

2016

# Strategies to Obtain Maximum Usage of Enterprise Resource Planning Systems

Edward James Schaffer  
*Walden University*

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# Walden University

College of Management and Technology

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Edward J. Schaffer

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Walden University  
2016

Abstract

Strategies to Obtain Maximum Usage of Enterprise Resource Planning Systems

by

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MBA, Ohio State University, 2001

BS, Miami University, 1989

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

December 2016

## Abstract

Business organizations invest significant resources implementing enterprise resource planning (ERP) systems, yet some organizations utilize less than 75% of the ERP system capabilities. The purpose of this single-site case study was to explore ERP utilization strategies implemented by 4 managers in the information technology (IT) department from 1 organization that uses an ERP system in the Midwest region of the United States. The conceptual framework that grounded this study was the user participation theory. Data were collected through participant interviews and analyzed using traditional text analysis. Member checking was used to strengthen the credibility and trustworthiness of the interpretation of the participants' responses. The emergent themes from the study were user participation, user involvement, user attitude, user system satisfaction, and user preparation. The most prominent utilization strategies identified by the participants related to the user participation theme. The implications for positive social change include the potential optimization of benefits from the ERP system that could allow the organization's leaders to direct their resources to causes that can improve the health and welfare of the geographic population in the operational region.

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## Section 1: Foundation of the Study

Over the past 3 decades, a significant number of business organizations, both large and small, implemented enterprise resource planning (ERP) systems (Koch & Mitteregger, 2016). An ERP system can provide an organization with an integrated information system applied to business units across the enterprise (Meissonier, Houze, & Lapointe, 2014). A fully utilized ERP system can assist an organization to improve operational efficiency as information flow between operating units becomes easier to manage. The improved efficiency can result in lower operating costs, improved operational productivity, and higher profits (May, Dhillon, & Caldeira, 2013). However, organizations experience a rate of failure of ERP systems between 60% and 90%, while receiving less than 30% of the promised benefits (Rouhani & Ravasan, 2013). There is a gap in the research on strategies used by organizations to increase the return on investment on an ERP system by maximizing the use of the system.

### **Background of the Problem**

As the competitiveness of today's business environment increases in intensity, organizations have a critical need for real-time and integrated business information (Jayawickrama, Liu, & Smith, 2014). Organizations implement ERP systems that form the foundation of their business practices. However, more than 50% of organizations fail to utilize the full capabilities of the ERP system (Chou, Lin, Lu, Chang, & Chou, 2014). Underutilization of ERP system capabilities may result in the organization experiencing lower than expected benefits from the system.

Researchers have indicated a positive relationship between the utilization of the ERP system and the organization's ability to achieve positive returns from the investment in the system (Ram, Corkindale, & Wu, 2013a). Findings from previous research also identified the effect on organizations that do not fully utilize an ERP system (Nazemi, Tarokh, & Djavanshir, 2012). There is a lack of research on the strategies used by organizations to maximize the usage of an ERP system (Chou, Lin et al., 2014). The understanding of how organizations successfully utilize their ERP systems can help business leaders develop and implement strategies to realize the potential benefits of their ERP system (Verdouw, Robbmond, & Wolfert, 2015). With the background to the problem provided, the focus will now shift to the problem statement.

### **Problem Statement**

To remain competitive in the global marketplace, between 2003 and 2013, worldwide business leaders have invested over \$500 billion in ERP systems (Chou, Chang, Lin, & Chou, 2014). Researchers estimate that over 80% of Fortune 500 firms have implemented an ERP system (Maas, van Fenema, & Soeters, 2014). Over 80% of organizations fail to achieve the expected business objectives from their ERP system, and some organizations utilize less than 75% of ERP system capabilities (Shatat, 2015). The general business problem is that some organizations are negatively affected by low ERP system usage, which results in the failure to achieve the return on investment goals. The specific business problem is that some ERP directors and managers in the information technology (IT) department lack strategies to obtain maximum ERP system usage.

### **Purpose Statement**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. The targeted population consisted of four ERP directors and managers in the IT department from one organization in the Midwest region of the United States who have implemented successful strategies to maximize ERP system usage. The implication for positive social change is the potential to identify the perceived primary issues of ERP system underutilization, as underutilization results in suboptimal benefits to the organization and its employees, suppliers, and customers (Nwankpa, 2015). Optimization of benefits from the ERP implementation could allow the organization's leaders to direct their resources to causes that can benefit the health and welfare of employees and citizens in the geographic region in which they operate. Successful and socially responsible organizations can provide capital and human resources to contribute to social initiatives that benefit employees, employees' families, and communities.

### **Nature of the Study**

A qualitative method was chosen for this study as researchers use the qualitative method to clarify a problem or identify groups or individuals affected by the problem. Qualitative methods can also increase the understanding of why things are the way they are and why people act the way they do (Venkatesh, Brown, & Bala, 2013). I was interested in documenting the decisions and actions of individuals with respect to a particular phenomenon by understanding the experiences and derivative perceptions of individuals involved directly with the phenomenon. Qualitative researchers are likely to

capture rich life experiences and yield a nuanced understanding of the phenomenon under study (Birkinshaw, Brannen, & Tung, 2012). Qualitative methods are also most appropriate when the research is exploratory in nature (Barratt, Choi, & Li, 2011). A mixed methods approach includes aspects of both qualitative and quantitative methods in the same study (Venkatesh et al., 2013). This study did not require an evaluation of variables; therefore, a quantitative or mixed methods approach was not appropriate (Ketokivi & Choi, 2014). The qualitative method was the most appropriate method for this study.

