of the implications of adopting digital innovation. The results of Fichman et al.'s study indicated the need for a discussion of broader implications relating to (a) the information systems curriculum beyond the core class, (b) the research agenda for the information systems field, and (c) the identity and

legitimacy of information systems in business schools. This discussion may increase innovation and preparedness of future business executives.

Previous research on information systems indicated an overwhelming response to the fact that digital innovation and the education among employees thereof plays a significant role in a firm's success (Popa et al., 2017; Trantopoulos et al., 2017). Knowledge of business processes, the software, and how the methods interact with customers, competitors, and consultants, is a fundamental success factor for ERP implementation success. As noted by Fichman et al. (2014), digital innovation is an essential concept that through adoption of the process would provide SMEs with the knowledge that all involved may have a fundamental education in the operation of the software. This information is critical to ERP implementation research because the study highlights training initiatives SMEs employ to ensure proper training among their employees when adopting and maintaining ERPs.

SMEs and Innovation

Some researchers have explicitly focused on how innovation affects SMEs and innovation strategies have attracted attention in innovation management research (Popa et al., 2017). To conceptualize various aspects of change and gain an enhanced understanding of innovation and SMEs Ali and Shah (2016) addressed the different origins of idea generation and innovation and discussed factors that affect change within SMEs. Ali and Shah highlighted four separate perspectives of innovation, which are individual, organizational, networking for innovation, and the system of innovation

approach, which results in a focus by leaders on the mutual interactions of economic agents. Ali and Shah contended that the role of government in increasing chances of successful innovation efforts was a crucial component in the creation of their review and argued that national initiatives provide opportunities for economies to flourish, as innovation is a primary way of achieving economic success.

Ali and Shah (2016) argued that the obstacles to innovation are generally in the following areas: lack of resources, lack of innovation idea generation, and lack of technical knowledge of human capital. Additional barriers to ERP implementation include the lack of judicial and enforcement systems, the lack of collaborative networks, and inefficiencies of internal research and development (Caserio & Tracco, 2018). Effective business leaders identify the risk factors during the development of their strategy to implement ERP systems (Ali & Shah, 2016).

In summary, researchers concluded that a direct correlation exists between how innovative practices affect SMEs and how to manage the innovations. Ali and Shah (2016) stated the most common areas in SMEs affected by innovativations are individual, organizational, networking for change, and the system of innovation approach all centering on the concepts of mutual interactions of economic agents. As such, cloud architecture is the most logical way to implement ERP systems as leaders develop ERPs to accommodate innovative practices within enterprises by building and solidifying bridges among SMEs and multiple vendors business processes so they may work efficiently (Hayes & Heit, 2018).

Decision Process for Selecting ERP Software

Godse and Mulik (2009), Seethamraju (2015), Chen et al. (2015), and Hsu et al. (2015) argued that Software as a Service (SaaS) is the best and most flexible option for SME leaders considering ERP systems or replacing legacy systems. Seethamraju considered SaaS as the best option for ERP implementation because of enhanced functionality, lower capital outlay regarding IT infrastructure hardware, software, maintenance, and training, improved access to vendors, and increased knowledge sharing across organizational systems. Seethamraju used a cross-sectional field study conducted across four case study organizations and concluded that SME leaders choose to adopt SaaS ERP based on vendor reputation in the market, software fit to the business, and the potential willingness of the vendor to support the customer throughout the product lifecycle.

Godse and Mulik (2009) defined SaaS as a software delivery model in which the software is hosted off-premise and delivered via the Internet. SaaS has emerged as a leading trend in the IT industry, attracting avid interest from researchers and practitioners seeking to explain how to adopt this type of IT innovation in an organization (Seethamraju, 2015). The use of SaaS is an effective means for leaders to improve their ERP system because of increased flexibility and interaction with multiple users simultaneously (Hsu et al., 2015). Godse and Mulik suggested the use of an analytic hierarchy process approach in using SaaS with ERP systems, which is a means for leaders to exercise the prioritization of product features and take advantage of the

evaluation of SaaS products by leading ERP experts. Godse and Mulik, in agreement with Seethamraju, concluded that SME leaders should recognize the value of adopting SaaS to implement and use an ERP system. In addition, Chen et al. (2015) posited that SaaS is a superior delivery platform for ERP systems than traditional IT or Internet applications. The preponderance of the reviewed literature indicated that SaaS is an effective system to implement and use an ERP system.

The vendor's participation in co-creation of value for customers and the general benefits of implementing an integrated ERP system are what SME leaders seek when considering ERPs adoption (Hsu et al., 2015). Seethamraju (2015), in agreement with Hsu et al. (2015), stated that vendors' participation in the creation of value results in improved systems performance, increased accessibility to vendors' resources and knowledge, and lower overall cost to the company. Seethamraju noted the accounting shift of capital costs to operating expenses as the best benefits of SaaS cloud to SME firms. Seethamraju highlighted fears of ERP adoption, such as vendor reputation, the software fitting to the business, vendor to support the customer throughout the product lifecycle. Godse and Mulik agreed with Seethamraju, in that challenges and various elements exists regarding SaaS ERP systems, as well as prohibitive expenses related to IT infrastructures, such as training, software, upgrades, and maintenance. Godse and Mulik (2009) noted a few internal and external factors, such as having the freedom to migrate services between different physical servers and the sudden growth in cloud computing for resource allocations, stating these factors do not influence adoption decisions on issues,

such as data security, system performance, and competitive pressures. Godse and Mulik also highlighted challenges that SME leaders face, such as change management and effective strategy, noting the willingness of the software vendors to work with requests made by organizational leaders regarding changes, improvements, and continued support post-implementation of ERP systems.

The collaboration between software vendors and organizational leaders hold benefits for companies during the post-implementation phase. Adopting SaaS to work in conjunction with ERP systems is a means for enterprise users to work with a plethora of vendors, enabling them to compete with larger companies and achieve a sustainable market presence (Bharathi & Mandal, 2015); Chen et al., 2015; Essila, 2018; Hsu et al., 2015). Cloud-based ERP systems are composed in large part of an organization's IT infrastructure being outsourced to an external vendor or service provider, and this may present a host of other issues to consider before implementation (Carlsson-Wall et al., 2021). Alkawsi et al. and Bharathi and Mandal stated that cloud systems are preferable to traditional ERP platforms since they cost less to implement, offering the further benefit of practicality and versatility for the SME. Cloud ERP is a means for a more straightforward integration, customization, performance, and security standards than traditional ERP systems. The concepts put forth by Alkawsi et al. and Bharathi and Mandal highlighted the various factors that go into choosing which ERP system to implement, traditional or cloud-based, and closely relate to how the diffusion of innovation theory frames elements of technological innovation within organizations.

Leadership in ERP Projects

Effective leadership is an essential element of successful ERP implementation. In ERP implementation, strategies set forth by management may bring different results on how and if their respective organizations adopt innovations; therefore, value-based leaders versed in change initiatives are a crucial component of ERP projects (Shao et al., 2017). Leadership will have direct or indirect effect on the progress of the ERP adoption, which will consequently have influence on both the efficiency of the implementation process and the quality on the project result (Pabst et al., 2016). Executives and managers leading ERP projects must recognize and understanding CSFs and their benefits, process failure triggers, and effective ERP implementation strategies to be successful (Pabst et al., 2016). Drummond et al. (2017) conducted a qualitative, multiple case study, collecting data from 11 ERP project leaders and 20 end-users in large Brazilian company, finding that project leadership was the key to the projects' success. The leaders' ability to invoke the need for change, maintain organizational agreement, motivate the project team to meet the stated objectives, and exhibit inspirational behaviors were essential to successful conclusions of the ERP implementation process (Drummond et al., 2017).

In the absence of effective leadership, ERP projects often fail. Pabst et al. (2016) conducted a qualitative study using the Delphi method, collecting data from 20 ERP experts and facilitators through three rounds of questioning, finding that approximately 50% of ERP project fail because of the lack of executive and project team leadership. Pabst et al., as did Drummond et al. (2017), found that when commitment to the ERP

project by executive leaders in the organization is low or nonexistent, the probability of failure increases dramatically. Leaders must diffuse the innovation regarding ERP systems throughout the organization and convey the need for the ERP system to all relevant stakeholders to improve the rate of project success (Drummond et al., 2017; Pabst et al., 2016).

ERP Usage

Proper ERP system usage has the potential to facilitate the integration of business functions within an organization (Ramadhana et al., 2016). Nwankpa (2015) attested that companies realize that ERP success comes from proper installation through proper system usage and has been a critical factor in gaining the rewards of a proper ERP installation. Many of the specifics of ERP usage and its benefit remain unknown by implementing companies. Nwankpa applied the absorption capacity theory to this study and created a model that examines the ERP system mediating effects and benefits while highlighting the negatives of ERP system usage. Nwankpa gathered responses from 157 ERP system end-users across the United States with results indicating ERP system usage is a critical component of the benefits of an ERP system but confirmed the relationship by the degree of knowledge integration mechanisms within the firm. Nwankpa's results indicated that technical resources, organizational fit, and the extent of ERP implementation are vital drivers of ERP system usage.

ERP Processes and ERP CSFs

The collection and storage of business data are changing primarily because of ERP systems. Enterprise resource planning systems are systematic IT processes that business leaders use to take unstructured data collected by sensor systems such as ERP software to gain proper control of data and output the best results combined with automation (Bandara & Jayawickrama, 2021). Previous researchers have noted that individual CSFs must occur within an organization for an ERP system project to succeed (Ram et al., 2013). Additionally, the success in implementing ERP systems, as well as in increasing performance, could be conceptualized by task and objective, such as strategic goals and objectives, reduced organization resistance, project budget, business process re-engineering, technological factors, selection of ERP package, IT infrastructure, compliance, network, network latency, printing in the cloud, security, confidentiality of data, and maintenance (Gupta et al., 2018).

Classification of variables into dependent variables, such as implementation success and a performance increase, is useful because the progress in implementing ERP systems is contingent on project delivery outcomes, while leaders use the performance improvement to assess post-ERP project performance. Ram et al. (2013) questioned whether some CSFs were critical to the success of ERP implementation and improving output performance. To examine how critical the success factors were to successful ERP projects, Ram et al. investigated the effect a successful implementation of CSFs may

have in influencing organizational performance. Ram et al. determined significant CSFs for ERP implementation were:

- Project management
- Evaluation of project management capabilities
- Training and education
- Business process and re-engineering
- System integration

Using structural equation modeling, Ram et al. created a conceptual model from data collected from 217 organizations to help leaders attempting to implement ERP systems recognize that the noted CSFs are critical for achieving organizational performance improvements.

Bradley (2004) examined the CSFs for ERP implementation using the classical management theory framework. Bradley prompted software vendors to improve the functionality of materials requirements planning (MRP) systems by creating MRP systems strategies and thereby forming the basis for ERP systems. Bradley used the following six dimensions of the information systems success to explain how to measure ERP implementation success:

- Systems quality: performance measures, such as ease of use, rate of errors, rate of response, and systems reliability
- Information quality: the usefulness and significance of the output of the ERP system

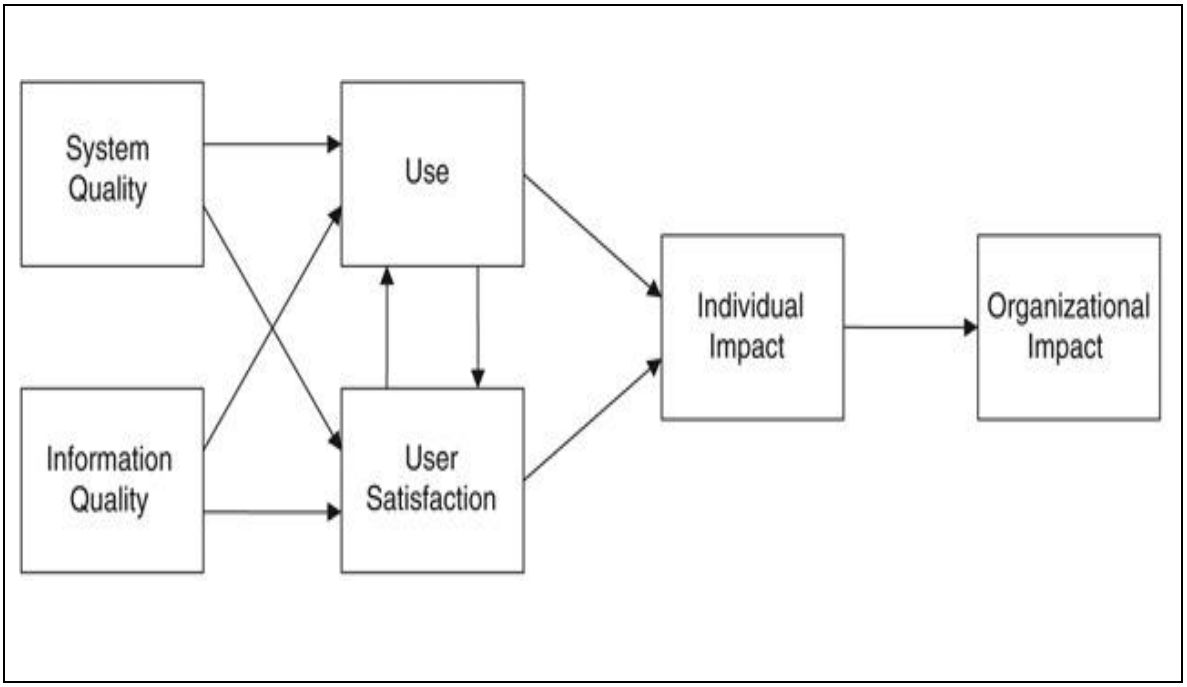
- Use: the degree of use by managers of the information output of the ERP system
- User satisfaction: the degree that users experience satisfaction from the accuracy, content, ease of use, and timeliness of the information output of the ERP system
- Individual impact: the effect on the individual user's behavior because of the information received from the ERP system
- Organizational impact: the effect on organizational performance because of the information received from the ERP system

Bradley determined the following about management based critical success factors in the implementation of ERP systems:

- Implementation management techniques are in effect at successful firms, but not so much, if at all, with unsuccessful firms.
- Practices considered in the literature to be essential to success did not differentiate between successful projects and unsuccessful projects. These factors may be necessary for project success but do not appear sufficient to guarantee success.
- Management practices prevalent in the literature on CSFs in ERP implementation are not relevant in the case studies.

Figure 1

Information Systems Success Theory Six-Dimension Model



Note. Adapted from Bradley (2004).

Bradley (2004) built on the research of Sneller (1986) who denoted two dimensions of information systems success, which are as follows: (a) the quality of training, and (b) the degree of testing to evaluate the degree of training. Sneller surveyed 50 MRP managers to explore how they performed in their functional areas of responsibilities. Sneller concluded that the most significant CSFs regarding MRP implementing was the effective training of managers and users followed by extensive testing of managers and users. Bradley's six-dimension model of information systems success far exceeded Sneller's two dimensions of success as a means for leaders to

determine information systems project success. Bradley examined eight implementation projects and highlighted the results of how implementing and expanding ERP functionality within business processes provides enterprises with a much more flexible and significant position in the industry, with broader scope and functionality than normal operations and logistics functions.

To investigate CSFs crucial to the successful implementation of the ERP, Aremu et al. (2018) examined CSFs such as commitment from top management, re-engineering of the existing processes, integration of the ERP with other business information systems, and selection; as well as control of consultants and employees, and training of employees on the new system. Bingi et al. compared the ERP software market and its rapid growth to the predicted increase with the massive deficit of skilled and experienced workers available to implement ERP systems correctly and the losses experienced by companies attempting to adopt the process into their systems. Furthermore, Bingi et al. discussed initiatives by ERP vendors to penetrate medium to small tier industries with gross revenues of less than $250 million.

ERP Failure Triggers

Despite the advantages of ERP implementation, several failure triggers can arise during the ERP implementation process. Pelphrey (2015) described the following ERP failure triggers, also known as project constraints:

- Rules of engagement deviation

- Failure to recognize risk factors, such as improper organizational integration, ineffective redesign of business processes, cost overruns, and inadequate training
- Deviating from acceptance criteria
- Inadequate testing
- Straying from change management rigors
- Missing deliverable assumptions
- Inadequate documentation
- Missing requirements
- Significant change in conditions
- Over-specifying requirements
- Not specifying requirements tolerances
- Insufficient performance tracking metrics

Pelphrey found that a clear and concise requirements generation is the foundation successful ERP implementation and adhering to a specified process gives SME managers expected features, functionality, and capability deriving from implementation efforts.

Bharathi and Mandal (2015), conducted quantitative analysis of data drawn from a meta-analysis of 57 studies on ERP implementation risk factors using the concept of Fuzzy Petri Net (FNP) to develop a risk assessment model for SME leaders implementing ERP systems. Bharathi and Mandal (2015) used the risk assessment model for predicting the impact of risk that leads to implementation failure. Table 1 is a display of the key risk factors noted by Bharathi and Mandal.

Table 1

ERP Systems Risk Factors

Risk	Attributes of the Risk
Budget	Lack of clarity and rationale Lack of support from management
Schedule	Undefined time frame Budget not aligned with schedule
Project leadership	Lack of ERP knowledge Intradepartmental rivalries Ineffective team assemble
Employee training	Budget not aligned with training needs Employee apathy and disengagement Ineffective training to result in new skills
Project failure	Cost overruns Time overruns ERP system fails to meet objectives

Bharathi and Mandal's (2014) research was part of an ongoing effort to assess ERP implementation decisions involving five phases: planning, acquisition, implementation, usage and percolation, and extension. Bharathi and Mandal (2015) highlighted ERP implementation risk for SMEs, evaluated these risks according to earlier research, and defined the associated components for preparing the assessment model. Bharathi and Mandal's incorporated the formulation of rules for risk assessment, which highlighted the concept and application of fuzzy petri nets (FPN), and the results of this model developed into a tool using the primary visual application. Bharathi and Mandal's tried to use FPN because of the efficient and straightforward ability to evaluate

quantitatively the risks inherent in the implementation phase of ERP adoption by SMEs. Quantitatively assessing the risks inherent in the implementation phase of ERP adoption by SME leaders may result in reduced future failure triggers, such as implementation risk, limited resources, and ERP failure rates.

Further research reports have contained evidence of high failure rates of ERP implementation projects regarding cost overruns, schedule overruns, and failure to achieve desired objectives (Kähkönen et al., 2017; Umar et al., 2016). One of the core identified reasons for the touted benefits of ERP implementation not being effective is employee apathy toward the new systems from the core business users during the ERP implementation process. Kähkönen et al. (2107) noted the following as key causes of employee apathy and disengagement regarding ERP implementation:

- The fear of change
- The requirement for additional training and the learning of new skills
- Confusion and misunderstanding of the rationale for implementing ERP
- Increased transparency of organizational systems that results in exposure of employee deception, error, poor work habits, and lack of skills

Unlike in advanced countries, organizational leaders in developing markets face distinct challenges for standard ERP implementation projects in managing change (Umar et al., 2016). Umar et al. stated a lack of research existed regarding critical issues and possible remedies in ERP implementation for managing change is missing in Pakistani companies. Therefore, the purpose of their study was to present a model based on market

characteristics that can help the corporate sector in Pakistan while confronting country-specific issues in managing change. Umar et al. collected qualitative data using 88 semistructured interviews with leaders of 20 different organizations in Pakistan, and then compared the finding to existing studies through an in-depth review of the existing literature. Umar et al. derived the critical failure factors from the 88 interviews based on the frequency of occurrence. The study contained valuable guidelines for the recipient client organizations, ERP implementers, vendors, and consultants in managing change during ERP implementation projects executives and project managers are removing fears among users about the new system, identifying project barriers, and ensuring adequate communication among different teams.

Aside from guidelines derived from studies, researchers have noted failure triggers in research notes as well. For example, Iivari (2014) studied what researchers believe to be the three causes of ERP implementation difficulties, which are complexity, radicalness, and originality. Iivari theoretically analyzed how they affect the development of ERP systems, contending that the challenges provide complicated settings when combined with the ERP implementation process. Iivari noted additional causes of implementation such as the potential business benefits of an ERP system, complexity associated with the integration goals of the ERP system, radicalness with the process improvements, and originality with the customization needs. Nisula and Pekkola (2012) expanded further on the difficulties of ERP implementation by highlighting that the ever-changing SME sector lacks an adequate workforce. Competent management and proper

training methods, and available resources of education on ERPs for SMEs are pertinent because even with systems such as business simulation games and practice enterprise models. Each training method has its particular challenges and approaches business phenomena from a specific, narrowed perspective; a more holistic approach is critical to a successful ERP implementation.

Project Management of ERP Implementation

Existing researchers on accounting have provided little empirical research into the implications for management control when companies implement ERP systems as the technological platform (Teittinen et al., 2013). Findings concerning the production phase after implementation when the information processes, related work practices, and reliable new information contents are rare. Leaders use ERP systems to reshape the way businesses obtain, store, disseminate, and use data throughout the world (Kähkönen et al., 2017; Teittinen et al., 2013). Teittinen et al. (2013) explored and theorized the benefits, challenges, and problems for management control when an ERP system is in use 4 years after the implementation.

Teittinen et al. (2013) illustrated why and under what circumstances particular challenges and benefits may exist in ERP implementation by presenting a holistic view of the organization based on a qualitative case study constructed from the viewpoints of people at different levels and functions of the organization. Top management expecting a new strategic control system are one of the challenges managers and executives implementing ERPs face but are merely ascertaining financial accounting-based control

through their current implementation procedures (Teittinen et al., 2013). At the operational level, serious challenges lead to low usage of the ERP system. Management produces the underlying financial data and must contend with many practical problems caused by ERP implementation (Teittinen et al., 2013). Enterprise resource planning is one of the most complicated decisions that organizations make because these projects are large scale regarding scope, cost, time, and people involved in the implementation process.

Business leaders use ERP systems to promote knowledge diffusion and robust business decision-making processes; the adoption of ERPs is one of the most significant technological and organizational innovations in SMEs (Antoniadis et al., 2015). To investigate CSFs of ERP implementation, Ahmad and Cuenca (2013) conducted a study to identify and analyze the interrelationships of the critical issues involved in the implementation of ERP in SMEs. Ahmad and Cuenca conducted a meta-analysis of 50 scholarly papers on ERP implementation and conducted interviews with eight leaders of large companies in the United Kingdom who had experience with ERP projects to identify the CSFs that have the highest impact of project success. Ahmad and Cuenca then took the identified CSF data and researched their applicability to the SMEs. These findings of the study on relationships of the CSFs help to develop tools to monitor, and ultimately improve, ERP implementations for SMEs. Therefore, one might infer that CSFs exists that could ensure project success, contributing to the technological innovations of SMEs in the manufacturing industry.

Antoniadis et al. (2015) examined ERP systems adoption and implementation by SMEs in Western Macedonia. Antoniadis et al. focused on explaining critical factors affecting adoption of ERPs by SMEs and the business intelligence potential of implementing and using ERP during a period of crisis. Antoniadis et al. correlated these factors with economic and organizational components of the SMEs surveyed in this study. Antoniadis et al. indicated through study results that although SMEs may acknowledge the benefits attained by applying ERP systems, and how these advantages are improvements in managing and summarizing heterogeneous data, business intelligence capabilities of ERP systems remain underutilized. Managers are not embracing knowledge and experience gained by implementing ERPs. As such, Antoniadis et al. concluded with proposals for further research on the implementation of ERP systems and the expansion of business intelligence usage by SMEs. Additionally, Ahmad and Cuenca (2013) offered guidelines for the interplay of organizational and operational factors for the successful implementation of ERP. In sum, Ahmad and Cuenca (2013) examined the reasons SME leaders do not consider the benefits of implementing ERPs, despite the overwhelming evidence of information and knowledge management being a predominant risk factor during periods of crisis.