The design of this study was a case study exploring strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. The inductive method of a case study allows for a rich description of the strategies used to maximize ERP system usage (Yin, 2014). A case study approach is appropriate when the main research questions are *how* or *why* questions (Ketokivi & Choi, 2014). A case study is also appropriate when a researcher does not have control over the behavior events, and when the focus of the study is a current phenomenon (Yin, 2014). The case study design allows for the investigation of a phenomenon in a real-world context (Ketokivi & Choi, 2014). The case study design aligns with the purpose of this study.

A case study was more appropriate than other qualitative designs, such as ethnographic or phenomenological because the focus of my study was to obtain leaders' experiences and perceptions (Yin, 2014). I did not explore the lived experiences of the participants; therefore, the phenomenological design was not appropriate (Rowley, 2012). The ethnographic design was not appropriate, as I did not study the community or culture

of the participants (Akerlind, 2012). The grounded theory design was not appropriate for this study as there was no intent to develop a new theory (Charmaz, 2014). The most appropriate method and design for this study is a qualitative single-site study.

### **Research Question**

The central research question for this study focused on the strategies ERP directors and managers in the IT department use to obtain maximum usage of an ERP system. I conducted face-to-face, semistructured interviews to capture the perspective of the participants.

### **Central Research Question**

What strategies do ERP directors and managers in the IT department use to maximize the usage of ERP systems?

### **Interview Questions**

The interview process included asking semistructured interview questions to selected ERP directors and managers in the IT department of the study organization. Semistructured interview questions are an effective method to obtain an accurate sense of the phenomenon under study from participants of a qualitative study (Elo et al., 2014).

The data collection instrument consisted of the following 10 interview questions:

1. What is your perspective on the strategies your organization uses to obtain maximum usage of the ERP system?
2. What obstacles, if any, obstruct your organization's attempts to obtain maximum usage of the ERP system?
3. How are you addressing these obstacles?

4. How did you identify and address deficiencies in ERP usage?
5. What is your perspective on the depth to which the organization used members of your department in the design and development of the ERP system?
6. What strategies have you used to increase the level of user satisfaction in the ERP system?
7. What is your perspective on how the users of the ERP system perceive the usefulness of the ERP system?
8. What is your perspective on how easy it is for users to perform their assigned tasks in the ERP system?
9. What is your perspective on how effective the organization is in preparing users to use the ERP system?
10. What additional information can you provide to help me understand how your organization reaches the maximum level of ERP system usage?

### **Conceptual Framework**

The user participation theory was the conceptual framework for this study. Barki and Hartwick (1994) developed user participation theory. The user participation theory describes the potential effect of including system users in information technology development and deployment (Barki & Hartwick, 1994). According to the theory, user participation in development and deployment of an information technology system increases the level of user acceptance, improves system quality through a better understanding of business requirements, and increases overall usage of the system (De Waal & Batenburg, 2014). For purposes of the user participation theory, the definition of



user participation includes specific attributes. The attributes are (a) type of participation, (b) the extent of participation, (c) content of participation, (d) degree of responsibility, (e) the formality of the participation, and (f) the level of influence the participant has on decisions (Cavaye, 1995). Findings from previous research support the relationship between user participation, the level of system usage, and the success of the system (De Waal & Batenburg, 2014). The user participation theory provided a conceptual framework to explore the issues that can affect an organization's usage of an ERP system. Table 1 is a depiction of common themes and codes that emerged from the study based on the user participation theory.

Table 1

*Table 1. Themes and Emergent Codes*

Themes	Emergent codes
User participation	Early participation Participation in process reengineering Key user selection User skill set Implementation team culture
User involvement	Executive support of the system Management flexibility
User attitude	Participation in development activities Adequate support resources Relevancy of training Promotion of trust Management communication
User system satisfaction	System quality System design Quality of system support Information transparency
User preparation	Change management Organizational learning capacity Quality of training Knowledge sharing

## Operational Definitions

*Enterprise resource planning system (ERP).* Commercial software that integrates the information flowing through an organization, including financial, accounting, supply chain management, and customer information (Maas et al., 2014). The system offers an organization benefits such as improved integration of business processes and the opportunity for improved decision-making leading to potentially higher profitability (Maas et al., 2014).

*ERP implementation.* The process of developing the initial business case, planning the project, configuring and implementing the packaged software, and subsequent improvements to business processes (Dorobat & Natase, 2012).

*ERP system usage.* How users employ the features of the ERP system to perform a task (Nwankpa, 2015).

*Perceived ease of use.* The extent to which users believe that using a particular system is easy to manage, manipulate, and navigate (Ali & Younes, 2013). It is the degree users consider a system as not too difficult to understand, learn, and use (Ali & Younes, 2013).

*Perceived usefulness.* Refers to whether the system provides accurate, timely, relevant, reliable, and valid information for users (Ali & Younes, 2013).

*User involvement.* The subjective psychological state reflecting the importance and personal relevance that a user attaches to a given system (Barki & Hartwick, 1994).

*User participation.* The assignments, activities, and behaviors that users perform during the system development process (Barki & Hartwick, 1994).