Many SME leaders often doubt the capability, dynamics, and application of business intelligence in their decision-making processes when adopting and implementing ERP systems and their marketing-oriented subsystems, such as CRM. To analyze the widespread popularity of global diffusion of resource planning and explain

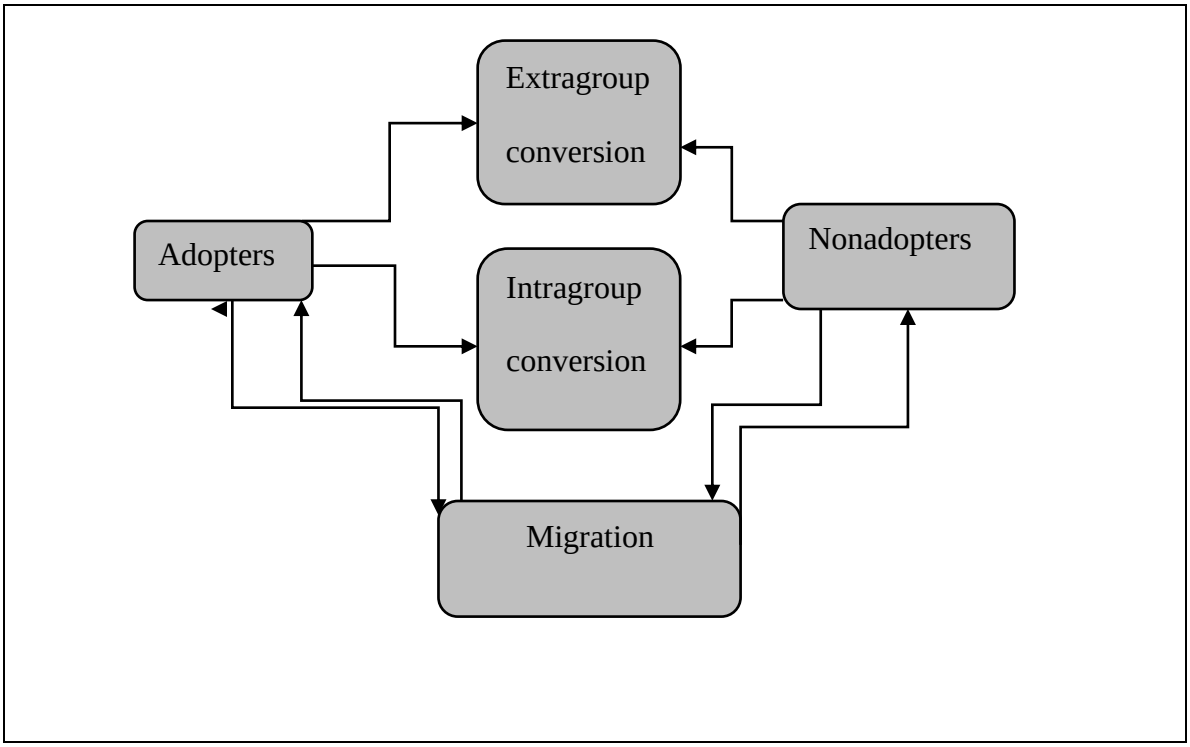
why business managers prefer resource planning instead of total quality management. Scarbrough et al. (2015) highlighted the work on the institutional model of management innovation and compared the interactions between the field-level actors engaged in diffusing changes and implementation of the innovation at the organization level; these places primary focus on the creation of management innovations versus the adaptation. Scarbrough et al. contended that each change regarding resource planning and TQM had experienced a high level of failure by implementing organizations, stating that a boom and bust cycle characterized TQM, while resource planning has maintained widespread popularity in the global marketplace in the forms of MRP and ERP. The results of Scarbrough et al.'s research led to a discussion on the concern of long-run diffusion of resource planning through a processual model that highlights the interplay between resource discursive framing at the field level, the benefits of the innovation itself, and its adaptation within organizations. Resource planning systems process, such as lean project management has many similarities to TQM especially concerning origin, methods, tools, and effects, differing only in central theory and approach. However, even though resource-planning rose in popularity among enterprises, the combination of the two would serve to complement the ERP implementation process, combining the excellence of project management road maps with the value-based management of TQM.

The discussion prompted by Scarbrough et al. (2015) influenced the deployment of diffusion models by researchers Wunderlich et al. (2014). Wunderlich et al. conducted a mixed-method study using a systems dynamics modeling approach on the undercurrents

of intraorganizational innovation implementation processes based on conversion within and migration between five groups of employees with classifications of an adopters or nonadopters of innovation. Conversion is an adopter or nonadopter converting a member with an opposing stance (Wunderlich et al., 2014). Migration is the communication of ideas, opinions, experiences, and expertise between members with an opposing stance (Wunderlich et al., 2014). Wunderlich et al. surmised three facets from their study, which were repeated acceptance and rejection decisions of adopters and nonadopters, diffusion within and across groups organized in different network structures, and management's continuous influence on the diffusion process. Wunerlich et al. concluded that managers could reduce the time and costs of implementing and diffusing innovation throughout the organization by strategically placing adopters in positions to convert nonadopters. Barth and Koch (2019), in agreement with Wunderlich et al., noted that the success of ERP implementation improves when managers assemble a team of employees who recognize the value of the system and have the expertise to diffuse the information to employees lacking an understanding of ERP systems. Figure 2 is a display of the migration of information between adopters and nonadopters who seek to convert intra or extra group members with an opposing stance.

Figure 2

Conversion Attempts Through Migration



Note. Adapted from Wunderlich et al. (2014).

Leaders use resource-planning software to spread innovations and allow field-level actors to differentiate its development as a thriving innovation from the many failures experienced by organizations attempting to adapt the software (Scarbrough et al., 2015). Barth and Koch (2019) conducted a qualitative, multiple case study collecting data through interviews with 12 senior IT managers in the banking, manufacturing, and education industry in Australia, concluding that proper composition of the ERP implementation team is the key to success. Managers use the Wunderlich et al. (2014) model to recognize and analyze senior managements' options to direct the diffusion

process. Wunderlich et al. argued that network structure is a means for managers to influence the interplay between the self-reinforcing dynamics of conversion and improve the migration of information from adopters to nonadopters.

Benefits of ERP/Reasons to Implement

Enterprise resource planning implementation has proven to be a lengthy and complicated process having both successful and unsuccessful adoptions (Bharathi & Mandal, 2015). Proper project management is an essential facet of successful ERP implementation. Researchers attribute a few factors as possible reasons for implementation failure of ERP systems, two of them being a lack of proper management and employee skill (Nisula & Pekkola, 2012). Nisula and Pekkola (2012) explored the types of environments that are conducive to SME employees developing the skills needed to implement ERP systems. The findings of Nisula and Pekkola included business owners that participated in business scenarios on smaller enterprise resource planning. Nisula and Pekkola noted systems that presented (a) problem-solving techniques (b) decision strategies, (c) operation in a business environment, (d) information management, (e) intellectual ability, (f) critical thinking, (g) emotional intelligence, and (h) creativity. Nisula and Pekkola concluded that these simulations offer small business leaders the opportunity to utilize acquired skills to maneuver critical issues that arise strategically. The simulation created by Nisula and Pekkola highlighted the skill requirements for business management in small businesses. With respect to SMEs, unfortunately, there are implementation difficulties in ERP implementations. Mainly, when ERP is initially

applied, some concerns impact organizations. The current era and integrated e-commerce markets underline the need for customer-centric approaches to have competitive advantages (Kiran & Reddy, 2019). Table 2 is a display of success and failure factors regarding implementing ERP systems as noted by Nisula and Pekkola (2012) and Pelphrey (2015).

Table 2

ERP Systems Success and Failure Factors

Success Factors	Failure Factors
Skilled and trained employees	Employee apathy/disengagement Inadequate training
Effective project management	Poor project team leadership Wrong team members
Upper management support	Lack of upper management buy-in Inadequate budget Lack of strategy and vision
Defined project objectives	Lack of clarity and rationale
Realistic budget	Inadequate budget to complete the project
Change oriented culture	Resistance to change
Defined completion time	Unrealistic time frame to complete the project

To gain an understanding of the benefits of ERP implementation, Mehrjerdi (2010) conducted a meta-analysis to explore existing literature on ERP implementation in various industries. Mehrjerdi compared ERP applications in sectors, such as government offices and enterprises in four related cases, to understand ERP software key points, risks,

benefits, CSFs, and implementation issues. Mehrjerdi provided foundational information on ERP implementation, critical elements of ERP, and reviewed four essential cases from the literature to enhance the perceptions of the risks and benefits of ERP software for new users. Mehrjerdi highlighted the critical benefits of ERP systems and software, such as organizational control by monitoring materials, orders, and schedules finished inventory goods, and other vital information necessary to management. Building on these findings, Bharathi and Mandal (2015) addressed the key factors that are a part of the decision-making process when SMEs are choosing whether to use ERP as a service. Bharathi and Mandal conducted an exploratory study by collecting a set of consultants, implementing partners, and SMEs of ERP. Bharathi and Mandal used an analytic hierarchy process approach AHP to prioritize and rank a set of 17 critical factors to consider when adopting cloud ERP and classified these factors by groups such as of cost, security, organizational factors, performance, and functionality of ERP. Bharathi and Mandal highlighted aspects of host-related factors such as subscription fees, maintenance cost, and implementation cost featured in the top five ranking critical factors. The results of Bharathi and Mandal's research lead to further discussions of other significant issues, such as service level management conditions, best current practice, data recovery, IT resources cost, and data confidentiality. Bharathi and Mandal provided a legitimate reference to stakeholders while planning and executing sustainable information system adoption such as cloud ERP.

Bharathi and Mandal (2015) also noted how cloud ERP is a means for SME leaders to be in direct competition with large corporations, allowing organizations to achieve and sustain competitive growth. Bharathi and Mandal stated a plethora of factors exists that play an essential role in the decision-making of SME leaders, whether to go for ERP as a service or not and highlights the ranking and prioritizing of critical factors which will help the ERP service providers to better understand the expectations of the SME clients. Mehrjerdi (2010) argued that to understand ERP software key points, risks, benefits, critical success factors, implementation issues, and fundamental process techniques that will enhance the decision-making process research papers related to the risk-benefit analysis of ERP systems require the further contribution to industry literature.

Other researchers also highlighted the need for further research regarding a risk-benefit analysis of ERP processes. For example, Dixit and Prakash (2011) wrote an article on why companies choose to implement ERP processes. Dixit and Prakash stated that companies perform ERP systems to integrate their business processes and obtain an advantage over competitors. Dixit and Prakash concluded that ERP is one of the most efficient solutions for SMEs that operate internationally. Dixit and Prakash highlighted critical factors that managers should view closely when essential processes of ERP in SMEs, such as proper system implementation, clearly defined the scope of implementation procedure, adequate project planning, and minimal customization of the system selected for execution.

Leaders of SMEs can take advantage of the benefits of ERP systems to enhance

many areas of operations. According to Kanellou and Spathis (2013), accounting is an example of one the many areas ERP systems may benefit an SME. As noted by Kanellou and Spathis (2013), leaders use ERP systems to improve the productivity within accounting systems by the following means:

- Expedited data gathering
- Time reduction in accounts closed and issuance of financial statements
- Information fluidity
- A boost in decision-making and internal auditing
- Enhanced report quality
- Working capital control
- Cutbacks in cost

Enterprise resource planning systems are counted as a key to increase economic improvement and quality (Al-Lozi & Al-Qirem, 2021). The preponderance of the evidence within the literature indicated that the benefits of implementing ERP systems outweigh the risks.

Strategies for Implementation

Several researchers have offered strategies for the successful implementation of ERP systems. Pelphrey (2015) wrote a book on plans to avoid failure triggers in ERP implementation to discuss how existing literature on ERP implementation does not contain an explanation that most ERP efforts offer a minimal benefit regarding return on investment. The basis for Pelphrey's conclusions was 30 years of personal experience in

implementing ERP systems, a meta-analysis of 20 published studies and books on ERP systems written by Pelphrey, and a review of over 400 other articles, books, and studies by other ERP experts. Tarhini et al. (2015) stated that successful ERP implementation has many benefits for the practicing organization. However, failing this project would have several negative implications, not only on the business but also on the ERP vendor (Tarhini et al., 2015). Many researchers have studied the CSFs that influence ERP implementation and post-implementation phases; however, few researchers have considered ERP implementation from the stakeholders' perspective (Tarhini et al., 2015).

Tarhini et al. (2015) provided a systematic review of the literature related to CSFs in ERP implementation and presented them while considering the participants' different perspectives. The researchers gave a systematic review of 35 research articles published on CSF implementation from 2000 to 2013. Tarhini et al. identified 51 CSFs in ERP implementation. In these 51 CSFs, top management support and commitment, training and education, project management, clear vision and objectives of the ERP system, careful change management, and interdepartmental communication were the most frequently cited as critical to the successful implementation of ERP systems.

Tarhini et al. (2015) stated that a better understanding of the CFSs would help the practitioners and managers to improve the chance of success in the implementation projects. As such, further study and exploration of CSFs are necessary to enhance successful implementation rates of ERP systems. Companies with strategic ERP systems in place experience significant benefits yet failing the implementation process has many

ramifications on the SME and its vendors (Tarhini et al., 2015). ERP implementation strategy and approach should be a meticulously drafted document with information detailing the project plan, scope, and undertakings dealing with the migration of ERP data, and must address validation of ERP data during the mitigation process (Hayes & Heit, 2018). Data migration results in difficulties and obstacles, such as cementing data requirements, obtaining and giving access to data essential to ERP systems, and legacy and third-party systems.

In summary, Pelphrey (2015), Tarhini et al. (2015), and Hayes and Heit (2018) agreed that leaders need a strategic plan to implement a successful ERP system. The findings of Miranda et al. (2016 Pelphrey), Tarhini et al. in agreement with Hayes and Heit indicated that the diffusion of innovation theory is the appropriate theory to study CSFs in ERP implementation processes. Leaders use the theory to highlight diffusion of innovations and technologies, the adoption process of an ERP system as a management and reporting system in an organization, and takes in to account potentially negative factors and facilitators of the ERP process while introducing possible innovations or gains from the incorporation of suggested ERP processes.

Transition

In Section 1, I presented the background of the problem, the problem statement, the purpose statement, the overarching research question, and the interview questions. I explained the conceptual framework, the nature of the study, the assumptions, limitations, and delimitations, and the significance of the study. I provided a comprehensive review

of the professional and academic literature regarding the diffusion of innovation theory, ERP systems implementation strategies, ERP as applied to SMEs and IT, the use of cloud computing and SaaS during ERP implementation, methods of ERP implementation, project management of ERP implementation, and the potential benefits of ERP systems to SMEs.

In Section 2, I restate the purpose statement of the study, explain my role in the research, discuss the eligibility criteria for participants, explain the research method and design, justify the sample size, explain ethical research guidelines and ramifications, discuss study data collection instruments, data organization techniques, and the means to analyze the data. I discuss measures to ensure credible, dependable, confirmable finding and reach data saturation. I explain the procedures to improve the prospects of future researchers transferring the findings to other cases or setting.

In Section 3, I will present the findings of the study, discuss applications for professional practice, explain the implications for social change, provide recommendations for action, and make recommendations for further research. I included my reflections of the research process and end with a concluding statement.

Section 2: The Project

In Section 2, I delineate the procedures to conduct this research study. I discuss in detail my role as the researcher, the means to identify and recruit participants, and the procedures to ensure adherence to ethical research standards. I justify the use of the qualitative method and the multiple case study design. I explain the data collection instruments, the data organization techniques, and the means to analyze the data. I discuss the measures to ensure credible, dependable, findings as well as the means to reach data saturation.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies that some manufacturing SME leaders use for implementing ERP systems. The targeted population consisted of leaders of ERP consulting firms that specialize in implementation for manufacturing SMEs in the U.S. who used successful strategies to implement ERP systems. The implications for positive social change include the potential to strengthen SME businesses resulting in more jobs and an enhanced standard of living in local communities.

Role of the Researcher

The role of the researcher in qualitative research is to serve as the primary tool for collecting and interpreting data (Yin, 2018). I was the primary data collection instrument for this study. Researchers use semistructured interviews to ask participants open-ended questions and follow-up questions to collect information-rich data (Finlay, 2014;

Moustakas, 1994). In my role as the researcher, I used semistructured interviews, asking participants seven open-ended interview questions and follow-up questions as necessary to collect rich data. Case study researchers must collect data using more than one method to triangulate the data (Yin, 2018). I reviewed company documents, such as ERP strategy implementation plans, operational manuals, project cost reports, ERP vendor contracts, and training manuals.

Researchers should be familiar with the research topic and geographic region of the study (James, 2016). My experience in acquiring business administration, information technology, and project management knowledge, and acquiring a certification in ERP/SAP systems with the University of Scranton, in Scranton, PA led to my desire to study the problem of successful ERP implementation within SMEs. Direct contact with SME leaders will not occur outside of the research environment, and there is no potential for conflicts of interest from business relationships. Having no direct contact outside the research environment is a means for researchers to prevent potential ethical issues, conflicts of interest, and the effect of participant or researcher bias (James, 2016). Researchers should avoid selecting friends, family members, or professional colleagues as participants (James, 2016). I avoided selecting participants with whom a personal or professional relationship exist. Researchers should be familiar with the geographic location of the study (James, 2016). I have lived and worked in the United States from 1981-2022; I am familiar with the geographic region of this study.

Researchers using human participants within their study must abide by the principles outlined in *The Belmont Report* (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research [NCPHSBBR], 1979). The key tenets of *The Belmont Report* are respect for persons, beneficence, and justice (Belmont Report, 2003; Hull & Wilson, 2017;). In my role as the researcher, I abided by the principles and tenet of *The Belmont Report*. I treated all participants with respect, maintain their confidentiality, and conduct a study in which the benefits outweigh the risks. Researchers ensure beneficence by minimizing the potential risks and harm to participants while seeking to maximize the potential benefit from conducting the study (NCPHSBBR, 1979). I protected the privacy of participants by using code names within the published study.

Researchers conducting doctoral research must obtain Institutional Review Board (IRB) approval from the governing university (James, 2016). I obtained IRB approval from Walden University prior to contacting any participants. The IRB approval number is 07-24-20-0407399. To maintain ethical standards, researchers should obtain informed consent from participants prior to collecting data (James, 2016). I obtained informed consent from each participant prior to conducting the semistructured interview. The informed consent form contains clear language regarding the participants' right to withdraw from the study as well as the potential risks and benefits of participating in this study. I upheld research ethics by abiding by the standards for human subjects' research

set forth in *The Belmont Report*, obtaining IRB approval, and obtaining informed consent from the participants.

A clear and concise research question must be supported by a strong conceptual framework contribute to the selection of appropriate research methods that enhance trustworthiness and minimize researcher bias inherent in qualitative methodologies (Johnson et al., 2020). In my role as the researcher, I recognized and avoided personal biases in the research process by taking a neutral stance during data collection, interpretation, and analysis. I kept a reflective journal to remain aware of any personal biases that exist.

The researcher must remain an objective explorer when conducting qualitative research to mitigate biases (Glesne, 2015). Researchers should mitigate biases and avoid injecting their personal worldview during data collection and analysis to allow the findings of a study to emanate from the participants' perspective (Fusch & Ness, 2015; Yin, 2018). Member checking is a means for researchers to allow the participants an opportunity to validate that the researcher corrected interpreted the data collected during the interviews (Fusch & Ness, 2015). I used member checking to mitigate personal biases and ensure the findings resulted from the participants' perspective. I transcribed the interview recordings, create a 1-2-page summary of the transcript, and meet once again with the participants to provide them the opportunity to validate my interpretation of their responses to the interview questions.

An official strategy for gathering data will translate into an interview guide that encompasses vital topics and questions, such as individual and social meanings and processes of importance (re)construction in loss (Mahat-Shamir et al., 2021). I used an interview protocol as a guide to ensure a consistent process among all the interviews, remain objective during the interviews, and improve the flow of the interview in consideration of the participants time and effort (see Appendix A). The use of an interview protocol is a means for researchers to reduce the chance of inserting their personal worldview into the questioning of participants (Marshall & Rossman, 2016). I adhered to a strict interview protocol to avoid injecting my personal worldview during the interviews (see Appendix A). The use of an interview protocol reduces the researcher's tendency to rely on their thoughts or expertise regarding the topic of study (Finlay, 2014). I minimized researcher bias by separating my personal preferences and expertise on ERP strategy implementation by adhering to an interview protocol, recording and transcribing interviews, reviewing documents, and taking reflective notes in an attempt to get the most complete picture possible.

Participants

Researchers conducting qualitative multiple case studies must seek participants who meet specific eligibility criteria that aligns with the purpose of the study (Yin, 2018). Eligible participants must have a thorough understanding of the research topic (Hem et al., 2015). I selected participants who meet the specific eligibility criteria for participation in this study and who possess a thorough understanding of strategies for implementing

ERP systems. The eligibility criteria for participants are each must be (a) a leader (e.g., executive, manager, or IT specialist) of a manufacturing SME, (b) who used a successful strategy for implementing ERP systems, and (c) who operates on the East and West Coast of the United States. For the purposes of this study, the definition of a successful strategy for implementing ERP systems is a strategy that resulted in an on time, on budget completed ERP project, and the ERP system resulted in the desired organizational outcomes. My selection of participants remains dependent upon the participants' responsibilities, knowledge, and roles regarding strategy implementation for ERP systems.

Bunn et al. (2014) suggested the use of public directories, trade magazines, and the Internet as the means for researchers to initially identify and gain access to the contact information of potential participants. Researchers can gain access to the contact information of leaders of public and private companies through an Internet search, reviewing company websites, and local chamber of commerce directories (Kaiser et al., 2017; Miller, 2017). I gained access to the contact information of owners and leaders by conducting an Internet search of SME manufacturing companies as well as ERP consulting firms in on the East and West Coast of the United States that use ERP systems, reviewing public directories obtained from the internet and LinkedIn, and reviewing manufacturing trade publications. I contacted the owners or authorized officials of ERP consulting firms that have implemented ERP systems for and with

manufacturing companies, presented each with a letter of cooperation (see Appendix B), and continued this process until I secured four research partner organizations.

Researchers gain access to potential participants by gaining the approval of organizational *gatekeepers* (Lund et al., 2014). I gained access to participants as well as company documents through the owner or authorized official of each company signing the letter of cooperation (see Appendix B). Ethical researchers obtain IRB approval from the governing institution prior to contacting participants (Miracle, 2016). After obtaining Walden University IRB approval, IRB approval number is 07-24-20-0407399, I contacted potential participants from four ERP consulting firms manufacturing companies that help manufacturing companies with their use ERP systems through email to make initial contact by sending an invitation to participate as well as through LinkedIn (see Appendix C).

To abide by the tenets of *The Belmont Report*, a researcher must obtain informed consent from participants prior to collecting data (NCPHSBBR, 1979). The informed consent form should contain clear language regarding the benefits and risks of participating in a research study (Miracle, 2016). I attached a copy of the informed consent form to the invitation to participate email; the informed consent form contains clear language about the risks, benefits, voluntary nature, and time commitment associated with participating in this research study. If the potential participants meet the eligibility criteria, they can provide their informed consent to participate in the study by

replying *I consent* to the invitation email. I reviewed the informed consent terms with the participants prior to beginning the interview.

I built a working relationship with participants through fostering trust between the leaders and myself, ensuring they understood the informed consent process prior to agreeing to the interview, and reassured them that I ensured their confidentiality by not publishing any personal identifiers in the final study. Building rapport with participants is an essential duty of researchers seeking rich data using semistructured interviews (Van Praag & Sanchez, 2015). During this introductory phase, I maintained a healthy environment and built rapport with each participant by maintaining contact through email and telephone calls. I contacted each participant to establish a proper place and time for the interviews to take place. During this contact, I also explained the process of data protection as outlined in the consent form. I reviewed the entire consent form with the participants until they are confident that they understand their role and are comfortable proceeding with the interview.

Lamprinakis (2015) noted that researchers exploring a problem using a qualitative case study design should choose participants who possess the ability to provide data suitable for answering the central research question of the study. The use of purposeful sampling is a means for researchers to choose participants who can offer data that align with research objectives (Lund et al., 2014). I purposefully selected participants who can offer data suitable for answering the overarching research question of this study. I ensured each leader who provided informed consent met the eligibility criteria, which

was a leader in a SME manufacturing company on the east and west coast of the United States who has implemented a strategy for ERP systems.

Research Method and Design

The three commonly used methods for empirical research are qualitative, quantitative, and mixed (McKim, 2017). The research approach for this study is a qualitative research method with a multiple case study design. I chose the qualitative method because of the exploratory nature of this study. I selected a multiple case study design to gain a diversity of data from multiple companies regarding the strategies SME leaders used to implement ERP systems. To obtain an in-depth understanding of the research problem, Yin (2018) recommended that a researcher using a case study design incorporate various sources of research data. Semistructured interviews and a review of company documentation are the data collection methods for this study. Researchers must check the extensiveness and dependability of study findings by confirming sufficient data saturation and continuous collection of information until exhausting the ability to obtain new information (Marshall & Rossman, 2016). Triangulation is the process of collecting case study data and converging lines of evidence from gathered data to enhance the trustworthiness and credibility of the findings (Yin, 2018). I reviewed company documentation as a part of the triangulation process to crosscheck the data collected from participants during the interviews.

Research Method

The three methods of research are qualitative, quantitative, and mixed methods, and each is a way of presenting study information collected from the participants in a different form (Petty et al., 2012). Researchers choose a qualitative method when seeking to understand a phenomenon through the participants' perspective and the need exists to use a flexible, open, fluid approach during data collection (Moustakas, 1994). A researcher uses the qualitative method to engage in open discourse by asking participants open-ended questions to explore what has occurred or is occurring regarding a phenomenon (Henry & Foss, 2015). Qualitative researchers use inductive reasoning to take existing knowledge and make predictions about novel cases (Hayes & Heit, 2018). I used the qualitative method to explore ERP implementation strategies through open discourse and inductive reasoning, asking participants preselected, open-ended questions. I selected the qualitative method to engage in open dialog with participants and facilitate a flexible, fluid process during data collection.

The purpose of conducting qualitative research is to explore relevant information and to add further understanding to a research topic (Moustakas, 1994). Qualitative researchers explore the human element and meanings of situations in a research environment (Houghton et al., 2013). Allowing participants to reveal personal accounts through interviews provides for open communication and candidness on factors relevant to an in-depth knowledge of the research topic (Roulston, 2012; Yilmaz, 2013). I explored the strategies SME leaders use to implement ERP systems by asking

participants open-ended questions that directly aligned with the central research question of this study and by reviewing relevant company documents. The qualitative method is the proper method to use to collect data that will result in answers the research question of this study.

Quantitative researchers develop predictive models or estimations by conducting statistical analysis of numeric data that result in specific findings generalizable to an entire population (Yilmaz, 2013). Quantitative researchers use instrument-based surveys to collect numeric data for confirming or refuting a hypothesis (Henry & Foss, 2015). A quantitative method consists of researchers creating theories and assumptions that may limit a detailed exploration of the study topic (Henry & Foss, 2015; Yilmaz, 2013). Researchers using the quantitative method often examine relationships among predictor and criterion variables through statistical testing (Goertzen, 2017). Quantitative research is useful when the goal of the researcher is to statistically support or refute some testable aspect of a theory (Lund et al., 2014). Researchers conducting a quantitative method study use deductive logic to predict relationships among variables (Lund et al., 2014). The quantitative research design was not appropriate for this study because my purpose was not to statistically support or refute the testable aspects of a theory or use deductive reasoning. To collect data regarding the strategies SME leaders use to implement ERP systems, I had no need to collect numeric data for statistical testing, develop a set of hypotheses for confirmation or refutation, nor create a theory; therefore, I rejected the

quantitative method as a means to collect data relevant to the research question of this study.

Mixed-methods researchers use both qualitative and quantitative methods to gain the strengths of each method (Humphreys & Jacobs, 2015). Mixed-methods research is a complicated process; researchers must collect qualitative and quantitative data, interpret the information, and identify findings from both approaches (McCusker & Gunaydin, 2015). I did not collect quantitative data to statistically support or refute the testable aspects of a theory, nor did I need to combine qualitative and quantitative methods to explore the strategies some manufacturing SME leaders use for implementing ERP systems; therefore, I rejected the mixed-method approach. The qualitative method was the appropriate approach for conducting this study.

Research Design

Researchers select specific qualitative research designs to ensure the target population and the research question aligns with the purpose of the study (Houghton et al., 2013). To stay within the objectives of this study, I evaluated four qualitative designs: (a) case study, (b) ethnographic, (c) narrative inquiry, and (d) phenomenological. From a detailed review of the design options, I deemed the case study design as most appropriate for this research study.

The case study design is best for researchers seeking to use exploratory questions to create a deeper understanding of a real-world phenomenon (Onwuegbuzie & Weinbaum, 2017). Researchers employ the case study design to collect data from

multiple sources of evidence to explore a real-world problem within a bounded, contextual setting (Yin, 2018). I sought to explore a real-world problem within the boundaries of four companies in the manufacturing industry, specifically, some SME leaders lack strategies for implementing ERP systems.

The case study design is an appropriate approach for researchers to explore a case extensively within a real-life context (Houghton et al., 2013). Common data collection methods for case study researchers are interviews, a review of relevant documentation, and observations (Yin, 2018). I used a qualitative multiple case study design to collect a variety of data from multiple organizations through semistructured interviews with participants and a review of company documents to explore a real-world phenomenon within a bounded setting. The case study design was appropriate to conduct this study.

In a qualitative multiple case study, researchers use various sources of information to explore different stages and views of similar phenomena (Roulston, 2012). To gain a diversity of data, increase the dependability of the data, and improve the credibility of findings, researchers should consider conducting a multiple case study (Yin, 2018). l used a multiple case study design to gain a diversity of data from multiple organizations and organizational leaders, improve the dependability of the data, and increase the trustworthiness of the findings. A researcher uses the multiple case study design to understand a real-world case and gain a recognition of the appropriate contextual conditions crucial to their situation (Yin, 2018). An appropriate approach to investigate and analyze different perceptions and perspectives within and between cases

is to use a multiple case study approach (Petty et al., 2012). The use of cross-case synthesis is a means for researchers to increase the credibility of the outcome of the study (Onwuegbuzie & Weinbaum, 2017). I selected the multiple case study design to compare data collected from multiple SME leaders and their relevant documentation to exercise cross-case synthesis and ensure the credibility of the findings. Researchers use a multiple case study design when the boundaries between phenomena and context may not be evident (Yin, 2018). To answer the central research question, I seek a spectrum of strategies SME leaders use to implement ERP systems. The multiple case study design is the best approach to fulfill the purpose of this study.

Ethnographic research is an expressed practice of immersion within a field site whereby researchers use ethnographic sensibility to study how people perceive their surroundings and culture (Krause, 2021). Ethnographic research requires a substantial amount of time as it includes various data collection methods such as researcher observations, object handling, interviewing, documenting and working with data, and many more practices (Ploder & Hamann, 2021). Ethnographic research prompts critical questions on the extent to which researchers can succumb to the practices and belief systems and how researchers can reconstruct data in their study to provide practical challenges and critique (Townsend & Cushion, 2021). Ethnography is a prominent qualitative research method that uses a constructivist paradigm as the basis of research for this design (Woermann, 2018). The goal of this research is to explore the strategies SME leaders in the manufacturing industry use to implement ERP systems. Collecting data regarding the cultural aspects of SME leaders or of manufacturing organizations will not result in

appropriate data to answer the central research question of this study; therefore, I rejected the ethnographic design.

A researcher applies a narrative inquiry approach when obtaining information from a small number of participants based on their memory and life stories (Petty et al., 2012). A narrative approach entails field notes, participant observations, and data collection from participants' recollection of life events (Petty et al., 2012). Researchers using the narrative inquiry design interpret the data to develop a narrative based on how the participants experienced a phenomenon (Shedrow, 2017). Collecting data from the life stories of participants would not result in sufficient information because I needed data from interviews, company documents, and observation during interviews to explore the strategies SME leaders use for implementing ERP systems; therefore, the narrative design was not appropriate for this study.

Researchers use the phenomenological design to explore lived experiences of the selected participants (Moustakas, 1994). Moustakas (1994) mentioned the use of the phenomenological design to focus on the specific beliefs and perspectives common to a group of individuals who share a collective experience. The phenomenological design was not suitable for this study because I needed rich data collected from interviews and company documents to answer the research question. I collected data relevant to the strategies SME leaders used to develop and implement ERP systems, not just their lived experiences. Collecting data from participants based on their lived experiences regarding

ERP systems will result in insufficient information to answer the research question; therefore, I deemed the phenomenological design as inappropriate for this study.

To achieve data saturation, the researcher must collect data until no new themes or patterns emerge (Fusch & Ness, 2015). To produce credible, dependable findings, researchers conducting a case study researcher must collect data until all new information become repetitious (Fusch & Ness, 2015). I collected data through semistructured interviews with SME leaders and reviewing relevant company documents. I reviewed company documents, such as ERP strategy implementation plans, operational manuals, project cost reports, ERP vendor contracts, and training manuals. I collected data until no new themes or patterns emerge. I interviewed four leaders from four United States consulting firms who specialize in ERP implementation in the manufacturing industry, reviewing company documents from the companies they work with on implementation and examining their ERP systems. I engaged in methodological triangulation to crosscheck the interview data with data collected from document reviews. I engaged the participants in member checking to allow them the opportunity to validate and update my interpretation of their interview responses.

Population and Sampling

Purposeful sampling is commonly applied in qualitative research to identify and select information-rich cases related to the phenomenon of interest and just as in the initial stage of theoretical sampling, purposeful research requires researchers to visit the groups which they believe will maximize the possibilities of obtaining data and leads to

more data on their question (Mohammadi et al., 2021; Shaheen et al., 2019). Purposeful sampling is the selection of a set of participants that link to the research question of a study (Patton, 2015; Robinson, 2014). Purposeful sampling is my sampling method to choose participants that are in close relation to the purpose of this study to offer insight and understanding of the phenomena.

Waters (2015) noted that some researchers use snowball sampling, allowing one participant to refer another potential participant who might have an interest in participating in the study. I did not use snowball sampling because of the potential to break the confidentiality of the participants' identity.

Researchers use purposive sampling to better match a sample or samples to the aims and objectives of the research, thus improving the accuracy of the study and dependability of the data and results (Campbell et al., 2020). I used purposeful sampling to identify participants who meet the eligibility criteria of this study, which is (a) a leader (e.g., executive, manager, or IT specialist) of a manufacturing SME, (b) who used a successful strategy for implementing ERP systems, and (c) who operates in the East and West Coast of the United States. For the purposes of this study, the definition of a successful strategy for implementing ERP systems is a strategy that resulted in an on time, on budget completed ERP project, and the ERP system resulted in the desired organizational outcomes.

Sampling is essential to the development of a qualitative study (Guest et al., 2006; Patton, 2015; Robinson, 2014). Selecting a sample of participants who have a wealth of

comprehensive, in-depth information about the phenomenon is critical when gathering a broad understanding of the experience of participants (Rubin & Rubin, 2012). Fusch and Ness (2015) noted that researchers should focus more on the quality of the sample as opposed to the quantity of participants to collect rich data and reach data saturation. Yin (2018) posited that case study researchers should identify a small number of participants who meet the specific eligibility requirements of the study and who possess the knowledge, experience, and expertise needed to answer the research question as opposed to using a large number of participants. Researchers use the qualitative research method to gain the ability to obtain rich data from participants with specific knowledge regarding the phenomenon under study (Finlay, 2014). I identified and purposefully select two participants in each of four different consulting firms who have the knowledge of and experience with strategies for implementing ERP systems. In the event I receive new information in the second interview, I interviewed additional leaders in that company until I reached data saturation. I reached data saturation by continuing to collect data until no new themes, patterns, or information emerged.

Company owners or authorized officials provided a signed letter of cooperation to provide organizational access to recruiting study participants as well as company documents (see Appendix B). Upon obtaining organizational permission and receiving IRB approval from Walden University, I began data collection by using face-to-face, semistructured interviews and reviewing relevant company documents. I remained objective and fair throughout the data collection process. I had no assumptions regarding

the participants' appreciation of the nature and aims of this academic research. I am aware that consent from participants did not dismiss the requirement to explain to each host organization the process of anticipating and guarding against potentially harmful consequences for participants.

In this study, I had participants discuss their strategies openly regarding the implementation of ERP systems. Before the interviews, the SME executives and managers received an introduction to the study and the purpose of the research, the possible impact on business practices, and the implications for social change. Participants had the opportunity to ask questions about the research objectives. The interviews with participants consisted of eight interview questions and lasted approximately 45-60 minutes. The follow-up meeting for meeting checking lasted approximately 30 minutes. Researchers using face-to-face interviews as a data collection technique should consider the participants' convenience and confidentiality when selecting an interview site (Kline, 2017). Because of COVID-19 restrictions, interviews were conducted by phone, email, and zoom meetings because this was the best means for the researcher to promote participation while reducing distractions and preserving the confidentiality of the participant. The participants selected convenient locations of their choice for the interview, but I suggested a neutral setting, such as a zoom video in a quiet area of their location and ensured the confidentiality of the participants.

To achieve saturation, researchers must collect data until there are no new emergent themes (Fusch & Ness, 2015). I collected data using semistructured interviews

and document reviews until no new themes or patterns emerge. Engaging in methodological triangulation and member checking are means for researchers to ensure attaining data saturation (Fusch & Ness, 2015). I collected data through semistructured interviews with SME leaders and reviewing relevant company documents until no new themes or patterns emerge. I began interviewing two participants in each of four SMEs in the manufacturing industry and reviewing company documents from their companies. I engaged in methodological triangulation to crosscheck the interview data with data collected from document reviews. I engaged the participants in member checking to allow them the opportunity to validate and update my interpretation of their interview responses.

Ethical Research

Researchers are strongly encouraged to completely disclose information to participants during the initial consent process about how their data will be monitored and used to guide emergency interventions (Jacobson et al., 2020). *The Belmont Report* states that researchers must view human subjects as autonomous agents and aim to increase potential benefits while simultaneously decreasing the risk of harm, as well as strive to distribute are fair to ensure accessibility and quality is equally dispersed (Vingan & Kenkel, 2022). Researchers should obtain informed consent from participants to uphold ethical research standards (Yin, 2018). I obtained informed consent from the participants prior to conducting the semistructured interviews and reviewing company documents. Researchers gain trust with participants and guard against potential harm during the

interview process (Hull & Wilson, 2017). The participants reviewed and signed the informed consent document to confirm consent to volunteer. The informed consent form contained an explanation that each interview would last approximately 45-60 minutes, the follow-up meeting for member checking would last approximately 30 minutes. There were seven open-ended questions, and the collected data will remain in a locked safe for 5 years, after which destruction of all research records will occurs. Once the Walden University IRB approved the study, participant recruitment took place. I emailed an invitation to participate to ERP consulting leaders in the United States who have used successful strategies to implement ERP systems (see Appendix C). Participants had the opportunity to participate without coercion. Participants who volunteered to take part in the study had the opportunity to read and review the informed consent form. Through the informed consent form, I gave participants a full disclosure of the limited risks as well as the potential benefits of participating in this research study.

A participant had the ability to leave the research study at any time. Researchers should ensure participants understand the extent to which the consent they grant is essential to the ethical viability (Pietrzykowski & Smilowska, 2021). Participants were able to withdraw from this study by phone, email, or in person with or without a withdrawal explanation. Study participation comes with an underlying assumption that participants will voluntarily participate (Caserio & Tracco, 2018). I did not offer any compensation or incentives for participation in this study. Participants should understand and acknowledge their voluntary participation in a research study prior to engaging in

interviews (Spillane et al., 2017). I included language in the informed consent form to notify the SME leaders that their participation in this study is voluntary, without incentives or compensation. I provided the SME leaders a 1-2-page executive summary of the findings after completing the study. The researcher must maintain privacy, discretion, and consent of the participants during the analyzation of participants' explicit and implicit meanings (Antes, 2014; Moustakas, 1994; Patton, 2015). The strategy used to ensure participant confidentiality was alphanumeric codes. In the interview transcripts and field notes, I used alphanumeric codes, such as P1, P2, P3, P4, P5, and P6 to represent the participants' names. I used the alphanumeric codes to remove all personal identifiers of the participants from the published study and protect their confidentiality.

Research objectives must meet the criteria of applicable laws, professional conduct, practices, and institutional regulations (Antes, 2014). My credentials included the completion of the NIH Office of Extramural Research's web-based training course to supplement my application for Walden University's IRB approval. Contact with participants occured through direct communication with various manufacturing SMEs on the East and West Coast of the United States. I obtained the contact information of the participants from the SME leader or owner through a signed letter of cooperation (see Appendix B). I explained to participating SME leaders that accurate documentation is a crucial component upon the commencement of the data collection process. I obtained the letter of cooperation (see Appendix B) and informed consent form before data collection occured to ensured adherence to ethical research standards.

Qualitative researchers are aware that conducting the audit procedure requires time and effort yet acknowledge its value in terms of increasing and establishing quality (de Kleijn & Van Leeuwen, 2018). All information, data, and research records will remain in a locked safe, and all digital data will reside on my password-protected personal computer for 5 years. The measures to ensure confidentiality and confidentiality will include the destruction of all information that may link the participants to the study by erasing all electronic data, information, study documentation, and shred all paper-copy reports after 5 years.

Data Collection Instruments

A researcher conducting a qualitative, case study is the primary data collection instrument (Yin, 2018). I am the primary data collection instrument for the study. Qualitative researchers typically use semistructured interviews, observation, focus groups, or a review of relevant documents as data collection instruments (Finlay, 2014). I used semistructured interviews and a review of relevant company documents as data collection instruments.

Researchers use semistructured interviews to collect information relative to the research topic while considering the skills of interviewing to ensure the quality of obtained data, thereby becoming a powerful tool to understand individuals' thoughts, beliefs, and experiences-(DeJonckheere & Vaughn, 2019). Researchers use semistructured interviews to ask open-ended questions that result in an in-depth inquiry of a phenomenon (Finlay, 2014; Moustakas, 1994). I engaged the participants in open

dialog to collect rich data through the use of semistructured interviews. After obtaining Walden University IRB approval and obtaining informed consent from the participants, I followed an interview protocol (see Appendix A) to conduct the semistructured interviews. The participant time commitment is approximately 45-60 minutes for the initial interview and approximately 30 minutes for the member checking session. During semistructured interviews, the researchers should allow the participants to openly share their knowledge in response to interview questions in alignment with the overarching research question (Marshall & Rossman, 2016; Porter et al., 2016). I allowed the participants to share their expertise and knowledge regarding the strategies they used to implement ERP systems by answering interview questions that align with central research question of this study. I asked follow-up questions if needed to gain additional clarity. I engaged the participants in member checking to allow them the opportunity to verify and possibly update my interpretation of their interview responses.

A dependable interview protocol is key to quality interview data (Yeong et al., 2018). I used an interview protocol to maintain a consistent interview process (see Appendix A). An effective interview protocol contains reminder statements for the researcher to remember to discuss the informed consent form, document the time and date of the interview, and ask the interview questions in the same order for all interviews (Porter et al., 2016). I used the interview protocol to ensure I discuss the informed consent form prior to the asking of interview questions, record the time and date of the interview, and ask the interview questions in the same order for all the interviews (see

Appendix A). The purpose of the interview protocol is to conduct every interview methodically and to bring forth useful information from SME leaders using ERP systems (see Appendix A).

Researchers should audio record the interviews for transcription purposes if possible (Porter et al., 2016). I audio recorded the participants' responses, with permission, using a iPad 2020 tablet and an iPhone 12 mobile phone. I concluded the interviews by thanking the participants and scheduling the follow up member-checking session. After each interview, I transcribed the audio recordings, and analyzed the participants' responses for themes and patterns. Coding is the process of organizing answers from interview data to create themes for a research study. I organized the participants' responses to the interview questions and my reflective notes into categories before coding. I used QSR NVivo 12 software during interpretation of data and coding to assist in theme recognition. I classified participants by alphanumeric codes to ensure their confidentiality and the protection of their identity. Researchers establish credibility by coding the data based on the themes that emerged from participants' responses (Elo et al., 2014). I coded the data based on the emergent themes to improve the credibility of the data.

A review of relevant company documents is a means for researchers conducting a qualitative case study to collect valuable data (Fusch & Ness, 2015; Yin, 2018). Researchers use data collected from company documents as a second source of evidence as well as to validate the information collected from the participants during the interviews

(Morse, 2015. I used document review as a data collection instrument in this study. I used the data collected from pertinent company documents to engage in methodological triangulation to crosscheck the validity of the interview data. I gained access to the company documents through the owner or authorized official of each SME signing a letter of cooperation (see Appendix B). I requested documentation, such as ERP implementation plans, project costs, strategic policies for engaging ERP vendors, ERP training policies, ERP organizational integration measures, and ERP implementation metrics. In addition to reviewing the documents received from the SME leaders, I reviewed public records from various sources, such as company websites, public annual reports, and news articles as part of the document collection process.

Member checking is frequently used in qualitative research to maintain validity and is the process in which the researcher asks one or more participants in the study to check the accuracy of the account (Candela, 2019). Member checking is one way of achieving transactional validity, which has been heralded as a more robust version of validity reached through triangulation (Caretta & Pérez, 2019). With the member checking method, the research subject is asked to verify the completeness and accuracy of an interview transcript to ensure the transcript truthfully reflects the meaning and purpose of the subject's contribution (Johnson et al., 2020).

I transcribed each interview recording, analyzed the participants' responses, developed a 1-2-page summary of my interpretation of their responses, and met in a follow-up session with the participants allowing them the opportunity to validate and

possibly update my interpretation of their answers to the interview questions. During the member-checking sessions, I asked the participants if they had additional information to add to further my ability to reach data saturation. Harvey (2015) noted that member checking is a means for researchers to increase the dependability, credibility, and trustworthiness of the data and the findings of a study. I used member checking to increase the dependability of the data and the credibility of the findings of this study. The semistructured interviews and document reviews were a means to collect a plethora of evidence to engage in methodological triangulation and ensure the basis of the findings is dependable, credible, saturated data.

Data Collection Technique

Researchers conducting a qualitative method study use a variety of data collection techniques, such as semistructured interviews, a review of relevant documents, on-site observations, and focus groups (Finlay, 2014; Willgens et al., 2016; Yin, 2018). In this study, I used semistructured interviews and document review. Researchers use analytic semistructured interviews to record dialogue between researcher and participant(s), by using guided and flexible interview protocols, supplemented by follow-up questions, probes and comments (DeJonckheere & Vaughn, 2019; Evans & Lewis, 2018).

Prior to engaging participants in interviews, ethical researchers obtain IRB approval from the governing body and obtain informed consent from the participants (Miracle, 2016). I obtained Walden University IRB approval and informed consent from the participants prior to conducting the semistructured interviews. Researchers using an

interview protocol as a guide should consider the salience of events, attributes, and experiences of participants as well as the structure of what is normal, perceptions of cause and effect, and views about sensitive topics (Jiménez & Orozco, 2021). The use of an interview protocol is a means for researchers to reduce researcher bias and improve the experience for the participants (Marshall & Rossman, 2016). I used an interview protocol as a guide to ensure a consistent process among all the interviews, remain objective during the interviews, and improve the flow of the interview in consideration of the participants time and effort (see Appendix A).

The use of an interview protocol is a means for researchers to reduce the chance of inserting their personal worldview into the questioning of participants (Marshall & Rossman, 2016). I adhered to a strict interview protocol to avoid injecting my personal worldview during the interviews (see Appendix A). The use of an interview protocol reduces the researcher's tendency to rely on their thoughts or expertise regarding the topic of study (Finlay, 2014). I minimized researcher bias by separating my personal preferences and expertise on ERP strategy implementation by adhering to an interview protocol. The purpose of using the interview protocol is to conduct every interview methodically and to bring forth useful information from SME leaders using ERP systems (see Appendix A).

Researchers gain access to potential participants by gaining the approval of organizational leaders (Lund et al., 2014). I gained access to participants as well as company documents through the owner or authorized official of each company signing

the letter of cooperation (see Appendix B). After obtaining Walden University IRB approval, I emailed prospective participants an invitation to participate (see Appendix C) and attach a copy of the informed consent form. If the potential participants met the eligibility criteria, they provided their informed consent to participate in the study by replying *I consent* to the invitation email. During the semistructured interviews, I asked the participants open-ended questions to elicit their responses regarding the strategies they used to implement ERP systems. I used an initial sample of six participants, consisting of two participants from each of four consulting firms. After the second interview in each SME and my review of company documentation, I made a determination of data saturation. I collected data, engaged participants in member checking, and reviewed documents until no new themes or patterns emerged. The interviews with participants lasted approximately 45-60 minutes. The follow-up meeting for member checking lasted approximately 30 minutes.

The current increase in internet usage has introduced web-based technologies such as Skype and Face Time which are now more common alternatives for qualitative interviewing, especially for research participants who are geographically distant from the researchers (Mirick, & Wladkowski, 2019). Researchers should respect the need for privacy and confidentiality with precise protocols even in individual video calls by interviewing in a “private space” without distractions and in a room where participants can speak freely (Marhefka et al., 2020).

The participants could select convenient locations of their choice for the interview to take place, but I suggested a neutral setting, such as a private zoom conference room in a quite location to reduce distractions and ensure the confidentiality of the participants. I recorded the participants' responses to the open-ended interview questions using an iPad 2020 tablet and iPhone 12 cellular phone. At the close of the interviews, I scheduled with each participant the follow-up member-checking session.

Member checking is a means for researchers to improve the dependability and credibility of the data collected using semistructured interviews by affording the participants the opportunity to validate the researcher's interpretation of their responses to the interview questions (Harvey, 2015; Walker, 2012). I used member checking to ensure collecting dependable, credible interview data regarding the strategies SME leaders use to implement ERP systems. I transcribed the audio recordings of the interviews, interpret the participants' responses, write up a 1-2-page summary, and meet once again with the participants. During the member-checking sessions, I asked the participants to verify that I accurately captured their intended conveyance during the interviews and ask if they have additional information to offer.

The use of semistructured interviews as a data collection technique has advantages and disadvantages. Advantages of using semistructured interviews are (a) the ability to gather clinical data for qualitative research purposes, (b) the exploratory interview structure for research in the social sciences, and (c) allows for discovery, with space to follow topical trajectories as the conversation unfolds (DeJonckheere & Vaughn,

2019). An advantage of using face-to-face interviews is the researcher can assess both verbal and nonverbal communication from the participants (Porter et al., 2016). The semi-structured interview method has advantages and disadvantages that researchers should consider such as time required to conduct interviews, costs and accessibility, researcher familiarity with the technology, and relative comfort level of the subject population with the technology is essential factors when conducting research (Hawkins, 2018).

Conducting face-to-face, semistructured interviews can be time consuming, challenging, and somewhat intimidating for novice, student researchers (Porter et al., 2016). I used document reviews as a data collection technique in this study. Researchers conducting a qualitative case study can use the review relevant company documents as a second data source to verify the data collected from the participants during the interviews (Morse, 2015; Yin, 2018). Reviewing pertinent documents is a means for researchers to improve the trustworthiness of the data as well as a means to reach data saturation (Fusch & Ness, 2015). I gained access to proprietary company documents through the owner or authorized official of each SME signing a letter of cooperation (see Appendix B). I requested documentation, such as ERP implementation plans, project costs, strategic policies for engaging ERP vendors, ERP training policies, ERP organizational integration measures, and ERP implementation metrics.