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

### **Assumptions**

Assumptions are facts understood to be true without verification (Simon & Goes, 2013). This study had several basic assumptions. The first assumption was that participants could articulate experiences related to the research question. The second assumption was that the interviewees had an interest in the questions during the semistructured interview. A further assumption was that the interviews offered the opportunity to explore themes surrounding strategies that organizations employ to maximize the usage of ERP systems. Another assumption was that participants interpreted the questions in the same manner based on the terms, definitions, and descriptions provided in the interview.

### **Limitations**

Limitations are potential weaknesses of the study (Simon & Goes, 2013). The first limitation was that a single-site case study limits the generalizability of results (Yin, 2014). Another limitation was the possibility that personal bias influenced responses based on the participants' experiences, interfering with the objectivity of the participants. A further limitation was my professional experience with an ERP implementation project could potentially influence the research approach and analysis of the data. To minimize bias, I bracketed my opinions and closely followed research protocol.

### **Delimitations**

Delimitations describe the boundary of what is in and out of the scope of the study (Simon & Goes, 2013). The study participants were four ERP directors and

managers in the IT department from an organization who have implemented successful strategies to maximize ERP system usage. All participants were over 18 years of age. Participants' knowledge and experience levels were varied, but the individuals volunteering for this research had experience with ERP systems to include the execution of strategies to maximize the usage of an ERP system. The study included participants selected through purposive sampling, which is not transferable to a larger population.

### **Significance of the Study**

Findings, conclusions, and recommendations resulting from conducting my study could be of value to the practice of business because organizations expend significant resources on ERP systems with the expectation that the resulting ERP system will provide operational improvements, intellectual capital through knowledge creation, and possible competitive advantages (Ram, Wu, & Tagg, 2014). The level of system usage is an important influence on an organization's ability to obtain a positive return on the investment (Ha & Ahn, 2013). The findings, conclusions, and recommendations resulting from this study could be important because they are expected to enable ERP directors and managers to advance the understanding of strategies that they can employ to maximize the usage of ERP systems.

The contribution to professional or practitioner application was the knowledge that could guide organization leaders to strategies that will maximize the usage of ERP systems. Business leaders that choose to invest significant resources in an ERP system must understand the implications of underutilization of their investment. Implications could include wasting significant organization capital, decreasing competitive advantage,

and long-term financial underperformance of the organization (Schniederjans & Yadav, 2013).

An effective and efficient ERP system can provide greater economies of scale, reduced operating costs, and increased profits (Schniederjans & Yadav, 2013). The implications for positive social change include the potential optimization of benefits from the ERP system that could allow the organization's leaders to direct their resources to causes that can improve the health and welfare of the population in the geographic region in which they operate.

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

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain the maximum usage of ERP systems. The purpose of this literature review was to develop a complete understanding of the various theories in the academic literature surrounding the utilization of ERP systems. The basis of the review to investigate common themes among research participants was the user participation theory. The comprehensive literature review provides information about strategies that organizations can employ to obtain the maximum usage of an ERP system.

The literature review will begin with a description of the strategy and process used to identify literature included in the review. The review will continue with a discussion of the importance of ERP system usage, a discussion of the user participation theory, and then a review of the key themes regarding ERP system usage.

### Strategy for Literature Searches and Selection

I identified the information presented in the literature review from searches of academic databases using terminology related to the research question of this study. The most common databases searched were the Walden University Library, the Franklin University Library, and Google Scholar. Table 2 lists the databases used in the literature search. Overall, 64 references were included in the final literature review.

Table 2

*Table 2. List of Databases Used for Literature Review*

Host system	Database name
EBSCO	Academic Search Complete Business Source Complete
Emerald	Emerald Management Journals
Google	Google Scholar, linked to Walden University Library
Google	Google Scholar, linked to Franklin University Library
ProQuest	Dissertations & Theses
SAGE	Premier
SSRN	eLibrary Database
Thoreau	Multiple database search

I began the literature search by filtering for relevant results from the 2012 publishing year to current. The searches included a filter for peer-reviewed articles. I conducted a second search that eliminated the publishing year and peer-reviewed filters to identify other articles that might have relevance. Table 3 lists the key terminology used in the searches. For each selected article, I read the abstract to determine if the paper's subject related to my research question. For any article that was relevant to my research question, I read the article in detail, noting specific sections of the article to include in the literature review. For all articles selected for inclusion in the literature, I verified and

recorded the peer-review status. Table 4 summarizes the number of references by the type of reference with an indication of peer-review status and age of the reference.

Table 3

*Table 3. Searches Conducted for Literature Review*

Terminology searched
Case study design
Enterprise Resource Planning
Enterprise Resource Planning System
ERP
ERP culture
ERP implementation
ERP investment
ERP knowledge transfer
ERP maintenance and support
ERP post-implementation usage
ERP risk management
ERP system
ERP system training
Impact of ERP
Information technology
Qualitative case study
Qualitative method
Research methods
Utilization of ERP system
Usage of ERP system
User involvement
User motivation
User participation theory
User perception
Utilization of ERP system

*Note.* Table 3 lists the terms searched. The terminology was slightly varied as needed in various databases due to unique searching of each database. An example is the use of quotes (“”) to find exact phrases in databases that split terms. Words could also vary slightly to find more results (i.e., changing *system* to *systems*).

Table 4

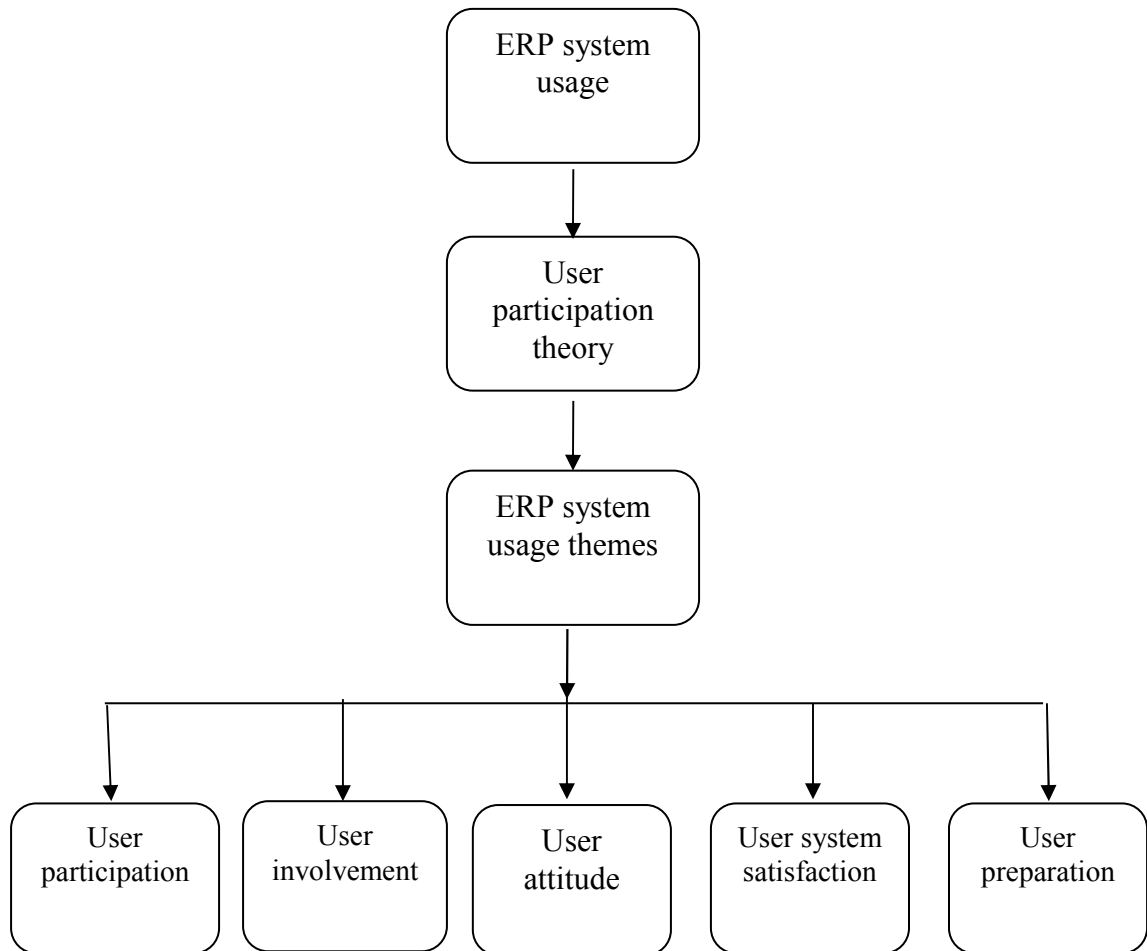
*Table 4. Summary of References in Literature Review*

Type of reference	Peer-reviewed?		Less than 5 years?	
	Yes	No	Yes	No
Academic Journal	60	4	62	2
% of Total	93.8%	6.2%	96.9%	3.1%

*Note.* Table 4 summarizes the peer-reviewed status and dating of the references based on a review of Ulrich's or the publisher's website. This table only summarizes the references used in the literature review. Additional references are in other parts of the doctoral study.

To conduct the literature review, I used a thematic approach. I will begin with a discussion of the importance of usage of ERP systems, a review of the user participation theory, followed by a review of the literature regarding the five key themes related to ERP usage that emerged from the data collection component of this research. The key themes are (a) user participation, (b) user involvement, (c) user attitude, (d) user system satisfaction, and (e) user preparation. Figure 1 is a depiction of the organization of the literature review.





*Figure 1.*

Organization of the literature review.

### **ERP System Usage**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain the maximum usage of ERP systems. Before delving into theories and literature regarding ERP system usage, it is important to define the purpose of an ERP system, discuss the importance of ERP system usage, and establish system usage as critical to the achievement of the expected benefits from the system.

The primary purpose of an ERP system is the integration of information and business processes across operating units of an organization (Tian & Xu, 2015). Researchers consider ERP systems the most effective computer application to support overall business objectives regardless of constraints from human resources, software, and hardware (Usmanji, Chu, & Khosla, 2013). The ERP system improves management's ability to make decisions and improve control processes (Rajan & Baral, 2015). The fully utilized ERP system enhances the organization's ability to manage its information and review key business activity based on the integrative nature of the system (Tarhini, Ammar, Tarhini, & Masa'deh, 2015). Managers can adjust quickly to changing conditions in the economic environment from the system's ability to provide timely, precise, and enterprise-wide information (HassabElnaby, Hwang, & Vonderembse, 2012). The capabilities of an ERP system can greatly enhance the organization's ability to compete in the marketplace.