I used the data collected from pertinent company document to engage in methodological triangulation to verify the participants responses recorded during the

interviews and member-checking sessions. In addition to reviewing proprietary company documents received from the SME leaders, I reviewed public records from various sources, such as company websites, public annual reports, and news articles as part of the document collection process.

Advantages and disadvantages exist regarding the use of document reviews as a data collection technique. Reviewing relevant documentation is a means for researchers to validate the interview data, obtain valuable information from multiple sources of evidence, and bolter the trustworthiness of the findings (Sherif, 2018; Yin, 2018). Researchers improve the credibility of the findings by reviewing documents and confirming the truthfulness and accuracy of the participants' responses to interview questions (Fusch & Ness, 2015; Sherif, 2018). Disadvantages of using document reviews are (a) gaining access to proprietary company documents might prove difficult to impossible; (b) the documents might be out-of-date, incomplete, or inaccurate; and (c) reviewing volumes of documentation can be a time-consuming process (Sherif, 2018).

Data Organization Technique

Efficient organization of data is crucial to the data analysis process (Cypress, 2017). A key aspect of data organization is for the researcher to ensure objectivity in data results so that data analysis is not impeded upon, thereby maximizing the value of research outcomes (Williams & Moser, 2019). I began data organization by coding the participants' names using alphanumeric codes, such as P1, P2, P3, and P4. Researchers conducting a qualitative method study need efficient data organization techniques to

secure, arrange, and categorize interview data, document data, notes, audio recordings, and reflective journal information (Yin, 2018). I organized the interview data, member-checking data, and document review data, and my reflective journal notes using Microsoft Word and Excel. Coding and labeling of data are processes researchers undertake to engage in efficient data organization for easy retrieval of the information (Vaughn & Turner, 2016). I organized the interview transcripts using Microsoft Word and organize the data codes and labels using Microsoft Excel. In addition to using Microsoft Word and Excel, I used QSR NVivo 12 for data organization. Researchers organizing qualitative data in preparation for data analysis often use computer-aided qualitative data analysis software (CAQDAS), such as QSR NVivo 12, because of the enhanced ability to organize volumes of data in an efficient manner (Woods et al., 2016). The use of QSR NVivo 12 software is a means for qualitative researchers to organize data, begin data coding, and identify themes and patterns (Vaughn & Turner, 2016). I used QSR NVivo 12 software to assist me in organizing, coding, and labeling data in preparation for data analysis. Furthermore, I used QSR NVivo 12 software during data analysis to verify my identification of themes and patterns to explore the key strategies SME leaders use to implement ERP systems.

Methodological triangulation is a process to compare data collected from multiple sources to improve the dependability of the data and the credibility of the findings (Fusch & Ness, 2015; Joslin & Muller, 2016). I organized data through coding and labeling to facilitate the use of methodological triangulation. As this study is a qualitative, multiple

case study, I organized the data for each case, and then compared the case-specific data, and identified themes and patterns from the entirety of the collected data. I organized and triangulated interview data and document data. Researchers protect the anonymity of participants through withholding names and instead use codes for participants and researchers in all data files such as recordings, transcripts, or translations (Van den Eynden, 2021). I secured electronic data files for this study on a password-protected personal computer until completion of the study. I transferred the files to a password-protected flash drive after completing the study and store the flash drive along with any paper files in a locked safe in my home office for 5 years. I am the only person with access to the files. After the 5-year period, I will delete the electronic files and mechanically shred the paper files.

Data Analysis

Researchers engaging in qualitative data analysis must verify the results through data assembly, interpretation, and conclusion (Amankwaa, 2016; Yin, 2018). Qualitative researchers conducting case study research should thematically analyze and triangulate data collected from multiple sources of evidence (Amankwaa, 2016; Yin, 2018). I engaged in objective thematic analysis of data collected from semistructured interviews, member-checking sessions, and a review of company documents. Analyzing qualitative data is an interpretive process, yet researchers must strive to remain neutral during data analysis to avoid inserting their personal biases or worldviews into the process (Stewart et al., 2017). I maintained a reflective journal to remain aware of my personal biases and

worldviews during data collection and data analysis. I used member checking to mitigate personal biases and strive to ensure the findings resulted from the participants' perspective. My goal was to take a balanced approach, recognizing my personal worldview, yet allow the themes and patterns to emerge from the collected data.

Methodological Triangulation

Researchers conducting case study research use methodological triangulation to compare data collected from multiple sources of evidence to improve the dependability, credibility, and confirmability of the findings (Joslin & Muller, 2016). Methodological triangulation is a process researchers use to crosscheck interview data with data collected from other sources, such as archived documents, company website information, and annual reports (Amankwaa, 2016). During data analysis, I engaged in methodological triangulation to compare interview data with data collected from company documents. I used the data gathered from relevant company documents to validate the data collected from the participants during the semistructured interviews. As this study is a qualitative, multiple case study, I analyzed data for each case, compare the case-specific data, and identify themes and patterns from the entirety of the collected data.

Thematic Data Analysis Sequence

Thematic analysis is an effective method for researchers to analyze information collected from multiple sources to identify themes and patterns (Yin, 2018). Researchers analyzing qualitative data should engage in constant comparisons of interview data with data collected from other sources to identify emergent themes through explanation-

building, time-series analysis, the use of logic models, and cross-case synthesis (Amankwaa, 2016; Yin, 2018). The discovery of emerging topics through thematic analysis consists of six steps: (a) familiarization of data, (b) generating initial codes, (c) identifying themes, (d) reviewing identified issues, (e) defining ideas, and (f) reporting the findings (Varpio et al., 2017). Yin (2018) recommended five data analysis steps consisting of compiling, disassembling, reassembling, interpreting, and concluding data. I thematically analyzed the data, following the five-step process recommended by Yin.

Compiling. Compiling data is a process researchers engage in to gather, organize, become familiar with, and begin coding all the collected data (Yin, 2018). I familiarized myself with the interview data and document data. The assignment of alphanumeric code names for the participants, such as P1, P2, P3, P4, P5, and P6, occurs to protect their identities. I compiled and organized the data using Microsoft Word, Microsoft Excel, and QSR NVivo 12 software. The use of QSR NVivo software is an excellent means for qualitative researchers to compile and organize data in preparation for data disassemble (Oliveira et al., 2016).

Disassembling. Disassembly of the data consists of categorizing and dividing the data into labeled coded fragments (Yin, 2018). Disassembly of the data using QSR NVivo 12 software is the process I engaged in to begin generating initial categories, codes, and labels. Marshall and Rossman (2016) noted that researchers analyzing qualitative data should separate the information into manageable fragments to improve

pattern identification. I divided the data collected into manageable fragments, assign labels and codes, and prepare to reassemble the data into groups.

Reassembling. During data reassembly, the researcher groups the coded data into themes and subthemes (Yin, 2018). I reassembled the data to align emerging information of similar words, phrases, and idea into themes and subthemes, and synthesize the data by further reviewing and aligning emerging patterns. Researchers analyzing qualitative data should compare and contrast emergent themes and subthemes to prepare for data interpretation (Ramani & Mann, 2016). I compared the emergent themes and subtheme and engage in cross-case comparisons in preparation for data interpretation.

Interpreting. Researchers engage in data interpretation to make sense of the emergent themes and patterns and create narratives from the thematic groupings (Van & Struwig, 2017). I interpreted the data to create narratives from the key themes and subthemes that emerge from the interview data and document data. Researchers interpreting qualitative data collected from multiple sources should engage in triangulation (Yin, 2018). During the interpretation phase, I engaged in methodological triangulation by crosschecking the interview data with document data.

Concluding. Researchers conclude data analysis by collating the narratives created during the interpretation phase, exposing the alignment with the conceptual framework, and presenting the results to answer the overarching research question of the study (Yin, 2018). I organized the narratives created during data interpretation to begin concluding data analysis. Clark and Vealé (2018) noted that researchers should conclude

data analysis by presenting the dominant themes and revealing the answer the central research question derived from the key emergent themes. I concluded data analysis by revealing the key strategies that SME leaders use for implementing ERP systems.

Software Plan

Researchers analyzing qualitative data should consider using computer software to improve the accuracy, precision, and reliability of data and the resulting findings (Woods et al., 2016). The use of CAQDAS, such as QSR NVivo 12, is an efficient means for researchers to analyze large data sets (Woods et al., 2016). Qualitative researchers increase the dependability of the data and the credibility of the findings by using CAQDAS to analyze data, insert codes and labels, and identify themes and patterns (Vaughn & Turner, 2016). I used Microsoft Word software to compile and organize the interview transcripts, QSR NVivo 12 software to code and label data, and Microsoft Excel software to organize coded and labeled data. I used QSR NVivo 12 software during data analysis to assist in identifying themes and patterns to explore the key strategies SME leaders use to implement ERP systems. I used QSR NVivo 12 software to reduce the risk of errors, improve the data analysis process, and enhance my ability to interpret the data using a reliable and proven CAQDAS.

Key Themes

Researchers use the key theme findings from a qualitative research study to confirm or refute the findings of previous researchers and provide a link with the findings to the conceptual framework (Unkovic et al., 2016). Stewart et al. (2017) noted that

qualitative researchers should clearly denote the alignment of the key themes with the theory used as lens for the research study. The conceptual framework for this research study is the diffusion of innovation theory originated by Rogers (1993). In the presentation of the findings, I included an explanation of how each key theme aligns or does not align with the diffusion of innovation theory. In the event the findings aligned with a different theory, I explained this alignment in the presentation and discussion of the findings. Comparing the key themes to the findings of previous researchers is a means for a researcher to improve the trustworthiness of the study's results (Amankwaa, 2016; Yin, 2018). I used the findings of this study to support or refute the findings from studies used as sources in the literature review and newly published empirical research studies. I located studies published by researchers from 2018-2019 regarding the implementation of ERP systems and identify the relationship between my findings and their results. I added to the rigor, credibility, and trustworthiness of the findings of this study by comparing the results with the findings of other researchers.

Reliability and Validity

The purpose of this section is to outline the steps used to safeguard against threats to the reliability and validity of the study. Validity and reliability of research and its results are important elements to provide evidence of the quality of research in the organizational field (Hayashi et al., 2019). The protection of human subjects by applying appropriate ethics is essential in all research studies. Qualitative research has ethical

considerations that have a specific meaning due to the in-depth nature of the study process (Arifin, 2018).

Introducing concise guidelines could enhance the clarity of qualitative investigations giving more justice to the importance and beauty of such research (Carminati, 2018). I reviewed peer-reviewed journal articles and seminal sources to identify the procedures to ensure dependability, credibility, and confirmability, and to improve the prospects of future researchers transferring the findings to other cases in other setting.

Dependability

Qualitative researchers seek dependability to ensure the replicability of the study by other researchers (Marshall & Rossman, 2016). The process of ensuring dependability is a function of the researcher reporting precise, consistent findings resulting from an objective and accurate analysis of the data (Houghton et al., 2013). I used member checking to improve the academic rigor and dependability of the research findings of this study. Researchers use member checking to allow the participants the opportunity to validate the researcher's interpretation of their interview responses during a follow-up meeting (Fusch & Ness, 2015). A researcher uses the member-checking session to allow the participants to authenticate a summary of the interview transcript, ask for additional information, and make any needed corrections to the interpreted summary of the interview transcript (Houghton et al., 2013; Walker, 2012). During member checking, I provided the participants my interpretations of their interview responses, gave them the

opportunity to check the accuracy of the interpreted summary, asked them if they have additional information regarding strategies for implementing ERP systems, and made any necessary correction of interpretation errors.

Researchers conducting a qualitative case study must reach data saturation to ensure dependable findings, and data collection ends when the researcher has attained a adequate depth of understanding to build a theory (Braun & Clarke, 2021; Fusch & Ness, 2015; Yin, 2018). To ensure the dependability of the findings, I achieved data saturation by collecting data through semistructured interviews and a review of company documents until no new data, themes, patterns, or information emerges. Methodological triangulation is a procedure researchers engage in through collecting data from multiple sources of evidence and using one set of data to crosscheck another set of data (Walker, 2012).

The use of multiple data sources is a means for researchers to achieve data saturation and enhance the dependability of the study's outcomes (Fusch & Ness, 2015). I engaged in methodological triangulation by collecting data through interviews, document reviews, and examination of ERP systems, and then validating the interview data with the data collected from company documents. I interviewed 4 leaders in each of 4 consulting firms. I collected data until no new themes or patterns emerged; therefore, I attained data saturation.

Credibility

Ensuring credibility is a means for researchers to increase the dependability of the data, the level of accuracy of the findings, and the prospects for future researchers to

transfer the findings to other settings (Abdalla et al., 2018). Qualitative researchers improve the credibility of the findings by engaging participants in member checking, reaching data saturation, and using methodological triangulation to cross check data from one source with data collected from a second source (Abdalla et al., 2018). Reaching data saturation is a necessary task for a researcher conducting a qualitative case study (Fusch & Ness, 2015). Researchers improve the credibility of the interview data by engaging participants in member checking to allow them the opportunity to review the researcher's interpretation of their interview responses, ensuring that the final summations and interpretations are correct (Joslin & Muller, 2016).

I undertook measures to maintain credible research and align the conceptual framework, research questions, data collected, and conclusions of the study. Data synthesizing took place after each interview to fortify the credibility of the study so that I could recognize when data saturation occured. I collected data by conducting semistructured interviews, reviewing company documents, and observing the processes regarding ERP systems implementation. I engaged the participants in member checking to ensure the accuracy of my interpretation of their interview responses. I used methodological trianguation to crosscheck the interview data with the document data. I continued data collection until no new themes or patterns emerge to ensure reaching data saturation as well as ensure the credibility of the findings.

Confirmability

Confirmability is defined as the degree to which the findings of the study can be confirmed by other researchers (Tuval-Mashiach, 2021). Techniques researchers use to improve confirmability include ensuring the dependability and credibility of the findings, using a consistent and documented data collection process, and remaining objective and neutral during data analysis (Guest et al., 2006). The confirmability of a study improves when the researcher aligns the interview questions with the central research question of the study, asks probing follow-up questions during the interviews, engages the participants in member checking, and collects data from multiple sources of evidence to use methodological triangulation (Cypress, 2017; Rubin & Rubin, 2012).

I delineated and documented each step of the research process to ensure the trustworthiness and accuracy of the data collection and analysis procedures. I asked participants interview questions that aligned with the overarching research question, asked probing follow-up questions, and engaged the participants in member checking to improve the confirmability of the findings of this study. To enhance the confirmability of the conclusions, I collected data from multiple sources of evidence to use methodological triangulation and reach data saturation by continuing data collection efforts until no new themes or patterns emerge. I mitigated personal biases during data interpretation and analysis to allow the findings to emanate from the participants' perspective.

Transferability

Transferability is the degree to which future researchers apply the findings of a study to other cases, contexts, or settings (Korstjens & Moser, 2018). Researchers conducting qualitative case studies must present information from data collection with sufficient clarity, rigor, and trustworthiness to allow a reader or future researcher to judge the transferability of the findings (Yin, 2018).

Transferability is the pertinency of findings to other contexts and is gained through description of study context and assumptions (Nyirenda et al., 2020). Adhering to an interview protocol, meticulously documenting each step of the data collection and analysis process and reaching data saturation are means for researchers to improve the opportunity for a future researcher to make informed decisions about the transferability of the study findings to another case or setting (Houghton et al., 2013). I ensured readers and future researchers have accurate study descriptions through meticulous documentation of the research process, adhering to an interview protocol, and maintaining a reflective journal.

I improved the prospects of a future researcher transferring the findings to another context, case, or setting by ensuring the dependability and credibility of the findings of this research study. I mitigated personal biases during data collection and analysis; present the findings from the participants' perspective, and present reliable and valid outcomes to increase the probability of the transferability of the findings.

Data Saturation

Data saturation is the most employed concept for estimating sample sizes in qualitative research and is reached when no new relevant information emerges with additional interviews (Fofana et al., 2020; Guest et al., 2020). Fusch and Ness (2015) argued that researchers conducting qualitative case studies must collect data until no new themes or patterns emerge to reach data saturation. The determination of an adequate sample size to appropriately address a research question is a fundamental aspect of the data collection process in any context, qualitative or quantitative (Fofana et al., 2020).

Engaging in methodological triangulation and member checking are means for researchers to ensure attaining data saturation (Fusch & Ness, 2015). I collected data through semistructured interviews with SME leaders and reviewing relevant company documents until no new themes or patterns emerge. I began with interviewing 4 participants, consisting of 1 participant in each of four consulting firms in the manufacturing industry and reviewing company documents from their companies. I engaged in methodological triangulation to crosscheck the interview data with data collected from document reviews. I engaged the participants in member checking to allow them the opportunity to validate and update my interpretation of their interview responses. I continued collecting data until the information became repetitious, and further data collection efforts did not result in new information.

Transition and Summary

In Section 2, I restated the purpose of the study, explained my role in the research, discussed the eligibility criteria for participants, and justified the sample size. I explained the data collection instruments, the data organization techniques, and the means to analyze the data. I discussed the measures to ensure credible, dependable, confirmable finding and reach data saturation. I explained the procedures to improve the prospects of future researchers transferring the findings to other cases or setting. Section 3 contains the presentation of the findings, recommendations for action and research, and my overall reflections on the study. In addition, Section 3 includes an explanation of the data collection process, the results of my research, application to professional practice, the implications for social change, and recommendations for further actions of the research study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore the strategies that some manufacturing SME leaders use for implementing ERP systems. The general problem that prompted this research was that more than 50% of SMEs in the manufacturing sector have failed to realize the desired benefits of ERP systems (Pabst et al., 2016). In particular, most SMEs in the manufacturing sector fail to realize the full potential of ERP systems due to implementation failures arising from the schedule and budget overruns. Such implementation failures and the subsequent schedule and budget overruns can be attributed to a lack of effective strategies for implementing ERP systems in the manufacturing context. The data collection process included validating and triangulating information gathered from semistructured interviews, member checking of interpreted interview transcripts, review of company documents, and peer-reviewed journals. My findings indicated that participants used ERP implementations strategies consisting of (a) background analysis of available ERP systems, prior analysis of costs and risks associated with the relevant ERP software, (b) identification of potential stakeholders that include users, vendors, and a dedicated implementation team, and (c) regular communication, collaboration, and coordinated efforts among project stakeholders, and change management strategies. The participants' experiences of ERP implementation projects could benefit other project managers and ERP consultants by

providing insight on effective processes that may help reduce or eliminate poor planning and improve pre- and post-implementation processes.

Presentation of Findings

The research question for this study was: What strategies do some manufacturing SME leaders use for implementing ERP systems? From the research question I presented seven predetermined open-ended interview questions to participants. Participants were identified with a code, such as P1, P2, P3, and P4, to maintain confidentiality, protect participants' identities, and present evidence from participant responses in support of the themes. I identified five themes (a) company culture and business process strategy, (b) diffusion of innovation theory and digital transformation strategies in ERP, (c) planning, managing, and leading strategies, (d) change management strategies in ERP, and (e) methods of implementation\lessons learned. I linked the themes to the literature review and conceptual framework.

Qualitative analysis was conducted using thematic analysis and verified with NVivo version 12 software. After reading through each qualitative data file and familiarizing myself with the content, I embarked on open coding, breaking down the data into meaningful segments called codes. The segments were phrases, sentences, or paragraphs relevant to the overall concept of strategies used in successful ERP implementation in the manufacturing sector. In situations where data segments conveyed similar meanings, I grouped them to form parent open codes. Ninety data segments and 20 open codes were extracted from the data (see Table 3). I conducted a thematic analysis

using Braun and Clarke's (2021) six-step qualitative data analysis process to answer the research question above. First, I began by consolidating all data files into a single folder.

Table 3

Open Code List of Critical Success Factors for ERP Implementation Strategies

Code	Number of participants (N = 4)	Number of data segments included
Revise strategy based on external factors	2	2
Rarely revise overall strategy, focus on execution details	1	1
Evaluate costs and risks of strategy revision first	1	1
Regular communication and coordinated effort	4	11
Difficult in terms of cultural differences	1	3
Manage Risk of Change	4	8
Train potential users	4	4
Targeted communication to specific workgroups	1	1
Identify stakeholders	2	4
Decide on best vendor	4	9
Create a dedicated implementation team	3	5
Clear implementation leadership	1	1
Security Threats and Containment	4	4
Proper Budgeting	4	10
Analyze points of failure	2	10
Background assessment	1	1
Create business plan	2	2
Assess business needs and requirements	2	2
Analyze the essence of an ERP	4	9
Analyze problems facing the organization	2	2

After successfully conducting open coding, I embarked on axial coding, which involved grouping open codes that conveyed similar meanings and assigning them an

identifying name. In total, seven axial codes were extracted from the data. The seven axial codes extracted from the data, which later formed the key themes in this study, are displayed in Table 4.

Table 4

Axial Codes List of Critical Success Factors for ERP Implementation Strategies

Axial Code	Open Code
Revising project strategy	Revise strategy based on external factors
	Rarely revise overall strategy, focus on execution details
	Evaluate costs and risks of strategy revision first
Regular communication and coordinated effort	Regular communication and coordinated effort
	Difficult in terms of cultural differences
Manage Risk of Change	Manage Risk of Change
	Train potential users
	Targeted communication to specific workgroups
Identify stakeholders and a clear implementation team	Identify stakeholders
	Decide on best vendor
	Create a dedicated implementation team
	Clear implementation leadership
Evaluate Risks and Costs	Security Threats and Containment
	Proper Budgeting
	Analyze points of failure
Consider appropriate legal factors	Consider appropriate legal factors
Background checks	Background assessment
	Create business plan
	Assess business needs and requirements
	Analyze the essence of an ERP
	Analyze problems facing the organization

Theme 1: Company Culture and Business Processes

All participants indicated the need for manufacturing companies to carefully assess the background factors necessitating ERP implementation considering current and future corporate goals. Table 5 is a display of the subthemes of theme one and percentage of use by participants.

Table 5

Subthemes of Theme 1

Subthemes	Percentage of use by Participants
Analysis of background factors	100%
Developing a business plan	100%
Company culture	100%

P1 emphasized the need for manufacturing companies intending to implement ERP first to develop a business plan and evaluate the extent to which implementation of the ERP is necessary to the organization and will assist it in achieving effective logistics management. Notably, P1 stated, "We create a business plan to identify the necessity of being applied the ERP systems, we ask ourselves what we can do to better the process of managing the company and your ERP systems." P1 further indicated that developing a business plan for ERP implementation ensures the company gets the best ERP plan: "So, the ERP implementation and the business plan of the organization work hand-in-hand to provide the best ERP solution for the company moving forward." Additionally, P1 indicated that leaders of manufacturing companies interested in ERP implementation need first to evaluate the problems their businesses face and determine how the implementation of an ERP system will help correct the business defects. P1 stated that

"In business, you view the business plan and incorporate which problems the business have been occurring with how the ERP implementation will help to correct the defective business processes." The sentiments shared by P1 concurred with the findings of Tarhini et al. (2015) and Hayes and Heit (2018). In their study, Tarhini et al. stated that an integrated understanding of CFSs used was critical in successfully implementing ERP. The statements by P1 agree with Hayes and Heit who noted that a background analysis plan for ERP needed to be meticulous and thorough to cover all the required areas. A meticulously drafted analysis plan will help identify barriers and obstacles and the training and software required for a successful ERP implementation. Additionally, Nisula and Pekkola (2012) agreed that creating a strategic implementation plan was the first critical step of ERP implementation because stakeholders could identify ERP fail triggers before the actual implementation.

P2 stated that business needs and requirements must be clearly defined before ERP implementation: "Clearly define and prioritize business needs and requirements." In their follow-up email, P2 further reiterated that business leaders must first understand the need for ERP software before implementing it. "You want to understand what is driving the need for the software. What is the organizations' company culture?" P2 also added that specifying the need for ERP implementation earlier on was imperative. According to P2, the 'why' question refers to the rationale behind implementing ERP software. As such, this 'why' question must be answered earlier before any decision to implement an

ERP is made. P2 stated “The ‘why’ must be concrete initially as this must be defined early on."

P3 reiterated the 'why' question and the importance of answering it before diving into ERP implementation. According to P3, it is essential to determine why the company should implement an ERP and the core benefits derived from the pending implementation. P3 stated as follows regarding the essence of ERP implementation:

> What we strive for in the beginning is to have clear communication particularly around the ‘why’: why is the company doing the project. What are the benefits of the pending implementation? We try to distill those benefits down to individual functional areas.