The ability of an ERP system to provide the integration of business processes across the enterprise is a critical capability. However, the implementation of such a system is lengthy, complex, and expensive (Remus, 2012). The rate of failure of ERP implementations exceeds 60%, even when the organization supports the implementation with experienced consultants and best practices (Meissonier et al., 2014). Researcher findings indicated that a significant reason for the high rate of failure is the organization's inability to utilize the full capabilities of the ERP system (Chou, Lin et al., 2014). An organization implementing an EPR system must consider strategies that will increase the level of utilization of the system's capabilities.

The implementation of an ERP system affects the organization's business strategy and its operational capabilities. Researchers considered an implementation project successful when the organization utilizes the implemented systems to achieve its goals (Bavarsad, Rahimi, & Norozy, 2013). Nwankpa (2015) explained that high usage of the ERP system is a critical determinant as to whether the organization will obtain the potential benefits of the system. A properly implemented and fully utilized ERP system can significantly increase the performance of the organization (HassabElnaby et al., 2012). An ERP system can bring about benefits such as improved cost control, improved asset management, and integrated information to improve decision-making (De Toni, Fornasier, & Nonino, 2015). The organization will realize the benefits of the ERP system only when the users adopt the system processes and capabilities.

The ERP system can also provide the infrastructure that will enable the organization to change strategic direction whether in the form of new product development and introduction, acquisition, or divestiture (HassabElnaby et al., 2012). Organizations that can utilize and leverage the functionality of the ERP system experience superior financial performance and a competitive advantage compared to peers with lower ERP utilization rates (Gallagher, Worrell, & Mason, 2012). The organization that can utilize the ERP system's capabilities can achieve a positive return on its investment (Ram, Corkindale, & Wu, 2013a). The maximization of ERP capabilities will occur only when leaders of the organization implement strategies that focus on system usage.

I have defined the purpose of an ERP system, discussed the importance of ERP system usage, and established system usage as critical to the achievement of the expected benefits from the system. The next section of this literature review discusses the conceptual framework of this study, user participation theory, and provides the basis for understanding the key themes that influence ERP system usage.

### **User Participation Theory**

Researchers began studying the influence of user participation in system development projects on the level of system utilization in the 1960s (Barki & Hartwick, 1994). However, researchers had difficulty conclusively proving a link between the level and type of user participation and system utilization. Barki and Hartwick (1994) identified a key modification to previously existing theories that enabled significant movement towards proving the relationship between user participation and system utilization. The modification was the separation of *user participation* from *user involvement*. Barki and Hartwick defined user participation as the assignments, activities, and behaviors of users during the system development process. User involvement refers to the psychological state reflecting the importance and personal relevance that a user attaches to the system.

Barki and Hartwick (1994) stated that users who participate in the system development process were likely to develop beliefs that the system is good, important, and relevant. Barki and Hartwick concluded that user participation influences subsequent levels of user involvement, user attitude, and system usage. The influence is likely due to the user's inclusion in the design of the system and possible feelings of ownership. The

user also obtains a richer understanding of how the system can help with their job responsibilities (Bano & Zowghi, 2015). Therefore, this concept of ownership could potentially drive higher utilization of ERP systems, which is one of the themes of this research.

After separation of user participation from user involvement, researchers began to identify specific dimensions of participation for purposes of research measurement. Cavaye (1995) identified six specific attributes of user participation to include (a) type of participation, (b) extent of participation, (c) content of participation, (d) degree of responsibility, (e) formality of participation, and (f) influence of participation (Bano & Zowghi, 2015). Type of participation refers to actual user participation in system development versus the engagement of representatives of users (Bano & Zowghi, 2015). The extent of participation is the participation in the various phases of development such as process blueprinting, coding, testing, and implementation (Bano & Zowghi, 2015). The content of participation is the type of contribution such as technical design, social design, or change management (Bano & Zowghi, 2015). The degree of responsibility refers to the level of responsibility that user have during development (Bano & Zowghi, 2015). The formality of participation describes whether the user participates in formal meetings or information discussions (Bano & Zowghi, 2015). Finally, the influence of participation addresses the extent that the development team considers the user's input and suggestions (Bano & Zowghi, 2015). Understanding the attributes of user participation can assist the organization to develop strategies to involve users in such a way that will increase their eventual usage of the system.

Markus and Mao (2004) expanded user participation theory with the introduction of six aspects of user participation activities that influence the utilization and success of a system implementation. The aspects of influence are (a) stakeholders versus participants, (b) user representation, (c) selection and representation of users, (d) techniques to include users, (e) type of participation, and (f) change agents (Markus & Mao, 2004). The most important distinction made by Markus and Mao was the difference between the quantity of participation and the quality of participation. The most important factor that influences user participation is the depth and richness of the participation (De Waal & Batenburg, 2014). The refinement of the definition of user participation activities helped with distinguishing between the functional outcomes of participation, such as system quality, and the relational outcomes such as adoption and utilization of the system (De Waal & Batenburg, 2014). Organizations can use this insight to drive the specific behavior of participants during and after ERP system implementation.

A complementary theory to user participation theory bases its foundation on the technical acceptance of the system by users. The technology acceptance model, first proposed by Davis in 1989, explains the relationship between users' perception, attitudes, and behavior intention to utilize the new information system (Kwak, Park, Chung, & Ghosh, 2012). Users' perception affects their behavior intention to use the system, which leads to the eventual usage of the system. The technology acceptance model leads to two primary drivers of user system satisfaction and intention to use the system, (a) the perceived usefulness of the system and (b) the perceived ease of use of the system (Kwak

et al., 2012). The technical acceptance theory provides conceptual support to the importance of user system satisfaction, which is one of the themes of this research.