While research on ERP implementation is sparse, P3 and P2 cited different studies in the literature. They mentioned Mehrjerdi’s (2010) findings that governments and other SMEs implemented ERP to enhance administrative control in the monitoring of orders, materials, and dissemination of information critical in management. Bharathi and Mandal (2015) stated that SMEs adopted and implemented ERP based on the services they sought to improve or what they wanted to accomplish. For instance, Bharathi and Mandal found that some SMEs adopted ERP cloud software because of its role in cutting operational costs and information security. Therefore, answering the 'why' question provides a clear guideline of how stakeholders in the manufacturing sector approach the background analysis of ERP before implementation. Wunderlich et al. (2014) and Nisula and Pekkola (2012) stated that identifying what to improve or change, security,

performance, and cost of ERP implementation compared to expected return will help stakeholders in the manufacturing sector decide whether it is worth the trouble.

Unlike the other participants, P4 was more specific and explained the essence of ERP implementation within the accounting context. P4 gave one of the reasons for ERP implementation as the need to automate a company's accounting processes: "One of the reasons companies choose to move their processes to ERP systems is because they want to automate their accounting processes." P4 also indicated that ERP implementation is essential to assist organizations in migrating from legacy systems to modern cutting-edge and open-source ERP systems within the accounting context. P4 attributed this migration to open-source systems being better than traditional legacy systems, which mainly include QuickBooks and homegrown spreadsheets: "Open-sourced software is better to use than a legacy system. Legacy systems usually consist of QuickBooks or homegrown excel spreadsheets." Lastly, P4 stated that the need to conduct a background evaluation is the responsibility of the organization implementing the ERP system and the ERP vendors. P4 faulted most contemporary ERP vendors for failing to take time to understand their client's business processes and goals properly: "Most companies do not take the time to understand the client's business processes and organizational goals thoroughly."

Theme 2: Diffusion of Innovation Theory and Digital Transformation in ERP

All four participants agreed that evaluating the costs and risks of ERP implementation are necessary before manufacturing company leaders dive straight into

project implementation. Bharathi and Mandal (2015) noted that before ERP implementation, SMEs needed to examine and consider critical factors such as cost, security, performance, and ERP functionality. Being an IT infrastructure, Ravi and Diatha Krishna (2013) and Temur and Bolat (2018) reported that factors such as cost efficiencies, control, and consistency in the execution of ERP software should be looked at by stakeholders before any implementation is done. Table 6 is a display of the subthemes of theme two and percentage of use by participants.

Table 6

Subthemes of Theme 2

Subthemes	Percentage of use by Participants
Cost efficiencies, control, and consistency	75%
Evaluating various risks and their containment	75%
Evaluating the costs and risks of ERP implementation	100%

Notably, the participants indicated evaluating various risks and their containment – threats to system security, points of failure, budget risks, and risks associated with resistance to change – as important best practices for successful ERP implementation. The findings of Godse and Mulik (2009) and Seethamraju (2015) supported the participant responses that expenses associated with installing new IT infrastructure to support ERP in terms of employee training and software upgrades maintenance. In terms of system security, all participants generally indicated that vendors of ERP systems were responsible for their software security. P2 highlighted that cyber security was an essential

consideration for ERP implementers. However, P2 argued that most ERP vendors host is also responsible for these systems' security since they host the software themselves. Notably, P2 stated as follows:

> The vendors that create the software usually host the systems themselves. So, the cyber security of the software generally comes with the purchase. Cyber security is one of the areas I am weakest in, but from what I understand, most companies don't shift all of their processes into one ERP System. Generally, they split them between vendors something like 80/20 percentagewise. If you are a cannabis producer in the U.S., there is a particular ERP system that they are required to use, which traces the lots by seed so that they can be tracked from grower to factory.

Similar to P2's statement on system security, Hsu et al. (2015) contended that vendors' involvement in co-creating value for customers was critical in EPR security. Seethamraju (2015) reiterated that involving vendors when creating value for customers using ERP improved its performance and enhanced its security due to the manufacturer's easy access to the vendor's security system and lower costs of improving on vendor's security features. However, frequent software breakdown and damaged vendor reputation increased the manufacturer's risk of breach.

Similarly, P3 reported that the company they worked for had subscribed to Plex's ERP software, which is only offered in a software-as-a-service rather than a complete product. As such, as Plex's client, the company P3 worked for did not involve itself in

matters cyber security of their ERP software. Instead, the responsibility of ensuring the system's security was laid on the part of Plex. Notably, P3 stated:

> We don't usually get involved in the cyber security portion of the software because Plex's model is SaaS. Plex is responsible for running their software, and the customers use it as a cloud application. We used to use NetSuite, but we didn't believe their manufacturing functionality was robust enough.

P4 acknowledged that ERP software is sold as a SaaS and customized to meet the client's specific needs in their submission. Cyber security threats are not a big concern for clients since ERP vendors manage such issues. P4 started as follows: "Cyber security would not be an issue because the software is sold can be customized 100% for the client's needs." Additionally, P4 considered the potential impact of emerging technologies such as blockchain on the cyber security of ERP systems: "is getting better and better as blockchain will help minimize security risk since every user is recorded on the blockchain." Similar to P4, existing literature indicated that the collaboration between software vendors and organizational leaders enhances the system's security features. Bharathi and Mandal (2015), Chen et al. (2015), Essila (2018), and Hsu et al. (2015) opined that adopting SaaS to work with ERP systems meant a closer working relationship between companies and vendors, which enhanced the security of manufacturer information in addition to helping SME startups effectively compete with already established businesses. Nonetheless, ERP systems can bring various advantages to organizations regarding system and business perspectives (Amini, & Abukari, 2020).

Separate from cyber security risks, P2 highlighted several points of failure that could lead to unsuccessful ERP implementations among manufacturing companies. According to P2, several factors that could result in unsuccessful ERP implementation include faulty software, unrealistic ERP expectations, a tendency to jump right into performance without properly conducting a background needs assessment and allocating appropriate budget and time to ERP implementation. Pelphrey (2015) emphasized these factors, who described that the inability of stakeholders to conduct thorough market analysis before implementation and failures in ERP software hindered its implementation. P2 noted that an ERP implementation failure does not occur suddenly. Instead, such a failure is the result of a build-up of a series of mistakes on the part of either the client or the ERP vendor or both: "ERP failures happen slowly and over time. ERP failure is a lot like death by a thousand paper cuts. It is usually a series or sequence of activities that cause failure."

P2 also noted that most client executives tend to develop unrealistic expectations regarding the performance of the ERP in terms of company sales. When such expectations are not met, the ERP system is considered to have failed: P2 stated, "Unrealistic expectations: Overstated benefits and downplayed risk. The sales cycle is where this usually occurs. Executives are vulnerable to creating unrealistic expectations." However, P2 did not elaborate more on examples of executives' unrealistic expectations that are likely to lead to ERP implementation failure. Kähkönen et al. (2017) and Umar et

al. (2016) confirmed this finding in that many ERP implementation failures resulted from cost and schedule overruns and unrealistic objectives.

In connection with unrealistic expectations, P2 noted that ERP implementation failure could be attributed to the allocation of too much money and time to ERP implementation, failure to assess the return on assets of the ERP system properly, and the general failure to evaluate the risk associated with disruption of ERP implementation. Specifically, P2 stated, "The root cause of ERP failure are a few factors: too much time and money spent, not enough ROI on the implementation, and the cost of operational disruption and not addressing the risk that leads to operational disruption." Iivari (2014) added that failures in ERP implementation were due to the complexity associated with ERP software, originality of the software, and radicalness associated with ERP. Lastly, P2 noted that implementation failures could be attributed to implementers failing to identify and correct mistakes earlier enough. According to P2, after a company has spent large amounts of money on an ERP project, implementation failure would be the company executives' last expectation. As such, putting in place contingency measures to course-correct any potential sources of failure is paramount.

After spending ample amounts of money and resources, ERP failure is the last thing any company wants to endure. Even so, most digital transformations fail by missing the opportunity to course-correct when necessary. For this reason, many companies are catching onto the best practice of performing a project health check.

Lastly, participants indicated that the effective implementation of ERP systems in the contemporary manufacturing context depended on proper budgeting techniques. In their initial interview, P2 stated that proper budgeting included setting aside a contingency budget of at least 15% of the entire cost of ERP implementation. The purpose of the contingency budget, according to P2, is to take care of any budget overruns that may be encountered during EPR implementation: "There are a few things we do, and one is to have a contingency budget in place, typically 15%, to ensure any potential extra budget costs are taken care of effectively." P4, who emphasized that setting aside a contingency budget was necessary to ensure any errors in implementation can be corrected without running into budget constraints, raised similar contentions. P4 stated, "We also allocate a contingency budget for how much each section of the process would cost to correct. Everything has a budget; if you don't have a budget, the budget will go too long, and unnecessary costs will occur."

P2 indicated that before embarking on ERP implementation, the vendor company should gather data on the costs of data migration and other expenses about staffing; "We also gather the data migration cost as well as any internal cost as it pertains to staff and the organization using some of their people for the project."

In their second interview, P1 acknowledged that ERP systems are expensive, and as such, implementers and ERP project managers should conduct cost risk analysis before implementation. Based on P1's sentiments, ERP implementation should only be pursued if the budget risk is within the acceptable margins: " ERP implementations cost a lot of

money, and if you have the finances to you should calculate the risk of implementation before moving forward." P1 also cited an experience where their company had expended heavy costs in ERP implementation, which he attributed to too many procedures to be followed during implementation, stating, "I compare with the current cost that I have with too much process."

P3 held a different view from the rest. Besides setting aside a contingency budget plan and performing budget risk assessment, P3 indicated that manufacturing companies needed to consider certain factors characteristic of the manufacturing sector. In their submission, P3 used an example from their company where time zones added complexity and increased the company's ERP implementation budget. Notably, P3 contended that implementing their company's ERP system required regular physical meetings. Considering a 6-hour difference between manufacturing headquarters and that physical meetings were necessary during implementation, the company had to include travel costs in the initial ERP implementation budget. The views by P3 were reiterated by Hwang (2018), who posited that the success of contingency budget in ERP implementation, planning, improving employee working, and correlation skills facilitated ERP implementation. P3 noted that enhanced globalized partnerships and value networks between SMEs and management and employees facilitated effective ERP implementation in regular meetings. Specifically, P3 stated as follows:

> One of our customers was headquartered out of Michigan, so they were in the Eastern Time zone. The imprint was global, and the project we were working on

> was predominantly eastern and Western Europe-based. There is a 6-hour difference which is manageable, but it made sense to be onsite for this implementation, so travel was a budget that needed to be allocated for the project. When you travel, the stays are extensive, going for weeks at a time.

Findings regarding the second theme indicate the essence of evaluating costs and risks associated with ERP implementation to avoid shocks when the project is already underway. Notably, risks include cyber security threats, which may be overcome by leveraging the cyber security measures implemented by ERP vendors in situations where the ERP system is implemented as a SaaS. Risks also include points of failure, which the company in question must consider and address before conducting the actual implementation. Topics of failure include unrealistic expectations by company CEOs, improper budgeting, and the inability to conduct a risk assessment before implementation. Lastly, implementation costs should be better captured in a budget dedicated to ERP implementation.

Most importantly, apart from the typical budget of ERP implementation, a contingency budget must be set aside to take care of unexpected occurrences. It is also essential that ERP project planners consider any unique factors that may induce budgetary fluctuations. For instance, in P3's case, travel costs had to be included in the ERP implementation budget since physical meetings were imperative.

Theme 3: Planning, Managing, and Leading

Most of the participants indicated that effective ERP implementation depended on the company's ability to identify potential stakeholders and select a dedicated team to conduct the actual performance. The main stakeholders that participants must determine, as per the participants, include the implementers, users, and vendors. Table 7 is a display of the subthemes of theme three and percentage of use by participants.

Table 7

Subthemes of Theme 3

Subthemes	Percentage of use by Participants
Stakeholder Identification	100%
dedicated team/key players	100%
Team leadership	100%

P2 stated that it was important that the key players in the implementation be known when implementing an ERP system and their roles designated. P2 also used the example of a person who goes on maternity leave as a crucial player in ERP implementation. According to P2, a scenario where a key player becomes unavailable derails the implementation process. P2 stated, "Knowing your key players and their role in the implementation is crucial. A person on maternity leave is a crucial player, which derails the entire project."

Participants also indicated that ERP implementation required a dedicated team of implementers who were not overburdened with other roles. According to P2, ERP implementation is a full-time process; hence implementers are expected to be fully committed to the implementation process and not be handling any other duties apart from

ERP implementation. As such, identification of a dedicated team of implementers is imperative for successful ERP implementation: P2 stated, "The implementation is a full-time thing, it is not part-time. There have to be people dedicated solely to the implementation." In another separate interview, P2 also emphasized the need for a dedicated implementation team that works full-time instead of a part-time implementation team. According to P2, a part-time implementation plan entails waiting for something wrong with the ERP system then hiring experts to fix the mess. Using such an approach, according to P2, may result in more significant implementation costs on the part of the company: "A dedicated team that only focuses on the implementation is another critical factor that will help ensure project success. Having experts come in to fix what has gone wrong on implementation will cost more." P2 also added,

> The agile approach of having periodic check-ins performed by an independent, third-party consultant has acted as the guardrails to countless projects, helping more and more businesses reach transformation success. Rather than hiring a dedicated consultant from start to finish, it's a way to bring in an objective eye to identify any potential risks and pain points that could throw your implementations for a loop.

P3 further emphasizes the need for a dedicated implementation team. According to P3, "there should be a team specially dedicated to the success of the ERP implementation that is not also burdened with the task of running the organization in their respective roles."

In a second interview, P4 hinted at the essence of having a clear leadership structure for implementing the ERP system. According to P4, leadership should be clearly defined on the client and ERP vendor sides. Supporting P4's observation, Shao et al. (2017) viewed effective leadership as an essential ingredient in the successful implementation of ERP. Pabst et al. (2016) and Shao et al. explained that value-based leaders influenced the quality and efficiency of ERP implementation through their leadership skills. P4 proposed a three-tier leadership structure on the vendor side consisting of the technical, project, and functional. P4 suggested that leadership be assigned to the subject matter expert, project sponsor, and business owner on the client-side. Notably, P4 stated as follows: "Every project has a functional lead, a technical lead, and a project lead. On the client's side, they have the subject matter expert (SME), the business owner, and the sponsor." Confirming this observation, Pabst et al. discussed that to guide effective implementation of ERP, leaders in all cadres must understand the importance of CSFs in ERP, identify implementation strategies, and devise ways to avoid ERP trigger failures for a successful implementation. From a different angle, Pabst et al. established that a lack of effective leadership catalyzed the unsuccessful implementation of ERP. According to Pabst et al., lack of effective executive and team leadership resulted in number of ERP implementation projects failing. Drummond et al. (2017) examined that a lack of commitment to leadership heightened the probability of failing to succeed. These findings indicate the importance of both executive and team leadership in successfully implementing ERP.

Participants also hinted at the importance of having subject matter experts as part of the ERP implementation team. In the context of this analysis, subject matter experts have authority in the subject of ERP procurement and implementation. P2 stated that "Subject matter experts and key decision-makers are crucial to project success." P3 elaborated more on a subject matter expert in the implementation process. According to P3, the subject matter expert mainly conducts steering change concerning ERP adoption and implementation in the client company. Consequently, P3 argued that, if possible, a subject matter expert should be involved 100% of the time in ERP implementation. However, since dedicating 100% of their time to ERP implementation is impractical, P3 recommended that a subject matter expert be involved 50% to 60% of the time on the bare minimum. The subject matter expert role is the function that represents the primary change agent for the client and will need to be involved with the project 50 to 60 % of the time. P3 added: “It would be great if they could devote 100% of the time, but it's just not practical.”

P1 indicated that planning on potential stakeholders starts with their company's Human Resources (HR) department. The HR department in P1's company first begins with documentation on the types of potential system users and how they interact. According to P1, identifying potential users of the system allows the effective management of who gains access to data. P1 stated, "With us, everything starts with HR. This is how we know which users are in the company and how they interact. Next, we manage who will have access to the data within the system."

The final category of stakeholders that must be identified is the vendors. According to some participants, identifying ERP vendors is highly important in successful ERP implementation, yet the most challenging. In one of their series of emails, P2 likened identification of the right ERP vendor to solving a complex puzzle: "Finding the right software solution is like solving a puzzle." P2 further added that while many client organizations know that most of the issues they face in their business operations can be solved using technology, they do not know which type of technology is appropriate for their case. While P2 only presented vendor identification as a challenge, other participants went ahead and suggested solutions on how to select the best vendor. In their third interview, P1 indicated that an integrated ERP system is used in their company. Remarkably, the company has integrated different ERP services from other vendors such as SAP, AX Dynamics, and SQL: "We work with some solutions integrated as SAP, SQL, and AX Dynamics." On the other hand, P3 indicated that their company has an internal procurement team that assesses all available vendors and determines the best vendor based on a scoring system: "Typically there is an internal term that evaluates the vendors in comparison to their business req. Then through a systematic system of scoring, they choose the software is the best fit."

P4, whose company is an ERP vendor, held that client organizations decide on the most appropriate vendor based on the cost of ERP purchase, the scope of ERP needs, and vendor reputation. Seeing the relatively high expenses involved in acquiring an ERP, it is

more than natural to discover the factors that determine a successful implementation of such a solution (Stancu, 2019).

P4 argued that some client organizations, especially smaller ones, may opt for cheaper systems in terms of purchase costs. P4 gave the ODOO ERP system example, which some clients preferred because it was four times more affordable than NetSuite. P4 also recommended that for smaller client organizations, ODOO was preferable over the more expensive NetSuite as it was open-source and customizable; hence could be fine-tuned to suit specific client needs. However, P4 did not address the issue of cyber security of cheaper software such as ODOO and whether a client organization could hold the vendor accountable for any cyber security breaches. P4's complete submission on the choice of software based on cost is as follows:

> Some clients will opt for ODOO because it is four times less expensive than NetSuite. ODOO is an open-sourced ERP platform, so as a consultant, I can come from it to any client I work with on ERP implementation that would like a more affordable approach that is not as costly as NetSuite. Because ODOO is 100% open-sourced, my company can do 100% customizations for the client's project. Cyber Security would not be an issue because the software can be customized 100% for clients' needs. This is a preferable route to buying expensive software and conforming it to the organization's business process.

P4 also indicated that affordability was not the only factor influencing the choice of an ERP system. According to P4, the scope of business operations for which an ERP

system is also intended significantly determines the type of ERP system that a client organization will purchase. P4 gave the example of a client who indicated that they had their technologies and what they were only looking for is to integrate an ERP with the pre-existing technologies: "I have another client that says I have my technologies, and I just need an ERP system that can be integrated with my current system." P4 likened the cheaper ODOO ERP system to the old Pimp my Ride MTV show, whose episodes typically entailed taking a car in poor condition, re-making it, and customizing it to the owner's interests speed fuel efficiency. Similarly, as P4 contends, ODOO allows complete customization of business processes to the client organization's interests at a relatively cheaper cost than more prominent brands like NetSuite. According to P4, complex and more expensive ERP systems are only relevant to more prominent manufacturers with the budget and more significant needs that smaller brands like ODOO cannot exhaustively address.

P4 stated,

> ODOO is like the old MTV show "Pimp my Ride," this is what ODOO does; it dramatically enhances an ERP for an organization to fit their business processes precisely the way they like it. More prominent manufacturers are the ones who will buy an out-of-the-box ERP system and customize that to fit their needs because they have larger budgets.

In their last interview, P4 highlighted the importance of vendor reputation as a critical factor that client organizations consider when purchasing an ERP system.

Seethamraju's (2015) findings support these statements, explaining that vendor reputation influenced SMEs' ERP adoption and implementation decisions. P4 claimed that some vendor organizations are not legitimate; they only use persuasive language to extort more money for subpar or lesser-than-expected services. They stated: "Many consultants will lie and cheat and create a buffer, costing the client more money. In the consulting business, there are honest and dishonest people; dishonest people will do what you call a *switch and bait*." P4 also added that illegitimate ERP vendors would sell 'vanilla' software to their clients. P4 further explained that a 'vanilla' software is an ERP system that has neither been customized nor tailored towards the specific needs of the client organization:

> Many consultants will take a *vanilla* software and have the client pay them more to customize the software. Vanilla software is straight out of the box, and nothing is tailored. It's like getting a car with no paint and no parts.

From P4's contentions, client organizations should pay critical attention to vendors and learn how to differentiate legitimate from illegitimate vendors. While ERP vendors play a crucial role in ERP implementation, according to Seethamraju (2015) and Godse and Mulik (2009), vendor reputation, software type, and availability of vendor support influenced SME ERP adoption and implementation decision.

Theme 4: Change Management Strategies in ERP

All participants indicated that for the effective implementation of ERP systems, change management was imperative. Generally, participants indicated that introducing a

new ERP system that replaces an existing legacy system would probably be welcomed by resistance among stakeholders such as employees and some departmental leaders. These observations are supported by the findings of Ali and Shah (2016), who posited that lack of technical knowledge on the part of employees and unavailability of resources hindered technological acceptance. To overcome such resistance, implementation leaders needed to exercise change management skills. Table 8 is a display of the subthemes of theme four and percentage of use by participants.

Table 8

Subthemes of Theme 4

Subthemes	Percentage of use by Participants
Change management	100%
Organizational buy-in	100%
Digital transformation strategies	100%

P2 reported that getting stakeholders to embrace a new ERP system that represented a significant organizational change can be achieved "through a comprehensive organizational change management strategy and plan." P2 also added that organizations needed to "invest heavily in organizational change."

P2 acknowledged that of all the changes that need to take place in order to get a new ERP system up and running, the hardest change to effect is transforming the stakeholders' mindsets and getting them to accept the new system: "The hardest part of a transformation is the people. How do you get people to understand the new way of working and why the changes are important?" To address this challenge of transforming people's mindsets, recommended that implementation leaders collect views from all

relevant stakeholders, understand each stakeholder group's biases, and attempt to correct the biases by communicating the benefits associated with embracing the new system. Garg (2010) concurred with these recommendations, who established that leaders and managers needed to recognize the social elements within their organizations to effect change and achieve the potential and benefits of implementing ERP. Answering how to overcome the resistance of innovations, Barth and Koch (2019) encouraged the development of entrepreneurial culture, Communication, and training framework to encourage ERP acceptance.

In addition to recognizing its importance, the participants also identified various techniques through which change management can be achieved. First, participants indicated that targeted communication to specific stakeholder groups. According to P2, one change management strategy they used to ensure organization-wide acceptance of the ERP system was targeted communication to specific workgroups. The communication messages to these workgroups mainly focused on the essence of organizational change, the potential benefits of adopting new technology, and how business processes will improve after implementing the ERP system. Notably, P2 stated, "Change management was attained through various communication vehicles, targeted for specific workgroups and individuals, focused on the essence of technology, improvement in business processes, and importance of embracing organizational changes." Bloom et al. (2014) and Garg (2010) established that communication targeted to workers and plant managers was critical in facilitating the acceptance of new technology. Bloom et al. further stated that

using ERP systems in communication improved organizational operations and improved productivity. In another interview, P1 indicated that they achieved change management at their company by practically using the ERP technology to explain to relevant stakeholder groups: "I use the practical technology to explain the simplicity of ERP systems."

P1 indicated that they used performance metrics to illustrate how implementing the ERP system improved business processes: "I create KBDs, metrics, I try to show what is being impacted after implementing a new ERP." Supporting this notion, Bloom et al. (2014) stated that ERP systems could improve communication and improve organizational productivity. The support was also shown by the findings of Chen et al. (2015) and Sağnak and Kazançoğlu (2019) found that leaders and managers used cloud ERP systems to streamline the production process, accounting, distribution, and human resource activities. Banyal et al. (2022) also stated the important role ERP systems play a crucial role in optimizing industry operations, increasing flexibility, eliminating errors and saving time in business processes.

Another critical change management technique that emerged from the findings was potential training users of the ERP systems to ensure they develop adaptable skills to cope with the new changes effectively. P1 reported that in their organization, they commence training immediately after the implementation is over. The essence of training people is to show them how they will be using the system. P1 notably stated that "Once the ERP implementation has been completed, the training begins on the software where we show the end-users how they will be using the new system." According to P2, training

users allows them to understand their role in implementing the new ERP system.

P2 stated, "Training helps people understand what they are going to do to enable that change." This finding supports the study conducted by Gimmon (2014) and Nisula and Pekkola (2012), who found that inadequate training of employees hindered the implementation of ERP. Haddara and Zach (2012) concurred that training of employees and leaders on ERP ensured that they are well prepared to use ERP and contributes positively to the operations of SMEs.

In summary, participants indicated that implementers of ERP systems should incorporate change management techniques in the implementation process. The specific change management techniques that participants reported had worked for include training users on how to use the ERP system to develop adaptable skills for coping with the new change. From P2's perspective, change management was attained through targeted communication on the ERP system and improvement in a business process. According to P1, change management entailed practically demonstrating the importance of ERP technology on business process improvement. As such, change management techniques were found to be important for ensuring that there is organization-wide acceptance of the ERP system and little resistance from certain stakeholder groups.

Theme 5: Methods of Implementation and Lessons Learned

All the participants indicated that communication, collaboration, and coordinated efforts among project stakeholders were effective strategies for ensuring successful ERP implementation in manufacturing firms. According to Bloom et al. (2014), established

communication among workers and between plant managers ensured that all stakeholders were well informed of the innovation. Bloom et al. further presented that information through advanced communication systems enhanced the flow of information, influencing decision-making capability. Table 9 is a display of the subthemes of theme five and percentage of use by participants.

Table 9

Subthemes of Theme 5

Subthemes	Percentage of use by Participants
Communication strategies	100%
Communication channels	100%
Communication benefits	100%

P2 stated that for projects to prosper, it was necessary for implementers to set up a clear communication plan on what should happen in the future regarding project implementation: "Setting up a communication plan to articulate what the future will look like is one of the things that help projects prosper." P3 agreed with P2 that a clear communication plan was imperative and that multiple forms of communication should be implemented right from when the project kicks off until its completion. Notably, P3 stated that the multiple forms of communication should consistently focus on the benefits and rationale behind the ERP project and the project's status at each phase. P3 stated as follows regarding the need for communication among project team members: "Multiple forms of communication. Project kickoff, project status, consistently focused on the benefits, reasons for investing."

In the second interview, P3 further expounded on the specific aspects that stakeholders should communicate during the implementation process. According to P3, Communication must involve the roles and responsibilities that each stakeholder must fulfill, the schedule and workload for each member of the dedicated implementation team, and the expectations regarding each task. Since P3 was a manager of an ERP vendor organization, they emphasized that part of the vendor's role is to issue a detailed implementation plan to their clients regarding the specific tasks that should be executed and the timelines within which the tasks should be completed. According to Chen et al. (2015) and Garg (2010) established, the flexibility provided by the adoption of cloud ERP opened multiple communication channels with different vendors and enhanced productivity. Hsu et al. (2015) also presented that the adoption of cloud ERP enhanced SMEs' flexibility in associating and interacting with vendors. Communicating such a detailed execution plan is intended to clear any doubts and confusion on the part of the client organization:

> Communication of the why, roles and responsibilities, schedule, and expectation of workload, as well as an expectation of task are the main critical success factors on our projects. We employ a very detailed execution plan/project plan along with the task that makes it super clear to the customer what needs to be done and by when?

P4 indicated that ERP vendors had a role in establishing clear communication paths with the client organization to understand its business requirements and involve

stakeholders from the client's side with ERP system design and implementation planning. Notably, P4 stated that as an ERP vending organization, they always requested their client to provide a business requirements document containing what the client wants to have. During ERP system design and implementation planning, they involved a subject matter expert from the client's side in order to improve user adoption since the subject matter is part of the client organization who clearly understands the issues their organization is facing. P4 noted, “Business requirement document (BRD), understand client business and listening to client MSCW (must have, should have, could have and wants/wishes). We are getting SME (subject matter expert) involved with design and setup for better user adoption.”

Participants also indicated that coordinated efforts and full participation of all relevant stakeholders were necessary. P3 emphasized the full participation of relevant internal stakeholders such as client organization departments in the implementation process as this would enable them to learn the technical application of the ERP system. From the perspective of P4, leaving the implementation process to only a few stakeholders would result in the remaining stakeholders not embracing the system and the benefits it brings to the organization: "Heavy emphasis is placed on full participation in cross-functional events (discovery, piloting, testing) to encourage inter-departmental learning and understanding beyond the context of the technical ERP application."

According to P4, implementation success can be achieved by including employees in the implementation process. Implementation leaders must ensure that they

make employees feel part of the implementation process instead of simply dictating to use the ERP system. Specifically, P4 stated, “That way, the employee feels included in the implementation process from beginning to end. We no longer say, ‘Hey, we built this vanilla software, and now you have to live with it. Each step is personalized to the user/client/organization.’”

Apart from coordinated efforts, P3 also indicated that successful implementation of ERP is achieved through collaboration, trust, and interpersonal skills among stakeholders. According to P3, collaboration among stakeholders during goal formulation was one critical success factor that enables their client organizations to implement their ERP systems successfully:

> Collaboratively develop goals and expectations, which were formally communicated in project kickoff and status meetings. Trust and interpersonal relationships amongst the project team are the most important intangible aspects of a successful project. Individuals' lives are being changed, often without a choice. Frequently there are functional areas of the business that are asked to change more than others, or their change requires more effort or ultimately more resources. Commitment to a net *enterprise* gain is critical and often required to overcome individual burdens.

However, P3 pointed out one significant challenge with communication and collaboration their company encountered while implementing an ERP project on an international scale; cultural differences between different countries in which a client

organization's subsidiaries are located. According to P3, their company had to implement an ERP project across multiple subsidiaries located in Italy, Spain, France, the Czech Republic, Germany, and Poland. The main challenge they encountered was whether to roll out the implementation plan according to the initial implementation plan they had developed for the parent company or to develop a unique plan for every subsidiary. Considering the differences in culture between the different countries, a unique implementation plan needed to be developed for every subsidiary. This approach was obviously challenging and significantly increased the scope of work they had to accomplish within a limited schedule. Particularly, P3 stated:

> Another issue we had to tackle was the cultural differences. We implemented the project in Italy, France, Spain, Czechoslovakia, Poland, and Germany, and this was just one wave of the project. I have been working in ERP for manufacturing for over 20 years, and I have learned you have to be very aware of the cultural differences. When you roll out an ERP project, you have to decide whether to roll out a standard template of how to do things, and the answer is yes, that is always what we want to strive for, but then the question turns to how much variability do you want to allow from facility to facility? That's hard when you have a facility in two different geographical locations, for example, Connecticut and one in St. Louis. This becomes more difficult when this is on an international scale.

However, P3 recommended that when manufacturing firms implement ERP across subsidiaries in different geographical locations, understanding the local culture

and norms for each geographical region in which subsidiaries are located is essential to avoid a culture clash. As P3 had previously noted, communication and collaboration among project team members, both from the vendor's and client organization's sides, is important for successful implementation. Cultural differences may thus act as barriers to this collaboration hence resulting in ineffective coordination. They understand that the local culture for each region reduces the instances of culture clash by allowing the implementers to customize the implementation plan to the local tests of individual subsidiaries. For instance, P3 noted that in France, project stakeholders like discussing in detail important aspects of the project, while in the United States, stakeholders simply want to be told what to do. Transferring the high-power distance approach to the French context may thus lead to resistance to ERP implementation or reduced user adoption. P3 stated,

> Understanding cultural norms when dealing with other countries will help implementation to go easier. The French, for example, like to debate and discuss in great length everything such as the right way to perform a particular task, whereas, in the United States, they do not wish to discuss every detail of the implementation just want to be told what the right thing to do is by the consulting firm/software vendor. In the west, manufacturing consists primarily of aerospace and cannabis; the south-east is automotive, some aerospace in the north-east. Ultimately, our goal is to target the client's problem and bring a collaborative solution with that customer to the table.

While this theme provides a detailed exploration of communication, collaboration, and coordinated efforts in ERP implementation, it is evident that the literature confirming or disconfirming this finding is very limited. Most of the reviewed literature supports the significance of communication in facilitating ERP acceptance, implementation, and usage. Therefore, these findings add knowledge to the existing literature on the impacts of coordinated efforts in the effective implementation of ERP software systems.

Applications to Professional Practice

The findings from the study could be of value and contribute to ERP implementation practices by increasing ERP project teams' knowledge and offer practical approaches for improving ERP processes during the implementation phase that create lasting changes for the organization. Despite more than 20 years of experience concerning the adoption and implementation of ERP systems in organizations, ERP success is still elusive to many organizations. Although some successful ERP stories have been published, the failure rate of ERP systems is high (Alkawsi et al., 2016).

The themes, background analysis for ERP implementation practices, and preliminary analysis for costs and risks associated with specific ERP software are strategies worth adopting. The participants in this study presented that many SMEs failed to realize the benefits of ERP because they did not conduct a background analysis prior to implementation (i.e., unrealistic expectations, overstated benefits, and downplayed risk), or if they did, the background analysis for ERP software to use in manufacturing was

poorly done. Poor background checks are likely to increase the cost of implementing ERP because leaders will have no knowledge or limited knowledge of the type of ERP software compatible with their IT infrastructure, the kinds of employee skills and training needed, and the types of software upgrades required. Therefore, in practice conducting an extensive background analysis on the ERP software will equip SME leaders with much-needed information on ERP implementation, performance, and maintenance. The applicability of these strategies is supported by Tarhini et al. (2015) and Hayes and Heit (2018), who established that a structured background analysis would help manufacturing SME leaders to identify the problems likely to be encountered during implementation and the kind of employee and staff training required so that the SME can benefit from implementing ERP.

Effective leadership, management strategies, and improved communication, collaboration, and coordinated efforts in implementing and using ERP software is a feasible strategy applicable to many SMEs. In the existing literature, Pabst et al. (2016) and Shao et al. (2017) asserted that value-based and profit-oriented leaders are critical in successfully implementing and using ERP. The participants noted, having goal-oriented and visionary leaders who value clear communication, teamwork, and employee collaboration realized the benefits of ERP implementation. Therefore, encouraging communication and collaboration between employees, ERP vendors, and the management will not ease the implementation of ERP but will also enhance its performance allowing SMEs to realize its benefits. In essence, combining good

leadership with accurate information on the anticipated implementation problems and expected costs from background analysis will see SMEs benefit from ERP software.

Implications for Social Change

The implications for positive social change include promoting awareness and training of successful ERP implementation practices that will ensure an ERP software implementation project's success for manufacturing firms in the United States. Although many SMEs have succeeded in implementing ERP software, the benefits accrued from the system could be further enhanced. SME leaders could use the identified implementation strategies to strengthen their manufacturing businesses and better local economies on social change implications. Moreover, effective implementation of ERP software and processes following the suggested strategies may help SMEs lower implementation costs which is reflected to increased business performance and revenue. Enhanced business performance creates employment and encourages growth of complementary businesses with a subsequent improvement in the quality of life of individuals around SMEs businesses. Pryce (2016) and Kurland (2017) posited lives were improved, and unemployment rates reduced when companies improved their performance and increased their productivity.

Recommendations for Action

The integration of various business processes may increase task efficacy when organizations emphasize on knowledge integration with business processes (Nwankpa, 2018). The integration of ERP systems may consist of multiple business units for

business processes to run smoothly both at department and enterprise-level to meet organizational needs. The possibilities of an ERP system may be actualized after its integration into other business applications running in the organization; ERP serves as a backbone (Nwankpa, 2018) The purpose of this study was to explore the strategies that SMEs could use only to enhance the adoption and implementation of ERP software systems and how these strategies could be applied to enhance SME performance. Therefore, based on the themes identified during data analysis, I will provide three recommendations for actions by SME leaders.

The first recommendation is that manufacturing SME leaders should concentrate on conducting a thorough background analysis and investigation of current key process indicators (KPIs), available ERP software systems as they apply to KPIs, and the integrations that will be required to help departments and current technologies integrate seamlessly with the new ERP system being implemented. The interviewed participants noted that many SMEs failed to implement and benefit from ERP systems because they conducted poor background analysis, or none was done at all before implementing prior ERP systems. I recommend that before deciding to adopt an ERP software or new integrations for a current ERP system, SME leaders should conduct a thorough background analysis of their company culture and key business processes, ERP integrations that focus on the problems most likely to be encountered, ERP performance indicators, and the cost of implementation that includes contingency funds. Companies that identify their current KPIs, the ERP software and integrations that will most fit the

identified KPIs. and determine how the end-users of the implemented software will receive training on the new systems will encounter the most successful ERP implementations. Organizations should apply milestones to reach within a certain time frame and this requires a certain level of understanding of KPIs.

The second recommendation for action is that SME leaders should have a change management plan in place. According to the participants, a change management strategy will help ensure user adoption. Change management is the transitioning of individual, teams, and organizations to a future state that demonstrates ownership and value through sustained user adoption of ERP software. By engaging employees in the change management process, organizations can better bring people to the ideal future state of the organization. The benefits of a proper change management strategy for an ERP implementation project include (a) increased productivity: holistic change strategy with an end-user strategy in place will ensure a smoother adoption of the new technology, (b) sustained user adoption: having a change strategy and user adoption plan in place will create greater enthusiasm and adoption by employees, (c) engaged leaders: company leaders will be empowered and equipped with tools to drive their shared vision and understanding for the software implementation across the organization including motivating, aligning, and engaging key stake holders to deal with resistance and connect them to the bigger picture, and (d) streamlined implementations: everyone at all levels of the company will be engaged and inspired.

Third, SME leaders implementing ERP processes should plan, plan, and plan.

Taking notes of lessons learned pre, mid, and post implementation is the number one ingredient of a successful ERP implementation. A clear communication structure between the teams with effective leadership coupled with teamwork and an end goal at the start will see SMEs' successful implementation of ERP software. Based on the study findings, I recommend the following strategies and practices for SME leaders to use while implementing an or re-implementing an ERP system:

- Working backwards helps to establish a proper timeline.
- Start with vision, goals, and get the organization in line with these visions and goals.
- The hardest part of a transformation is the people. It is important to get people to understand the new way of working and why.
- Setting up a communication plan to articulate what the future will look like is one of the things that help projects prosper.
- Know the resistances and the biases that the team has will help as these are CSFs for project implementation success.
- Training helps people understand what they are going to do to enable that change.
- Question current employees fit into the new implementation.
- Go thorough possible scenarios help to mitigate risk factors.

- Digital transformations fail because of the lack of ability to align business processes with the transformation plan. Business alignment keeps implementation goals on course.
- The pandemic has changed so much with how implementations are conducted, and the business alignment is a crucial pre-planning tool
- What tools and techniques are close to your disposal?
- Expectation’s setting is another crucial factor because expectations change.
- People always want to know " What's in it for me?" So, highlight how the system will benefit everyone involved.
- Know the "Why" of every step throughout the project and communicating this to the organization is a CSF.
- Knowing you key players is crucial and the role they play in the implementation.
- The implementation is a full-time thing, it is not part-time. There must be people dedicated solely to the implementation.
- Do a responsible, accountable, consulted and informed (RACI) chart (shows people responsible for the project).
- SMEs and key decision makers are crucial to project success.
- Putting the project on hold or pausing the project is an issue that organizations need to consider.

- Discussing lessons learned throughout the project helps decrease the likely hood of falling out of alignment with the implementation.
- A dedicated team that only focuses on the implementation is another critical factor that will help to ensure project success. Having experts come in to fix what has gone wrong on an implementation will cost more.
- Many organizations treat the implementation as an IT function, but it is an overall business process that is not just siloed to the IT department.
- Digital innovations are a business change not just a technology change. Technology is just how the business gets done.
- Many businesses expect readymade IT solutions that leave the IT department with un-realistic expectations.
- Understanding company culture is important so that the wrong techniques are not applied to the wrong environment.
- How do you avoid implementation fatigue? Learn what motivates the team and focus on positives.
- Runaway projects require transparency.
- Understand the system integrator's personality and how it matches with the company culture. A collaborative approach is necessary.
- Expect change and manage the change.

The findings of this study could be useful to manufacturing firms, leaders, and managers in developing an effective ERP implementation plan that leaders use to focus

on successful implementation guidelines used by some of the most successful firms in their respective industries that will help ensure organizational buy-in of the new implementation processes and ERP software chosen by the operating organization. The research community could use the findings of this study to research and advance knowledge of ERP implementation through design. After publication of my study. I will share a summary of my findings with participants. I will disseminate the research findings with other ERP professionals in the manufacturing field at technical conferences, workshops, and training seminars.

Recommendations for Further Research

Business owners can strategize their processes with ERP systems to gain a competitive edge through integrating workflows and optimizing available resources (Vadivelu et al., 2018). ERPs generally work through integration of current inventory data with financial, human, and sales resource information and this offers companies a chance to generate, in real-time, their product prices, financial reports and maintain efficient resources of individuals, equipment and money (Vadivelu et al., 2018). Researchers probe intensely to decide on a particular set of guidelines that determine CSFs that ascertain the success of ERP implementations. Research literature booms in the parallel between CSF and also between CSF and other contributory factors at the organizational level (Nagpal et al., 2018).

In conducting this study, I found that in ERP implementation CSFs focused primarily on conducting a thorough background analysis on company culture and

processes so that ERP project implementation activities are tailored to the specific requirements of the organization. As well as vendor specificity for their chosen ERP implementation methodology and consultant specificity; a consultants tried and tested strategies for implementation built surrounding the vendor specificity model (Vadivelu et al., 2018).

Obstacles related to the implementation process include large upfront financial investments and conflicts of interest between customer organizations and service provider ERP vendors. Adaptation of business process to evolving ERP modules, vendor lock-in, lack of alignment between business processes and ERP System, difficult to measure and meet return on investment (Sancar Gozukara et al., 2022).

To further increase the understanding of successful strategies used during the implementation process, I recommend future studies focus on:

- Investigating strategic decisions making processes or framework that may provide new insights into implementation error mitigation to increase the effectiveness of chosen processes.
- Exploring the tailoring and optimization of ERP systems and the success parameters that should be set in place to gage the new system.
- Investigating available integrations with current technologies within the organization that will create solid potential to drive value to the organization through smart manufacturing investments.

A study limitation was the sample size for this study of four participants, which limits the transferability and applicability of the findings. Therefore, for further research, I recommend that, in addition to researching a different geographical location, future researchers might also consider conducting the study in multiple geographical locations. With a larger sample size of more than four participants and a diversified geographical location, future researchers could be addressing the problem of limited data and testing the transferability of the results of this study.

In this study I used qualitative methodology with multiple case studies to explore the strategies used by SME leaders to implement ERP software systems. Researchers may also consider extending the research scope beyond a qualitative, multiple case study and conduct a mixed-methods study to gain different perspectives from a quantifiable view and potentially further understand successful ERP implementation strategies through a combination of varying perspectives. Researchers could conduct quantitative research to measure the effectiveness of the identified themes with current implementation processes and correct any errors in their current system before moving forward with their ERP implementation project. Conducting a quantitative study will seek to statistically support or refute the effectiveness of the proposed strategies in helping with the effective implementation of ERP software systems.

Reflections

I have spent over a third of my life pursuing formal education. It was not until I entered the doctoral process journey at Walden did I see what everything I had

encountered in life up to this point was for. The perspective gained during this journey has offered a brighter path for my future on both a personal and professional level.

I found the doctoral study process to be simultaneously demanding, frustrating, invasive, depressing, motivating, progressive, and innovative at the same time; my emotions have ranged from one end of the spectrum to the other. My initial goal was to further my understanding of business processes pertaining to large and medium enterprises in an educational environment. However, in pursuit of this goal, I also gained invaluable skills such as patience, critical thinking and reading skills, regimented self-learning in academic research, synthesis, data analysis, and academic writing. The doctoral study process also helped me become a more grounded individual in life. My research helped me strengthen my communication, emotional intelligence, and time management skills with my cohort and study participants.

I gained a better understanding of ERP software and the different industries that prefer each software. For example, companies using NetSuite ERP are most often found in the United States and the computer software industry. NetSuite ERP is most often used by companies with 50-200 employees and 1M-10M dollars in revenue. Companies that use SAP are also in the computer software industry serving approximately 27,000 companies vs. the only 4,000 plus companies serviced by NetSuite. ODOOs' market share is not that big yet at only 0.13%, with only 219 current customers are in the ERP software category. Microsoft Dynamics also occupies the aforementioned market share with a total of customers. Through my job search and research for this study, I found out

about another ERP process software called SAGE X3 that works primarily for industries such as computer software, information technology, and pharmaceuticals.

I was able to experience an ERP implementation improvement as one of the research participants allowed me to partake in a project where NetSuite had not been implemented correctly. The doctoral journey has been an eye-opening experience. I have had many trying times and have been tested thoroughly to complete this degree. The first challenge was obtaining a first chair that would fit and continue the doctoral study process and coming up with the required business issue to build my study around. Finding a business topic to research took me almost 2 years, simply having a concretely defined business issue to base my research question around. I was still establishing my previous case in the field of information technology, however. I kept being told the problem I was presenting was still a social issue. This led me to lean on my project management knowledge earned when I obtained my MBA and led me to a more specific project management area: ERP. While completing my doctoral study, I received an ERP certification through the University of Scranton in Scranton, PA. I was introduced to the ERP industry, thus the basis for my study topic. I completed the DBA program mainly as a full-time student and wanted something tangible to give interviewing employers upon completing this degree.

Additionally, some of my chairs left the university for other endeavors and a few I did not fit well with; this was the first major challenge as a researcher's first chair is their primary mentor during the doctoral study process as well as the person with the most

approval for each written section before it can be introduced to other members of the committee. I realized the importance of working well with your chair because it can add months and sometimes even years to completing the doctoral study process if you do not fit well. The second challenge was getting my proposal approved at the URR stage. I conflicted with the school about this issue as well. Here was where the most inner effort and motivation came from to move forward with this journey. Dr. Ron Jones is one of the sole reasons I was able to move forward with the DBA process because under their mentorship, my understanding of the rubric was greatly improved, and we worked very well together. Another issue I experienced once my proposal was approved was gathering research participants to collect research data.

I had to ensure an objective approach and manage any personal biases or preconceived ideas on ERP software and the implementation process since my specialization at the University of Scranton was SAP software and my prior knowledge in project management and six sigma methodologies. I set aside my initial perspectives and practices that could have potentially limited the exploration of the research question. I determined my conclusions solely on the facts and evidence I identified through the participants' shared experiences and data analysis. Realizations obtained during the study such as guidelines that ensure success in ERP implementation pre-implementation phase; the different ERP software and which companies at which phases they best suit; why lessons learned are essential; how digital transformations affect the entire organization,

not just the IT department; and a few other cornerstone highlights allowed me to maintain objectivity throughout the study.

The COVID-19 pandemic created unique challenges for collecting data. My initial intent was to meet participants in person and take factory tours of the manufacturing firms for which they were implementing. However, this changed when workplace dynamics in the United States shifted towards remote work and web-conferencing to ensure the public's overall safety and mitigate health risks. I was due to take factory tours under my last participant requirements, but the pandemic made this possibility nonexistent. COVID-19 also caused me to take my focus from only manufacturing firms and only interviewing CIOs and CFOs in California to being able to interview any manufacturing firm and consulting firms hired by manufacturing firms that had experience implementing ERP systems in the United States. Trying to get executives in the c-suite of manufacturing firms to talk to me directly proved to be very difficult and almost impossible. After over a year of searching and asking at least 100 individuals, not one would accept the invitation to participate in the research for this study. The participant requirements that I only speak with c-suite execs at manufacturing firms about ERP implementation proved to be almost all the way incorrect. The requirement that I speak only with the CIO and CFOs of the manufacturing firms was a requirement of the former URR of this study. I felt then that their conditions were not feasible or possible as getting c-suite execs to stop their busy schedule to speak with a doctoral student was not easy; this notion also turned out to be incorrect. I have found that most businesses, not

just manufacturing firms, use ERP consulting firms for most implementation or implementation correction needs during ERP implementation and maintenance.

Most organizations have a CFO who usually hires consultants or hires someone in house. After interviewing with a few CFOs for ERP analyst and NetSuite administrator positions, I found that many employers are interested in the IPAAS ability of ERP software and which integrations they could best incorporate to have the ERP software best serve their organization. Many interviewers wanted candidates to hold ERP administrator knowledge, such as creating reports from scratch and implementing roles and exemptions to determine who had access to different factions within the software. I have developed a greater understanding and perspective of what organizations need from those operating the software and exactly what the software will help improve as it relates to its mission.

Conclusion

ERP software is essentially very diverse accounting software that combines many categories of accounting, ranging from core accounting to inventory, e-commerce, supply chain management, and even business intelligence solutions (Asmuni, 2021). Depending on an organization's project requirements and available software selections, many centralize all financial information into one complete ERP system. The extensive capabilities of ERP software may not be an excellent fit for every company. It may serve companies with more minor operations to use one of the best-integrated breed applications rather than implementing ERP (Asmuni, 2021).

ERP software implementation, when executed correctly, may reduce project completion processes between departments within a company and partnering vendors catering to those with sensitive resources and capital allocation. Implementing ERP software into the organization's structure requires that project implementation teams identify strategies that will ease and encourage a seamless implementation. Systems such as providing time and expenditure tools, human and material resource management, and joint and project billing, project management, task management features, project accounting tools bridge the gap between essential task-oriented project management tools and core accounting software (Asmuni, 2021).

The ease of implementing ERP systems is more prevalent today. However, there is still the possibility of failing to implement processes correctly and effectively in alignment with organizational goals resulting in imminent failures. The underlying issue of this study was that some leaders lack strategies to implement ERP systems properly, and the purpose of this study was to explore enterprise resource planning implementation strategies that SME leaders could use to implement ERP. As a result, the analysis of collected data yielded five themes that the I describe as the most prominent strategies identified by the participants: (a) company culture and business process strategy, (b) diffusion of innovation theory and digital transformation strategies in ERP, (c) planning, managing, and leading strategies, (d) change management strategies in ERP (e) methods of implementation lessons learned. The findings indicated that SME leaders could

effectively implement and benefit from ERP software systems by applying these strategies.