Perceived usefulness is the user's perception of the probability that the system will improve their individual job results. If a user believes that using the system will improve their performance, it is more likely that the user will accept the system (Kwak et al., 2012). Perceived ease of use is the degree to which the user expects that using the system will not cause additional effort or even reduce effort. If a user believes the system will not result in extra effort, the more likely they will accept and use the new system (Sadki, Bengourram, Latrache, & Mabrouki, 2015). User shared beliefs in the ERP system drive users' perceived usefulness and perceived ease of use and eventual system usage. The shared beliefs originate with project communication and user training.

Kwak et al. (2012) identified a positive relationship between users' perceived ease of use and perceived usefulness to the intention to use the ERP system. The authors also identified a significant influence of organizational factors on perceived ease of use and perceived usefulness (Kwak et al., 2012). Individual opinions of the system within the organization influence the users' perceived ease of use and perceived usefulness (Kwak et al., 2012). Negative opinions tend to decrease the likelihood of user acceptance even before the organization first exposes users to the system (Kwak et al., 2012). The finding suggested the importance of exposure to the system to all members of the organization, even if they will not be an eventual user.

I have defined the purpose of an ERP system, discussed the importance of ERP system usage, and established system usage as critical to the achievement of the expected

benefits from the system. I have also discussed the key theories that provide the foundation for this study. The remainder of the literature review will discuss the five key themes related to ERP system usage. The key themes are (a) user participation, (b) user involvement, (c) user attitude, (d) user system satisfaction, and (e) user preparation. These key themes emerged from the data collection component of this research.

### **User Participation**

The user participation theory predicts that increasing the level of user participation in the ERP system development process will increase the level that users will adopt and utilize the system (Barki & Hartwick, 1994). Organizations that include users in deep and rich participation in the development of the ERP system are more likely to experience a high level of usage once the system is live (Poonam & Agarwal, 2014). Qureshi and Abdulkhalaq (2015) described user participation in the development of the system as a key driver of ERP system usage and thus one of the most important factors for the success of an ERP system. This section of the literature review will discuss the key strategies that organizations may employ to improve user participation with an ERP system. The strategic themes include (a) early participation, (b) participation in process reengineering, (c) key user selection, (d) user skill set, and (e) implementation team culture.

User participation early in the implementation of the ERP system is critical to the eventual level of system usage (Poonam & Agarwal, 2014). Early participation of system users assists the organization to obtain a clear understanding of business processes critical to the development of a quality system (Poonam & Agarwal, 2014). The early



participation will also increase the likelihood of user acceptance and high utilization of the ERP system (Poonam & Agarwal, 2014). An example of an early participation opportunity is business process reengineering. The capabilities of an ERP system can open significant opportunities to change the fundamental processes in an organization leading to opportunities for long-term efficiency gains. Organizations may decide to conduct a business process reengineering project before the actual implementation of the ERP system begins.

The reengineering project is a strategy organizations can use to increase the understanding of business requirement and promote early participation in the implementation process (Elghany, Elghany, & Khalifa, 2015). Pattanayak and Roy (2015) suggested that user participation in the process reengineering project can lead to a higher ERP utilization rate. Users see the ERP system as a tool to implement their process improvement ideas resulting in a higher level of engagement upon implementation of the ERP system (Elghany et al., 2015). The organization must include users with a detailed knowledge of the business processes in the reengineering project. Once the implementation project begins, the users can influence the design of the new system based on their knowledge of business requirements and priorities. Business users can also recognize the need to change processes and procedures to fit with the ERP system capabilities.

A key strategy employed by organizations that experience high ERP system usage is the purposeful inclusion of the key system users as participants on the system implementation team (Mahdavian & Mostajeran, 2013). Key users are among the most

important members of the implementation team due to their understanding of the business processes (Mahdavian & Mostajeran, 2013). Key users develop the detailed requirements of the system, are responsible for training, and are the most important change agents (Mahdavian & Mostajeran, 2013). Key system users are also critical to the successful transfer of knowledge to subsequent system users. Mahdavian and Mostajeran identified that successful knowledge transfer to key system users was a predictor of high usage level of the ERP system.

Another important consideration for organizations that intend to drive high levels of system utilization is the particular skill sets of users selected as participants in the system implementation (Palanisamy & Foshay, 2013). Organizations that desire to increase utilization of the system not only must allow users to participate in the system implementation but also must consider the right users for participation (Palanisamy & Foshay, 2013). The key users most successful in driving eventual utilization of the ERP system possessed a high level of interpersonal and conceptual skills over technical skills.

A skill set common to successful system users is internal flexibility (Palanisamy & Foshay, 2013). Internal flexibility is the user's ability to change easily internally or react by simultaneously using a range of options to respond to changing conditions in the system development process. Palanisamy and Foshay (2013) identified users with higher levels of internal flexibility are more willing to participate actively and productively in the implementation of the new system. The users with internal flexibility are more likely to maximize the opportunity to use the system for the benefit of the organization. Organizations that actively recruit system users to the development team with strong

interpersonal skills and internal flexibility increase the opportunity maximize the usage of the ERP system.