References

Abdalla, M., Oliveira, L. G. L., Azevedo, C. E. F., & Gonzalez, R. K. (2018). Quality in qualitative organizational research: Types of triangulations as a methodological alternative. *Administração: Ensino e Pesquisa*, *19*(1), 66–98. https://doi.org/10.13058/raep.2018.v19n1.578

Ahmad, M. M., & Cuenca, R. P. (2013). Critical success factors for ERP implementation in SMEs. *Robotics and Computer-Integrated Manufacturing*, *29*, 104–111. https://doi.org/10.1016/j.rcim.2012.04.019

Ahmed, Z., Eryilmaz, E., & Alzahrani, A. I. (2022). IS diffusion: A dynamic control and stakeholder perspective. *Information & Management*, *59*(1), 103572. https://doi.org/10.1016/j.im.2021.103572

Akça, Y., & Özer, G. (2014). Diffusion of innovation theory and an implementation on enterprise resource planning systems. *Canadian Center of Science and Education*, *9*(4), 92–114. https://doi.org/10.5539/jbm.v9n4p92

Akter, S., Fosso Wamba, S., & D'Ambra, J. (2017). Enabling service systems by modeling quality. *International Journal of Production Economics*, *37*(1), 2–9. https://doi.org/10.1016/j.ijpe.2016.08.025.

Ali, M. D., & Shah, S. I. (2016). The conceptualization of various aspects of innovation and its relevance to SMEs. *International Journal of Information, Business, and Management*, *8*(4), 88–93. https://www.researchgate.net/profile/Badir-Alwan/publication/343452107_THE_IMPACT_OF_THE_GLOBAL_FINANCIA

L_CRISIS_ON_THE_FAIR_VALUE_ABOUT_JOURNAL_International_Journal_of_Information_Business_and_Management_CONTENTS/links/5f2b03f4458515b7290687f7/THE-IMPACT-OF-THE-GLOBAL-FINANCIAL-CRISIS-ON-THE-FAIR-VALUE-ABOUT-JOURNAL-International-Journal-of-Information-Business-and-Management-CONTENTS.pdf#page=93

Al-Isma'ili, S., Li, M., He, Q., & Shen, J. (2016). Cloud computing services adoption in Australian SMEs: A firm-level investigation. *Pacific Asia Conference on Information Systems 2016 Proceeding*, (pp. 1–11). https://scholars.uow.edu.au/display/publication104124

Alkawsi, G. A., Mahmood, A. K., & Baashar, Y. M. (2016). Factors influencing the adoption of cloud computing in SME: A systematic review. In *Mathematical Sciences and Computing Research (iSMSC), International Symposium on Computing Research*, 220–225. IEEE. https://www.researchgate.net/profile/Gamal-Alkawsi/publication/309327243_Factors_influencing_the_adoption_of_cloud_computing_in_SME_A_systematic_review/links/5faa64b5299bf10f73351cc9/Factors-influencing-the-adoption-of-cloud-computing-in-SME-A-systematic-review.pdf

Al-Lozi, E., & Al-Qirem, R. (2021). Towards the adoption of enterprise resource planning systems (ERP) as an effective teaching tool in higher education institutions. *Academy of Strategic Management Journal, 20*, 1–14.

https://www.proquest.com/scholarly-journals/towards-adoption-enterprise-resource-planning/docview/2541935766/se-2?accountid=14872

Amankwaa, L. (2016). Creating protocols for trustworthiness in qualitative research. *Journal of Cultural Diversity, 23*, 12–127. http://tuckerpub.com

Amini, M., & Abukari, A. M. (2020). ERP systems architecture for the modern age: A review of the state of the art technologies. *Journal of Applied Intelligent Systems and Information Sciences, 1*(2), 70–90. https://doi.org/10.22034/jaisis.2020.232506.1009

Antes, A. L. (2014). A systematic approach to instruction in research ethics. *Accountability in Research, 21*, 50–67. https://doi.org/10.1080/08989621.2013.822269

Antoniadis, I., Tsiakiris, T., & Tsopogloy, S. (2015). Business intelligence during times of crisis: Adoption and usage of ERP systems by SMEs. *Procedia-Social and Behavioral Sciences, 175*, 299–307. https://doi.org/10.1016/j.sbspro.2015.01.1204

Aremu, A. Y., Shahzad, A., & Hassan, S. (2018). Determinants of enterprise resource planning adoption on organizations' performance among medium enterprises. *LogForum: Scientific Journal of Logistics, 14*, 245–255. https://doi.org/10.17270/J.LOG.2018.277

Arifin, S. R. M. (2018). Ethical considerations in qualitative study. *International Journal of Care Scholars, 1*(2), 30–33. https://journals.iium.edu.my/ijcs/index.php/ijcs/article/view/82

Asmuni, I. (2021). Aligning the excellence of accounting software application with a review of the college curriculum. https://www.researchgate.net/profile/Idris-Asmuni/publication/352356230

Baktir, A. C., Ozgovde, A., & Ersoy, C. (2017). How can edge computing benefit from software–defined networking: A survey, use cases & future directions. *IEEE Communications Surveys & Tutorials*, *19*, 2359–2391. https://doi.org/10.1109/COMST.2017.2717482

Bandara, F., & Jayawickrama, U. (2021). Emerging interactions of ERP systems, big data and automotive industry. In *Advances in software engineering, education, and e-learning* (pp. 863–877). Springer. https://link.springer.com/chapter/10.1007/978-3-030-70873-3_62

Banyal, R. K., Rahul, K., & Sati, H. (2022). ERP module functionalities for the food supply chain industries. In *Intelligent sustainable systems* (pp. 595–606). https://link.springer.com/chapter/10.1007/978-981-16-2422-3_47

Barth, C., & Koch, S. (2019). Critical success factors in ERP upgrade projects. *Industrial Management & Data Systems, 119,* 656–675. https://doi.org/10.1108/IMDS–01–2018–0016

Belmont Report. (2003). Ethical principles and guidelines for the protection of human subjects of research. *Manual for Research Ethics Committees*, 126–132. https://doi.org/10.1017/cbo9780511550089.028

Bharathi, S. V., & Mandal, T. (2015). Prioritising and ranking critical factors for sustainable cloud ERP adoption in SMEs. *International Journal of Automation and Logistics, 1*(3), 294. https://doi.org/10.1504/ijal.2015.071723

Bloom, N., Garicano, L., Sadun, R., & Van Reenen, J. (2014). The distinct effects of information technology and communication technology on firm organization. *Management Science, 60(*12), 2859–2885. https://doi.org/10.1287/mnsc.2014.2013

Bradley, J. (2004). *Enterprise resource planning success: A management theory approach to critical success factors* (Doctoral dissertation). Available from ProQuest Dissertations & Theses Global. (UMI No. 3139266)

Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health, 13*(2), 201–216. https://doi.org/10.1080/2159676x.2019.1704846

Bunn, F., Burn, A.-M., Goodman, C., Rait, G., Norton, S., Robinson, L., Schoeman, J., & Brayne, C. (2014). Comorbidity and dementia: A scoping review of the literature. *BMC Medicine, 12*(1). https://doi.org/10.1186/s12916-014-0192-4

Caiazza, R., & Volpe, T. (2017). Innovation and its diffusion: process, actors and actions. *Technology Analysis & Strategic Management, 29*(2), 181–189. https://doi.org/10.1080/09537325.2016.1211262

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing, 25*(8), 652–661. https://doi.org/10.1177/1744987120927206

Candela, A. (2019). Exploring the function of member checking. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2019.3726

Caretta, M. A., & Pérez, M. A. (2019). When participants do not agree: Member checking and challenges to epistemic authority in participatory research. *Field Methods, 31*(4), 359–374. https://doi.org/10.1177/1525822x19866578

Carlsson-Wall, M., Goretzki, L., Hofstedt, J., Kraus, K., & Nilsson, C.-J. (2021). Exploring the implications of cloud-based enterprise resource planning systems for public sector management accountants. *Financial Accountability & Management*. https://doi.org/10.1111/faam.12300

Carminati, L. (2018). Generalizability in qualitative research: A tale of two traditions. *Qualitative Health Research, 28*(13), 2094–2101. https://doi.org/10.1177/1049732318788379

Caserio, C., & Tracco, S. (2018). ERP integration and information quality: Direct and indirect effects. *Annual International Conference on Accounting & Finance*, 25–32. https://doi.org/10.5176/2251–1997_AF18.34

Chatti, H., Radouche, T., & Asfoura, E. (2021). Framework for the evaluation of the ERP implementation success: Case study in SMEs. *Journal of Management*

Information & Decision Sciences, *24*(4). https://www.researchgate.net/profile/Taoufik-Radouche/publication/351774811_FRAMEWORK_FOR_THE_EVALUATION_OF_THE_ERP_IMPLEMENTATION_SUCCESS_CASE_STUDY_IN_SMEs/links/60a8d408a6fdcc6d6266e015/FRAMEWORK-FOR-THE-EVALUATION-OF-THE-ERP-IMPLEMENTATION-SUCCESS-CASE-STUDY-IN-SMEs.pdf

Chen, C.-S., Liang, W.-Y., & Hsu, H.-Y. (2015). A cloud computing platform for ERP applications. *Applied Soft Computing*, *27*, 127–136. https://doi.org/10.1016/j.asoc.2014.11.009

Clark, K. R., & Vealé, B. L. (2018). Strategies to enhance data collection and analysis in qualitative research. *Radiologic Technology*, *89*, 482C–485CT. https://www.ncbi.nlm.nih.gov

Cypress, B. S. (2017). Rigor or reliability and validity in qualitative research: perspectives, strategies, reconceptualization, and recommendations. *Dimensions of Critical Care Nursing*, *36*(4), 253–263. https://doi.org/10.1097/dcc.0000000000000253

Dąbrowski, J. (2017, September). Towards an adaptive framework for goal-oriented strategic decision-making. In *2017 IEEE 25th International Requirements Engineering Conference (RE)* (pp. 538–543). IEEE. https://www.researchgate.net/profile/Jacek-Dabrowski-3/publication/320027392_Towards_an_Adaptive_Framework_for_Goal-

Oriented_Strategic_Decision-Making/links/59d234f0a6fdcc181ad5f3dd/Towards-an-Adaptive-Framework-for-Goal-Oriented-Strategic-Decision-Making.pdf

Dearing, J. W., & Cox, J. G. (2018). Diffusion of innovations theory, principles, and practice. *Health Affairs, 37*(2), 183–190. https://doi.org/10.1377/hlthaff.2017.1104

DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: a balance of relationship and rigour. *Family medicine and community health, 7*(2), e000057. https://doi.org/10.1136/fmch-2018-000057

de Kleijn, R., & Van Leeuwen, A. (2018). Reflections and review on the audit procedure: Guidelines for more transparency. *International Journal of Qualitative Methods, 17*(1), 160940691876321. https://doi.org/10.1177/1609406918763214

Dikko, M. (2016). Establishing construct validity and reliability: Pilot testing of a qualitative interview for research in Takaful (Islamic Insurance). *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2016.2243

Dixit, A. K., & Prakash, O. (2011). A study of issues affecting ERP implementation in SMEs. *International Refereed Research Journal, 2*(2), 77–85. http://journals.pu.edu.pk/journals/index.php/gmr/article/viewFile/4233/2074

Drummond, P., Araujo, F., & Borges, R. (2017). Meeting halfway: Assessing the differences between the perceptions of ERP implementers and end-users. *Business Process Management Journal, 23*(5), 936–956. https://doi.org/10.1108/bpmj-05-2016-0107

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open, 4*(1), 215824401452263. https://doi.org/10.1177/2158244014522633

Essila, J. C. (2018). The impact of enterprise resource planning on job shop manufacturing supply chain management. *IUP Journal of Supply Chain Management, 15*(3), 48–67. https://iupindia.in/SupplyChain_Management.asp

Evans, C., & Lewis, J. (2018). Analysing semi-structured interviews using thematic analysis: Exploring voluntary civic participation among adults. https://doi.org/10.4135/9781526439284

Fiaz, M., Ikram, A., & Ilyas, A. (2018). Enterprise resource planning systems: Digitization of healthcare service quality. *Administrative Sciences, 8*(3), 38. https://doi.org/10.3390/admsci8030038

Fichman, R. G., Dos Santos, B. L., & Zheng, Z. E. (2014). Digital innovation as a fundamental and powerful concept in the information systems curriculum. *MIS Quarterly, 38*(2), 329–343. https://doi.org/10.25300/misq/2014/38.2.01

Finlay, L. (2014). Engaging phenomenological analysis. *Qualitative Research in Psychology, 11*(2), 121–141. https://doi.org/10.1080/14780887.2013.807899

Fofana, F., Bazeley, P., & Regnault, A. (2020). Applying a mixed methods design to test saturation for qualitative data in health outcomes research. *PLOS ONE, 15*(6), e0234898. https://doi.org/10.1371/journal.pone.0234898

Fosso Wamba, S., & Ngai, E. W. T. (2015). Importance of issues related to RFID-enabled healthcare transformation projects: results from a Delphi study. *Production Planning & Control, 26*(1), 19–33. https://doi.org/10.1080/09537287.2013.840015

Fusch, P., & Ness, L. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report, 20*, 1408–1416. https://doi.org/10.1177/1468794107085301

Garg, M. (2010). *Impact of enterprise resource planning on organizational productivity in an information technology organization* (Doctoral Dissertation). Available from ProQuest Dissertations & Theses Global. (UMI No. 3397341)

Garicano, L., Lelarge, C., & Van Reenen, J. (2016). Firm size distortions and the productivity distribution: evidence from France. *American Economic Review, 106*(11), 3439–3479. https://doi.org/10.1257/aer.20130232

Gimmon, E. (2014). Mentoring as a practical training in higher education of entrepreneurship. *Education + Training*, *56*(8/9), 814–825. https://doi.org/10.1108/et-02-2014-0006

Glesne, C. (2015). *Becoming qualitative researchers: An introduction* (5th ed.). Pearson.

Godse, M., & Mulik, S. (2009). An approach for selecting software-as-a-service (SaaS) product. *2009 IEEE International Conference on Cloud Computing* https://doi.org/10.1109/cloud.2009.74

Goertzen, M. J. (2017). Introduction to quantitative research and data. *Library Technology Reports, 53*, 12–18. https://doi.org/10.5860/ltr.53n4

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*, 59–82. https://doi.org/10.1177/1525822X05279903

Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS one, 15*(5), e0232076.

Gupta, S., Misra, S. C., Kock, N., & Roubaud, D. (2018). Organizational, technological and extrinsic factors in the implementation of cloud ERP in SMEs. *Journal of Organizational Change Management, 31*(1), 83–102. https://doi.org/10.1108/jocm-06-2017-0230

Gupta, S., Misra, S. C., Singh, A., Kumar, V., & Kumar, U. (2017). Identification of challenges and their ranking in the implementation of cloud ERP: A comparative study for SMEs and large organizations. *International Journal of Quality & Reliability Management, 34*(7), 1056–1072. https://doi.org/10.1108/ijqrm-09-2015-0133

Haddara, M., Gøthesen, S., & Langseth, M. (2022). Challenges of cloud-ERP adoptions in SMEs. *Procedia Computer Science, 196*, 973–981. https://doi.org/10.1016/j.procs.2021.12.099

Haddara, M., & Zach, O. (2012). ERP Systems in SMEs: An extended literature review. *International Journal of Information Science, 2*(6), 106–116. https://doi.org/10.5923/j.ijis.20120206.06

Hancock, D. R., & Algozzine, B. (2015). *Doing case study research: A practical guide for beginning researchers* (2nd ed.). Teachers College Press.

Harvey, L. (2015). Beyond member-checking: A dialogic approach to the research interview. *International Journal of Research & Method in Education, 38*(1), 23–38. https://doi.org/10.1080/1743727X.2014.914487

Hawkins, J. (2018). The practical utility and suitability of email interviews in qualitative research. *The Qualitative Report.* https://doi.org/10.46743/2160-3715/2018.3266

Hayashi, P., Abib, G., & Hoppen, N. (2019). Validity in qualitative research: A processual approach. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2019.3443

Hayes, B. K., & Heit, E. (2018). Inductive reasoning 2.0. *WIREs Cognitive Science, 9*(3). https://doi.org/10.1002/wcs.1459

Hem, M. H., Pedersen, R., Norvoll, R., & Molewijk, B. (2015). Evaluating clinical ethics support in mental healthcare: A systematic literature review. *Nursing Ethics, 22*(4), 452–466. https://doi.org/10.1177/0969733014539783

Henry, C., & Foss, L. (2015). Case sensitive? A review of the literature on the use of case method in entrepreneurship research. *International Journal of Entrepreneurial*

Behavior & Research, 21(3), 389–409. https://doi.org/10.1108/ijebr-03-2014-0054

Hilletofth, P., & Reitsma, E. (2018). Critical success factors for ERP system implementation: A user perspective. *European Business Review, 30,* 285–310. https://doi.org/10.1108/ebr-04-2017-0075

Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-study research. *Nurse Researcher, 20*(4), 12–17. https://doi.org/10.7748/nr2013.03.20.4.12.e326

Hsu, P. F., Yen, H. R., & Chung, J. C. (2015). Assessing ERP post-implementation success at the individual level: Revisiting the role of service quality. *Information & Management, 52,* 925–942. https://doi.org/10.1016/j.im.2015.06.009

Hull, S. C., & Wilson, D. R. (2017). Beyond Belmont: Ensuring respect for AI/AN communities through tribal IRBs, laws, and policies. *American Journal of Bioethics, 17*(7), 60–62. https://doi.org/10.1080/15265161.2017.1328531

Humphreys, M., & Jacobs, A. M. (2015). Mixing methods: A Bayesian approach. *American Political Science Review, 109*(4), 653–673. https://doi.org/10.1017/s0003055415000453

Hwang, M. I. (2018). Relationship between teamwork and team performance: Experiences from an ERPsim competition. *Journal of Information Systems Education, 29,* 157–168 http://jise.org/

Iivari, J. (2014). *Three root causes of ERP implementation difficulties*. https://www.researchgate.net/publication/

Jacobson, N. C., Bentley, K. H., Walton, A., Wang, S. B., Fortgang, R. G., Millner, A. J., Coombs, G., III, Rodman, A. M., & Coppersmith, D. D. L. (2020). Ethical dilemmas posed by mobile health and machine learning in psychiatry research. *Bulletin of the World Health Organization, 98*(4), 270–276. https://doi.org/10.2471/blt.19.237107

James, C. (2016). *Exploring strategies to gain frontline employee buy-in during change initiatives in manufacturing*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 10249121)

Jiménez, T. R., & Orozco, M. (2021). Prompts, not questions: four techniques for crafting better interview protocols. *Qualitative Sociology, 44*(4), 507–528. https://doi.org/10.1007/s11133-021-09483-2

Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education, 84*(1), 7120. https://doi.org/10.5688/ajpe7120

Joslin, R., & Muller, R. (2016). Identifying interesting phenomena using philosophical and methodological triangulation. *International Journal of Project Management, 34*, 1043–1056. https://doi.org/10.1016/j.ijproman.2016.05.005

Kähkönen, T., Lappeenranta, A., Pekkola, S., & Smolander, K. (2017). Explaining the challenges in ERP development networks with triggers, root causes, and

consequences. *Communications of the Association for Information Systems, 40*, 249–276. https://doi.org/10.17705/1cais.04011

Kaiser, B. L., Thomas, G. R., & Bowers, B. J. (2017). A case study of engaging hard-to-reach participants in the research process: Community advisors on research design and strategies. *Research in Nursing & Health, 40,* 70–79. https://doi.org/10.1002/nur.21753

Kanellou, A., & Spathis, C. (2013). Accounting benefits and satisfaction in an ERP environment. *International Journal of Accounting Information Systems*, *14*, 209–234. https://doi.org/10.1016/j.accinf.2012.12.002

Kiran, T. S., & Reddy, A. V. (2019). Critical success factors of ERP implementation in SMEs. *Journal of Project Management,* 267–280. https://doi.org/10.5267/j.jpm.2019.6.001

Klaas, B. S., Klimchak, M., Semadeni, M., & Holmes, J. J. (2010). The adoption of human capital services by small and medium enterprises: A diffusion of innovation perspective. *Journal of Business Venturing*, *25*(4), 349–360. https://doi.org/10.1016/j.jbusvent.2008.12.002

Kline, T. J. B. (2017). Sample issues, methodological implications, and best practices. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement, 49*(2), 71–77. https://doi.org/10.1037/cbs0000054

Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice, 24*, 120–124. https://doi.org/10.1080/13814788.2017.1375092

Krause, J. (2021). The ethics of ethnographic methods in conflict zones. *Journal of Peace Research, 58*(3), 329–341. https://doi.org/10.1177/0022343320971021

Kurland, N. B. (2017). Accountability and the public benefit corporation. *Business Horizons, 60*(4), 519–528. https://doi.org/10.1016/j.bushor.2017.03.009

Lamprinakis, L. (2015). Participative organizational change and adaptation: insights from a qualitative case study of successful change. *Development and Learning in Organizations: An International Journal, 29*(2), 10–13. https://doi.org/10.1108/dlo-03-2014-0015

Levitt, H. M. (2021). Qualitative generalization, not to the population but to the phenomenon: Reconceptualizing variation in qualitative research. *Qualitative Psychology, 8*(1), 95–110. https://doi.org/10.1037/qup0000184

Lips-Wiersma, M., & Mills, A. J. (2014). Understanding the basic assumptions about human nature in workplace spirituality: Beyond the critical versus positive divide. *Journal of Management Inquiry, 23*(2), 148–161. https://doi.org/10.1177/1056492613501227

Liu, H.-C., Lin, Q.-L., Mao, L.-X., & Zhang, Z.-Y. (2013). Dynamic adaptive fuzzy petri nets for knowledge representation and reasoning. *IEEE Transactions on Systems,*

Man, and Cybernetics: Systems, 43(6), 1399–1410. https://doi.org/10.1109/tsmc.2013.2256125

Lund, R., Nielsen, L. S., Henriksen, P. W., Schmidt, L., Avlund, K., & Christensen, U. (2014). Content validity and reliability of the Copenhagen social relations questionnaire. *Journal of Aging and Health, 26*(1), 128–150. https://doi.org/10.1177/0898264313510033

Maas, J. B., Van Fenema, P. C., & Soeters, J. (2018). Post-implementation ERP usage: A longitudinal study of the impact of control and empowerment. *Information Systems Management, 35*, 330–347. https://doi.org/10.1080/10580530.2018.1503804

Mahat-Shamir, M., Neimeyer, R. A., & Pitcho-Prelorentzos, S. (2021). Designing in-depth semi-structured interviews for revealing meaning reconstruction after loss. *Death Studies, 45*(2), 83–90. https://doi.org/10.1080/07481187.2019.1617388

Makowsky, M., Guirguis, L., Hughes, C., Sadowski, C., & Yuksel, N. (2013). Factors influencing pharmacists' adoption of prescribing: Qualitative application of the diffusion of innovations theory. *Implementation Science*, *8*(1), 1–11. https://doi.org/10.10.1186/1748-5908-8-109

Marhefka, S., Lockhart, E., & Turner, D. (2020). Achieve research continuity during social distancing by rapidly implementing individual and group videoconferencing with participants: Key considerations, best practices, and

protocols. *AIDS and Behavior, 24*(7), 1983–1989. https://doi.org/10.1007/s10461-020-02837-x

Marshall, C., & Rossman, G. (2016). *Designing qualitative research* (6th ed.). Sage.

McCusker, K., & Gunaydin, S. (2015). Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion, 30*(7), 537–542. https://doi.org/10.1177/0267659114559116

McKim, C. A. (2017). The value of mixed methods research: A mixed methods study. *Journal of Mixed Methods Research, 11*, 202–222. https://doi.org/10.1177/15586898156007096

Mehrjerdi, Y. (2010). Enterprise resource planning: Risk and benefit analysis. *Business Strategy Series, 11*, 308–324. https://doi.org/10.1108/17515631011080722

Miller, T. (2017). Telling the difficult things: Creating spaces for disclosure, rapport and 'collusion' in qualitative interviews. *Women's Studies International Forum, 61*, 81–86. https://doi.org/10.1016/j.wsif.2016.07.005

Miracle, V. A. (2016). The Belmont Report. *Dimensions of Critical Care Nursing, 35*, 223–228. https://doi.org/10.1097/DCC.0000000000000186

Miranda, M. Q., Farias, J. S., de Araújo Schwartz, C., & de Almeida, J. L. (2016). Technology adoption in diffusion of innovations perspective: Introduction of an ERP system in a nonprofit organization. *RAI Revista de Administraçãoe Inovação, 13,* 1348–1357. https://doi.org/10.1016/j.rai.2016.02.002

Mirick, R. G., & Wladkowski, S. P. (2019). Skype in qualitative interviews: Participant and researcher perspectives. *The Qualitative Report, 24*(12), 3061–3072. Retrieved from https://www.proquest.com/scholarly-journals/skype-qualitative-interviews-participant/docview/2331238835/se-2

Mohammadi, F., Oshvandi, K., Shamsaei, F., Cheraghi, F., Khodaveisi, M., & Bijani, M. (2021). The mental health crises of the families of COVID-19 victims: A qualitative study. *BMC family practice*, *22*(1), 1–7. https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-021-01442-8

Morse, J. M. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative Health Research, 25*, 1212–1222. https://doi.org/10.1177/1049732315588501

Moustakas, C. E. (1994). *Phenomenological research methods.* Sage.

Nagpal, S., Kumar, A., & Khatri, S. K. (2018). Relative importance of CSF in ERP implementation strategy: a multi-participant AHP approach. *International Journal of Business Information Systems*, *27*(1), 105. https://doi.org/10.1504/ijbis.2018.088573

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (NCPHSBBR). (1979). *The Belmont report: Ethical principles and guidelines for the protection of human subjects of research.* Washington, DC: U.S. Department of Health and Human Services. https://hhs.gov/ohrp/humansubjects/guidance/Belmont.html

Nelson, A., Earle, A., & Howard-Grenville, J. (2017). Obliteration, symbolic adoption, and other finicky challenges in tracking innovation diffusion. *Academy of Management Annual Meeting Proceedings*, *2017*, 13497–13505. https://doi.org/10.5465/AMBPP.2012.296

Nisula, K., & Pekkola, N. (2012). ERP-based simulation as a learning environment for SME business. *International Journal of Management Education*, *10*, 39–49. https://doi.org/10.1016/j.ijme.2012.02.004

Njualem, L., & Smith, M. (2018). Exploring the effects of enterprise resource planning systems on direct procurement: An upstream asset-intensive industry perspective. *International Journal of Supply & Operations Management*, *5*(4), 10–16. http://www.ijsom.com/

Nwankpa, J. K. (2015). ERP system usage and benefit: A model of antecedents and outcomes. *Computers in Human Behavior*, *45*, 335–344. https://doi.org/10.1016/j.chb.2014.12.019

Nwankpa, J. K. (2018). ERP systems benefit realization and the role of ERP-Enabled application integration In *Encyclopedia of Information Science and Technology*, 4th ed., IGI Global, pp. 2953–2964.

Nyirenda, L., Kumar, M. B., Theobald, S., Sarker, M., Simwinga, M., Kumwenda, M., Johnson, C., Hatzold, K., Corbett, E. L., Sibanda, E., & Taegtmeyer, M. (2020). Using research networks to generate trustworthy qualitative public health research

findings from multiple contexts. *BMC Medical Research Methodology, 20*(1). https://doi.org/10.1186/s12874-019-0895-5

Oliveira, M., Bitencourt, C. C., Zanardo dos Santos, A. M., & Teixeira, E. K. (2016). Thematic content analysis: Is there a difference between the support provided by Maxqda® and Nivo® software packages? *Brazilian Journal of Management, 9*(1), 72–82. https://doi.org/10.5902/1983465911213

Olson, D. L., Johansson, B., & De Carvalho, R. A. (2018). Open-source ERP business model framework. *Robotics & Computer-Integrated Manufacturing*, *50*, 30–36. https://doi.org/10.1016/j.rcim.2015.09.007

Oni, O., & Papazafeiropoulou, A. (2012). Diverse views on IT innovation diffusion among SMEs: Influencing factors of broadband adoption. *Information Systems Frontiers, 16*, 729–747. https://doi.org/10.4018/978-1-59904-851-2.ch030

Onwuegbuzie, A. J., & Weinbaum, R. (2017). A framework for using qualitative comparative analysis for the review of the literature. *The Qualitative Report, 22*, 359–372. https://nsuworks.nova.edu/tqr/

Pabst, B., Casas, A., & Chinta, R. (2016). Empirical lessons from failure of ERP systems in small and medium businesses. *Southern Business & Economic Journal, 39*(1), 25–50. http://business.aum.edu/about/southern-business-economic-journal

Paredes, A. A. P., & Wheatley, C. M. (2018). Do enterprise resource planning systems (ERPs) constrain real earnings management? *Journal of Information Systems, 32*(3), 65–89. https://doi.org/10.2308/isys-51760

Patel, J. K. (2021). Critical success factors for implementation of enterprise resource planning software. *International Journal of Computer Science and Engineering, 8*(2), 1–5. https://doi.org/10.14445/23488387/ijcse-v8i2p101

Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Sage.

Pelphrey, M. W. (2015). *Directing the ERP implementation: A best practice guide to avoiding program failure traps while tuning system performance*. CRC Press.

Petty, N. J., Thomson, O. P., & Stew, G. (2012). Ready for a paradigm shift? Part 2: Introducing qualitative research methodologies and methods. *Manual Therapy, 17,* 378–384. https://doi.org/10.1016/j.math.2012.03.004

Pfeifer, M. R. (2021). Development of a smart manufacturing execution system architecture for SMEs: A Czech case study. *Sustainability, 13*(18), 10181. https://doi.org/10.3390/su131810181

Pietrzykowski, T., & Smilowska, K. (2021). The reality of informed consent: empirical studies on patient comprehension—systematic review. *Trials*, *22*(1). https://doi.org/10.1186/s13063-020-04969-w

Pigues, D. K., & Alderman, J. D. (2010). *Winning with customers: A playbook for B2B*. Wiley.

Ploder, A., & Hamann, J. (2021). Practices of ethnographic research: Introduction to the special issue. *Journal of Contemporary Ethnography*, *50*(1), 3–10. https://doi.org/10.1177/0891241620979100

Popa, S., Soto-Acosta, P., & Martinez-Conesa, I. (2017). Technological forecasting and social change. *Science Direct, 118*, 134–142. https://doi.org/10.1016/j.techfore.2017.02.014

Porter, W. W., Graham, C. R., Bodily, R. G., & Sandberg, D. S. (2016). A qualitative analysis of institutional drivers and barriers to blended learning adoption in higher education. *The Internet and Higher Education, 28*, 17–27. https://doi.org/10.1016/j.iheduc.2015.08.003

Pryce, A. C. (2016). *Strategies to reduce employee turnover in small retail businesses*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 10244097)

Ram, J., Corkindale, D., & Wu, M. L. (2013). Implementation critical success factors (CSFs) for ERP: Do they contribute to implementation success and post-implementation performance? *International Journal of Production Economics, 144*(1), 157–174. https://doi.org/10.1016/j.ijpe.2013.01.032

Ramadhana, B. A., Govindaraju, R., & Wibisono, Y. Y. (2016). ERP system usage and panoptic control: The role of perceived organizational support. *2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM).* https://doi.org/10.1109/ieem.2016.7798191

Ramani, S., & Mann, K. (2016). Introducing medical educators to qualitative study design: Twelve tips from inception to completion. *Medical Teacher, 38*(5), 456–463. https://doi.org/10.3109/0142159x.2015.1035244

Ravi, S., & Diatha Krishna, S. (2013). Influence of ERP systems on business process agility. *IIMB Management Review, 25,* 137–149. https://doi.org/10.1016/j.iimb.2013.05.001

Rizan, C., Phee, J., Boardman, C., & Khera, G. (2017). Original research: General surgeon's antibiotic stewardship: Climbing the Rogers diffusion of innovation curve-prospective cohort study. *International Journal of Surgery*, *40,* 78–82. https://doi.org/10.1016/j.ijsu.2017.02.040

Robinson, O. C. (2014). Sampling in interview-based qualitative research: A theoretical and practical guide. *Qualitative Research in Psychology*, *11*(1), 25–41. https://doi.org/10.1080/14780887.2013.801543

Rogers, E. M. (1993). The diffusion of innovations model. *Diffusion and Use of Geographic Information Technologies*, 9–24. https://doi.org/10.1007/978-94-011-1771-5_2

Rogers, E. M., & Shoemaker, F. F. (1971). *Communication of innovations: A cross-cultural approach*. Free Press.

Roulston, K. (2012). Interviews in qualitative research. *The Encyclopedia of Applied Linguistics*. https://doi.org/10.1002/9781405198431.wbeal0572

Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing*: *The art of hearing data* (3rd ed.). Sage.

Rusly, F. H., Sun, P. Y.-T., & Corner, J. L. (2015). Change readiness: creating understanding and capability for the knowledge acquisition process. *Journal of*

Knowledge Management, 19(6), 1204–1223. https://doi.org/10.1108/jkm-02-2015-0092

Sağnak, M., & Kazançoğlu, Y. (2019). Integrated fuzzy analytic network process and 0-1 goal programming technique for enterprise resource planning (ERP) software selection. *Ege Akademik Bakis (Ege Academic Review), 19*(1). https://doi.org/10.21121/eab.2019148776

Sancar Gozukara, S., Tekinerdogan, B., & Catal, C. (2022). Obstacles of on-premise enterprise resource planning systems and solution directions. *Journal of Computer Information Systems, 62*(1), 141–152. https://doi.org/10.1080/08874417.2020.1739579

Savaget, P., Geissdoerfer, M., Kharrazi, A., & Evans, S. (2019). The theoretical foundations of sociotechnical systems change for sustainability: A systematic literature review. *Journal of Cleaner Production, 206*, 878–892. https://doi.org/10.1016/j.jclepro.2018.09.208

Scarbrough, H., Robertson, M., & Swan, J. (2015). Diffusion in the face of failure: the evolution of a management innovation: Diffusion in the face of failure. *British Journal of Management, 26*(3), 365–387. https://doi.org/10.1111/1467-8551.12093

Seethamraju, R. (2015). Adoption of software as a service (SaaS) enterprise resource planning (ERP) systems in small and medium sized enterprises (SMEs).

Information Systems Frontiers, 17(3), 475–492. https://doi.org/10.1007/s10796-014-9506-5

Shaheen, M., Pradhan, S., & Ranajee, C. (2019). Sampling in qualitative research. *Advances in Business Information Systems and Analytics*, 25–51. https://doi.org/10.4018/978-1-5225-5366-3.ch002

Shao, Z., Feng, Y., & Hu, Q. (2017). Impact of top management leadership styles on ERP assimilation and the role of organizational learning. *Information & Management, 54*(7), 902–919. https://doi.org/10.1016/j.im.2017.01.005

Shedrow, S. J. (2017). Cross-cultural student teaching: Examining the meaning-making of one white, female, middle class preservice teacher. *Journal of International Students, 7*(2), 270–290. https://doi.org/10.32674/jis.v7i2.381

Sherif, V. (2018). Evaluating preexisting qualitative research data for secondary analysis. *Forum: Qualitative Social Research, 19*(2), 1–17. https://doi.org/10.17169/fqs-19.2.2821

Shoemaker, M. E. (2003). What marketing students need to know about enterprise resource planning (ERP) systems. *Marketing Education Review*, *13*(2), 69–77. https://doi.org/10.1080/10528008.2003.11488832

Smith, K. T., & Betts, T. (2015). Your company may unwittingly be conducting business with human traffickers: How can you prevent this? *Business Horizons, 58*(2), 225–234. https://doi.org/10.1016/j.bushor.2014.11.006

Sneller, M. L. (1986). *Application of classical management approach to the implementation of material requirements planning systems.* Unpublished PhD dissertation. Claremont Graduate School, Claremont, CA.

Spillane, A., Larkin, C., Corcoran, P., Matvienko-Sikar, K., & Arensman, E. (2017). What are the physical and psychological health effects of suicide bereavement on family members? Protocol for an observational and interview mixed-methods study in Ireland. *BMJ Open, 7*(3), e014707. https://doi.org/10.1136/bmjopen-2016-014707

Spraakman, G., O'Grady, W., Askarany, D., & Akroyd, C. (2018). ERP systems and management accounting: New understandings through "nudging" in qualitative research. *Journal of Accounting & Organizational Change, 14(2),* 120–137. https://doi.org/10.1108/jaoc-06-2016-0038

Stancu, A. R. (2019). ERP for small and medium companies. *Knowledge Horizons Economics, 11*(2), 77–82. https://www.proquest.com/scholarly-journals/erp-small-medium-companies/docview/2269873731/se-2?accountid=14872

Stewart, H., Gapp, R., & Harwood, I. (2017). Exploring the alchemy of qualitative management research: Seeking trustworthiness, credibility and rigor through crystallization. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2017.2604

Subramaniam, P., & Islam, J. (2014). Innovation and the impact of technology on women entrepreneurs in small and medium enterprises in Singapore. *World Applied*

Sciences Journal, 30, 238–246. https://doi.org/10.5829/idosi.wasj.2014.30.icmrp.31

Tarhini, A., Ammar, H., Tarhini, T., & Masa'deh, R. e. (2015). Analysis of the critical success factors for enterprise resource planning implementation from stakeholders' perspective: A systematic review. *International Business Research, 8*(4). https://doi.org/10.5539/ibr.v8n4p25

Teittinen, H., Pellinen, J., & Järvenpää, M. (2013). ERP in action — Challenges and benefits for management control in SME context. *International Journal of Accounting Information Systems, 14*(4), 278–296. https://doi.org/10.1016/j.accinf.2012.03.004

Temur, G. T., & Bolat, B. (2018). A robust MCDM approach for ERP system selection under uncertain environment based on worst case scenario. *Journal of Enterprise Information Management, 31*(3), 405–425. https://doi.org/10.1108/jeim-12-2017-0175

Townsend, R. C., & Cushion, C. J. (2021). 'Put that in your fucking research': reflexivity, ethnography and disability sport coaching. *Qualitative Research, 21*(2), 251–267. https://doi.org/10.1177/1468794120931349

Trantopoulos, K., von Krogh, G., Wallin, M. W., & Woerter, M. (2017). External Knowledge and information technology: Implications for process innovation performance. *MIS Quarterly, 41,* 287–300. https://doi.org/10.25300/misq/2017/41.1.15

Trist, E., & Bamforth, K. (1951). Some social and psychological consequences of the longwall method of coal getting: An examination of the psychological situation and defences of a work group in relation to the social structure and technological content of the work system. *Human Relations, 4,* 1–38. https://doi.org/10.1177/001872675100400101

Tuval-Mashiach, R. (2021). Is replication relevant for qualitative research? *Qualitative Psychology*, *8*(3), 365. https://doi.org/10.1037/qup0000217

Umar, M., Khan, N., Agha, M. H., & Abbas, M. (2016). SAP-ERP implementation: Change management model using qualitative approach. *International Journal of Computer Science and Network Security, 16*(6), 9–13. http://paper.ijcsns.org/

Unkovic, C., Sen, M., & Quinn, K. M. (2016). Does encouragement matter in improving gender imbalances in technical fields? Evidence from a randomized controlled trial. *PLOS One, 11,* 55–86. https://doi.org/10.1371/journal.pone.0151714

Vadivelu, K., Balaji, N., Poongavanam, N., Tamilselvan, S., & Rajakumar, R. (2018). Cloud-ERP: Implementation strategies, benefits and challenges. *International Journal of Pure and Applied Mathematics, 119*(14), 1359–1364. https://www.researchgate.net/profile/N-Balaji-4/publication/345229491_CLOUD_-ERP_IMPLEMENTATION_STRATEGIES_BENEFITS_AND_CHALLENGES/links/5fa100f3458515b7cfb5c76e/CLOUD-ERP-IMPLEMENTATION-STRATEGIES-BENEFITS-AND-CHALLENGES.pdf

Van, D. B., & Struwig, M. (2017). Guidelines for researchers using an adapted consensual qualitative research approach in management research. *Electronic Journal of Business Research Methods*, *15*, 109–119. http://www.ejbrm.com

Van den Eynden, V. (2021). Sharing data from research on illicit drug economies. *International Journal of Drug Policy*, *89*, 103171. https://eprints.soas.ac.uk/35855/1/1-s2.0-S0955395921000694-main.pdf

Van Praag, B., & Sanchez, H. S. (2015). Mobile technology in second language classrooms: Insights into its uses, pedagogical implications, and teacher beliefs. *ReCALL: The Journal of EUROCALL*, *27*, 288–303. https://doi.org/10.1017/S0958344015000075

Varpio, L., Ajjawi, R., Monrouxe, L. V., O'Brien, B. C., & Rees, C. E. (2017). Shedding the cobra effect: Problematising thematic emergence, triangulation, saturation and member checking. *Medical Education, 51*, 40–50. https://doi.org/10.1111/medu.13124

Vaughn, P., & Turner, C. (2016). Decoding via coding: Analyzing qualitative text data through thematic coding and survey methodologies. *Journal of Library Administration*, *56*, 41–51. https://doi.org/10.1080/01930826.2015.1105035

Vingan, N. R., & Kenkel, J. M. (2022). The institutional review board: A discussion of the importance of ethical, evidence-based research in plastic surgery. *Aesthetic Surgery Journal*, *42*(2), 224–229. https://doi.org/10.1093/asj/sjab363

Walker, J. L. (2012). The use of saturation in qualitative research. *Canadian Journal of*

Cardiovascular Nursing, 22, 37–46. http://pappin.com/journals.php

Wambugu, L., & Njoroge, N. (2021). The search for understanding of mixed method research among graduate students: a case of learners in the school of continuing and distance education, university of Nairobi, Kenya. *Quality & Quantity*. https://doi.org/10.1007/s11135-021-01150-6

Waters, J. (2015). Snowball sampling: a cautionary tale involving a study of older drug users. *International Journal of Social Research Methodology, 18*(4), 367–380. https://doi.org/10.1080/13645579.2014.953316

Willgens, A. M., Cooper, R., Jadotte, D., Lilyea, B., Langtiw, C., & Obenchain-Leeson, A. (2016). How to enhance qualitative research appraisal: Development of the methodological congruence instrument. *The Qualitative Report, 21*, 2380–2395. https://nsuworks.nova.edu/tqr/

Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review, 15*(1), 45–55. http://www.imrjournal.org/uploads/1/4/2/8/14286482/imr-v15n1art4.pdf

Wimble, M., & Singh, H. (2015). A multilevel examination of information technology and firm performance*:* The interaction of industry and firm effects. *PACIS 2015 Proceedings*. 1–10. http://aisel.aisnet.org/

Woermann, N. (2018). Focusing ethnography: theory and recommendations for effectively combining video and ethnographic research. *Journal of Marketing*

Management, 34(5–6), 459–483 http://www.imrjournal.org/uploads/1/4/2/8/14286482/imr-v15n1art4.pdf

Woods, M., Paulus, T., Atkins, D. P., & Macklin, R. (2016). Advancing qualitative research using qualitative data analysis software (QDAS)? Reviewing potential versus practice in published studies using ATLAS.ti and NVivo, 1994–2013. *Social Science Computer Review, 34*, 597–617. https://doi.org/10.1177/0894439315596311

Wu, Y., Cegielski, C. G., Hazen, B. T., & Hall, D. J. (2013). Cloud computing in support of supply chain information system infrastructure: Understanding when to go to the cloud. *Journal of Supply Chain Management, 49*(3), 25–41. https://doi.org/10.1111/j.1745-493x.2012.03287.x

Wunderlich, P., Größler, A., Zimmermann, N., & Vennix, J. A. M. (2014). Managerial influence on the diffusion of innovations within intra-organizational networks, *System Dynamics Review, 30,* 161–185. https://doi.org/10.1002/sdr.1516

Yeong, M. L., Ismail, R., Ismail, N. H., & Hamzah, M. I. (2018). Interview protocol refinement: Fine-tuning qualitative research interview questions for multi-racial populations in Malaysia. *The Qualitative Report, 23*(11), 2700–2713. https://www.proquest.com/scholarly-journals/interview-protocol-refinement-fine-tuning/docview/2151128806/se-2?accountid=14872

Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal*

of Education, 48, 311–325. https://doi.org/10.1111/ejed.12014

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Yoshihara, H., & Okabe, Y. (2015). Japanese companies and ERP: A study on information technology and managerial style. 1–11. https://gebrc.nccu.edu.tw/

Appendix A: Interview Protocol for Managers

The protocol set forth will ensure each face-to-face interview follows the identical study process. In addition, this interview protocol ascertains the required steps necessary for the preparation of each interview ensuring a set protocol upon the commencement of each face-to-face meeting. Interviewees will meet the eligibility criteria, which is (a) a leader (e.g., executive, manager, or IT specialist) of a small- or medium-sized manufacturing enterprise, (b) who used a successful strategy for implementing ERP systems, and (c) who operates on the east and west coast of the United States. For the purposes of this study, the definition of a successful strategy for implementing enterprise resource planning (ERP) systems is a strategy that resulted in an on time, on budget completed ERP project, and the ERP system resulted in the desired organizational outcomes.

Informed Consent Form Completed:

Time of Interview:

Date:

Interviewer:

Interviewee:

Position of Interviewee:

Protocol:

1. Thorough introductions.
2. Show consent form, discuss contents, answer questions and concerns of the participant(s)
3. Ensure each interviewee receives a copy of the signed consent form.
4. Power on Echo Smartpen and store Android recorder devices.
5. Introduce participant(s) using a pseudonym/coded identification; note exact location, time, and date.
6. Commence each interview with the first question; continue until final question.
7. Follow up with additional questions.
8. Complete interview categorization; confer organizational triangulation documents and member checking procedures with the participant(s).
9. Gather company documents. Thank participant(s) for study participation. Discuss contact numbers for any follow-up questions and concerns by participants.
10. Power off Livescribe Echo Smartpen and backup Android recorder devices. End protocol.

Interview Questions:

1. What strategies did you use for implementing ERP systems?
2. How do you revise the strategies over time based on changing conditions?
3. What are the critical factors for successful ERP implementation in your organization?
4. What cost saving strategies did you employ when implementing the ERP process?

5. What strategies did you use to gain organization-wide understanding and acceptance of ERP processes?

6. How did you communicate your expectations and goals to employees when implementing ERP systems?

7. What additional information can you share regarding the strategies you used for implementing ERP systems?

Appendix B: Letter of Cooperation

To: XYZ Company
From: Tatianna Gilliam, Walden University Doctoral Candidate
Date: 5/18/2017
Subject: Permission to Perform Research on Premises

Permission to Perform Research on Premises

Dear Business Owner:

My name is Tatianna Gilliam. I am a student currently undertaking Walden University's Doctorate of Business Administration program. Presently, I am in the final stages of the research portion of my doctoral study, which focuses on gaining an understanding of strategies executives and managers in the manufacturing industry use to implement enterprise resource planning (ERP) systems.

This request intends to gain your approval to conduct research for my doctoral study on the business property. Research will include contacting participants for this study specifically to conduct interviews with executives and managers of the organization, as well as accessing company documentation that supports study research of critical success factors of ERP implementation processes within your organization. All information, interviews, or data collected remain confidential at all times. Granting permission will include providing a list of potential participants, allowing access to your executives and managers as well as company documentation. As the company owner or authorized official, you reserve the right to withdraw your company from the study at any time if circumstances change. Employee participation in the study is voluntary, and informed consent forms will be issued to and signed by each participant if they choose to participate.

The results of this study could be beneficial to your business as a realistic measurement of ERP implementation process efficiencies and deficiencies that are present within your organizations ERP systems to gain further understanding of CSFs that increase productivity and revenue. If this arrangement is agreeable, please confirm your approval via a returned letter of cooperation with your signature. To be eligible to participate, your company executives, managers, or IT specialists must have used successful strategies to implement your ERP system. For the purposes of this study, the definition of a successful strategy for implementing ERP systems is a strategy that resulted in an on time, on budget completed ERP project, and the ERP system resulted in the desired organizational outcomes. Thank you in advance for your favorable consideration.

Sincerely,

Tatianna Gilliam
Tatiaxxx@waldenu.edu
818-xxx-xxxx

Please sign below:

As the authorized official, I give you permission to conduct your research study in _____ (company name). I affirm that we used a successful strategy to implement our ERP system, defined as a strategy that resulted in an on time, on budget completed ERP project, and the ERP system resulted in the desired organizational outcomes.

_____
Authorized Official Signature

_____
Authorized Official Title

_____
Date

Appendix C: Invitation to Participate

Date:

Dear (name):

My name is Tatianna Gilliam. I am a doctoral student at Walden University. I am conducting a research study to explore the strategies leaders in the manufacturing industry use to implement enterprise resources planning (ERP) systems. I identified you as a potential participant through your company's owner or authorized official. I am inviting leaders who meet the eligibility criteria to participate in this research study.

The eligibility criteria for participants are (a) a leader (e.g., executive, manager, or IT specialist) of a small or medium-sized enterprise in the manufacturing industry, (b) who used a successful strategy for implementing ERP systems, and (c) who operates in the United States. For the purposes of this study, the definition of a successful strategy for implementing ERP systems is a strategy that resulted in an on time, on budget completed ERP project, and the ERP system resulted in the desired organizational outcomes. If you meet the eligibility criteria, I requested for an interview session lasting for 30-45 minutes, and a 30-minute follow up meeting for you to review my interpretation of your responses during the interview.

Please note that participation in this study is voluntary. I am not offering any form of compensation for participating in the study. I provided participants a 1-2 page executive summary of the findings of this study.

I have attached an informed consent form to this email to further explain the interview process, address confidentiality, and privacy concerns before the interview. Please read the informed consent form carefully and ask any questions you may have before making a decision to participate. You can contact me via email at XXXXXX@waldenu.edu_or by telephone at XXXXXXXX If you meet the eligibility criteria, would you be willing to participate?

Respectfully,

Tatianna Gilliam