The organization must also consider the culture and environment surrounding the system implementation team. The understanding of the implementation process is important as researchers indicated that the initial implementation stage determines the eventual level of ERP system usage (Ram, Corkindale, & Wu, 2013b). A productive team environment for an ERP implementation is critical to the success of the system. An ERP implementation team will span entities and disciplines across the organization. A strong implementation team requires the rich participation of team members of all levels (Hoch & Dulebohn, 2013). An environment based on shared leadership provides the empowerment to all team members to influence the design and functionality of the ERP system (Hoch & Dulebohn, 2013). User empowerment in the implementation stage is an antecedent to a higher level of system utilization.

### **User Involvement**

The user participation theory defined user involvement as a psychological state that reflects the importance and personal relevance of the system to the user (Barki & Hartwick, 1994). As it applies to information technology systems, user involvement is the extent that the user believes that the system is important and directly relevant to them (Bano & Zowghi, 2015). A system user that believes that the ERP system is important to their success and the success of the organization is more likely to utilize the system to the extent of its capabilities (Bano & Zowghi, 2015). An organization that desires to experience a high level of ERP usage should consider strategies that will increase user

involvement. This section of the literature review will explore the key strategies that organizations may employ to improve user involvement. The strategic themes include (a) executive support and (b) management flexibility.

Executive management support can have a profound influence on the overall motivation and capacity of employees to absorb knowledge, thus influencing the user's assimilation to the ERP system (Ha & Ahn, 2013). Management must demonstrate and communicate a clear vision for the ERP system and motivate users to immerse themselves in implementation activities. Ahmad, Ibrahim, and Garba (2015) identified lack of executive level support as a major reason for low system usage and eventual ERP failure. If users do not perceive the executives' support of the system, they may not perceive usage of the system as an organizational priority. Galy and Saucedo (2014) indicated that the low employee morale and motivation was a significant influence on low system usage. Support of executive management can increase user motivation and help to serve an increase in user involvement.

Subjective norm in the context of technology adoption is the perception of a user as to whether individuals of high status in the organization believe that the user should utilize the technology (Zhang, Gao, & Ge, 2013). Zhang, Gao, and Ge (2013) identified a positive relationship between subjective norm and the users' willingness to utilize the system. An organization that places a high priority on exhibiting executive support of the ERP system can increase user involvement and drive higher system usage based on the concept of subjective norm.

Demonstration of executive support does not end after the system implementation is complete. Cao, Nicolaou, and Bhattacharya (2013) found that management flexibility and support of the postimplementation expansion of ERP capabilities increases user motivation to identify options for increased usage of the ERP system. Organizations that created a process for regular checkpoints for consideration of extended system development experienced long-term increases in system utilization as users actively seek ideas for improvements.

### **User Attitude**

The technology acceptance model proposed a positive relationship between system users' attitudes and their intentions to utilize the capabilities of the system (Kwak et al., 2012). User attitude is a psychological state that refers to the affective or evaluative feelings that a person has towards the new system (Barki & Hartwick, 1994). This section of the literature review will explore the key strategies that organizations may employ to improve user attitude. The strategic themes include (a) participation in development activities, (b) adequate support resources, (c) relevant training, (d) promotion of trust, and (e) management communication.

De Waal and Batenburg (2014) found that only about 2.5% of users actively participate in system development activities. The authors indicated that users that did not participate in system development activities tended to have a negative attitude about the system. The negative user attitude resulted in a significant obstacle to maximizing the usage of the ERP system. Conversely, De Waal and Batenburg indicated that

organizations that promote the deep involvement of users in the system development led to a positive attitude about the system resulting in a high rate of acceptance and usage.

The complex nature of ERP systems requires an appropriate level of technical support resources available to users to alleviate system questions, frustrations, and issues that may lead to a negative perception of the system. Nwankpa (2015) found that inadequate technical support resources could have the effect of driving negative attitudes for the users thus reducing the level overall system usage. Adequate technical support resources allow users to overcome certain barriers that without intervention will limit the user's ability and willingness to find the most effective process routines to complete their job responsibilities (Nwankpa, 2015). The technical support can also provide users with the knowledge and confidence to investigate methods to optimize the system performance.

Another strategy that organizations can implement to improve user attitude revolves around system training. Esteves (2014) indicated that the relevancy of training for system users has a positive impact on user attitude and system acceptance. It is important the organization tailor the training program around the different types of users. For example, the training needs of a daily user are different from the training needs for a manager. The goal of the training is to provide a positive perception of the value of the system and increase the confidence in the capabilities of the system for all types of users (Esteves, 2014). Therefore, a link between the relevancy of training and user utilization of ERP systems should emerge from the research in this study.

Organizations also must consider the effect of trust on users' attitudes toward the ERP system (Schniedejans & Yadav, 2013). The extent that the user is willing to learn and use the system depends on whether the user trusts that the system will function as promised and whether the implementation team considered their needs in designing the system (Schniedejans & Yadav, 2013). The user's lack of willingness and motivation to prepare for changes brought about by the new system will reduce the level of utilization of the system (Gajic, Stankovski, Ostojic, Tesic, & Miladinovic, 2014). The organization can improve the attitude that users have toward the system with strategies that provide adequate support resources, relevant training, and the promotion of trust. Users that have a positive attitude toward the ERP are more likely to maximize the capabilities of the system.

Stanciu and Tinca (2013) emphasized that the organization can maximize the usage of the ERP system only if the people in the organization maintain a positive attitude toward the system. Employees' motivation, beliefs, skills, and willingness to change directly affect the extent that the organization will utilize the system. The extent of executive management support of the system is one of the most important factors that influence how deeply users engage with the system (Gajic et al., 2014). Researchers indicated that users respond favorably to the ERP system if management can communicate how the system assists the organization with meeting its operational and financial goals. Users will adopt the system at a higher rate if management can provide a clear message that links the system capabilities to organization success. Ram, Corkindale, and Wu (2014) indicated that users would make every effort to implement ERP system

capabilities if they understand the role that the system has in advancing the organization's competitive advantages.

### **User System Satisfaction**

The technical acceptance model identified two primary drivers of user system satisfaction. The model describes the drivers of system satisfaction as perceived usefulness of the system and the perceived ease of use of the system (Kwak et al., 2012). The authors of the technical acceptance model proposed that how useful and easy to use that a user perceived the system will determine the level of usage of the system. When a user believes that the system will improve their performance at no additional or reduced effort, the user will experience a high level of satisfaction (Kwak et al., 2012). A high level of user satisfaction is more likely to result in user acceptance and the maximization usage of the system (Nwankpa & Roumani, 2014). Verdouw et al. (2015) identified the users' perceived benefits of the system as the most important driver of adoption and utilization of the ERP system. To capture the benefit, it is critical that the organization adopt strategies that align the ERP system with the specific characteristics and requirements of the business.

This section of the literature review will explore the key strategies that organizations may employ to improve user system satisfaction. The strategic themes include (a) system quality, (b) system design, (c) quality of system support, and (d) information transparency.

Researchers modified the technical acceptance model to highlight the importance of user satisfaction on the utilization and eventual success of the ERP system (Saravanan



& Sundar, 2015). Weli (2014) identified content, accuracy, format, ease of use, and timeliness as the measures that determine user satisfaction. DeLone and McLean proposed a model in which information quality, system quality, and service quality directly influence intention to use and user satisfaction. DeLone and McLean also identified a positive relationship between user satisfaction and increased organization benefits from the ERP system (Tsai, Lee, Liu, Lin, & Chou, 2012). Strategies that can increase user satisfaction will increase the opportunity for a successful ERP system.

An organization can implement strategies to increase user satisfaction by focusing on certain aspects of user support and system design. Ali and Younes (2013) explored the influence of system quality and information quality on perceived usefulness and perceived ease of use. System quality is a measure of inputs such as integration, correctness, and reliability (Ali & Younes, 2013). Information quality is a measure of completeness, timeliness, and accessibility. An organization achieves perceived system quality when users believe that the ERP system provides integration, flexibility, and optimum resource allocation (Ali & Younes, 2013). The authors identified a positive relationship between system quality and information quality on perceived usefulness and perceived ease of use. Users also experienced an improvement in their overall job performance. Ram, Corkindale, and Wu (2013c) identified a positive relationship between perceived system quality, the level of system satisfaction, and the level of user acceptance. The authors concluded that a reliable EPR system that can adapt to adjusting user requirements facilitated users' interaction and use of the ERP system. Organizations

should include a focus on the quality of the ERP system as part of its implementation strategy.

The design of the ERP system is also important to user satisfaction. Information system development historically follows a design that centers on the technology (Usmanji, Khosla, & Chu, 2013). ERP systems are no exception. Current ERP technology bases its designs from the perspective of the product and technology. The design of the systems expects users to conform to the technological design. Usmanji, Khosla, and Chu (2013) explored information systems designed from a human-centered approach. The authors identified a positive correlation between a social design dimension such as ease of use, to user satisfaction and increased utilization levels.

Another aspect of the ERP system that management must consider to increase user satisfaction is the quality of training and support. Ram, Wu et al. (2014) indicated that the quality of training and education on the ERP system has a direct influence on user satisfaction and the level of system utilization. Ram, Wu et al. found that training and education increase the understanding and confidence that users have in the system, thus leading to an increase of satisfaction and utilization and eventually improvement in organization performance. System support is also important to user satisfaction (Tsai, Lee, Shen, & Lin, 2012). Service quality is the overall support delivered by the provider. Tsai, Lee, Shen, and Lin (2012) identified a positive relationship between service quality and user system satisfaction. The authors also identified a positive relationship between user system satisfaction and the utilization and value of the ERP system.

A strategic consideration for management as it relates to user satisfaction is information transparency. Information transparency is the openness and access to information within the organization (Al-Jabri & Roztocki, 2015). In the context of an ERP system, information transparency exists when employees directly receive the information necessary to make their business decisions. Al-Jabri and Roztocki (2015) investigated the effect of information transparency on perceived usefulness and perceived ease of use. The authors found a significant positive relationship between information transparency and perceived usefulness and perceived ease of use and a positive relationship to the utilization of the system. The authors concluded that users value and benefit from the ERP system's ability to share information, increasing their satisfaction with the system. Management should consider strategies that use the ERP system's capability to share information across the organization as a means to increase system utilization. Therefore, the relative level of connectedness of systems in an organization should emerge as a theme connected to ERP utilization in this research.

### **User Preparation**

A theme that underlies the discussion of utilization of ERP under both the user participation theory and the user acceptance model is the importance of user preparation. Organizations that adopt strategies that focus on preparing users to work on the ERP system are more likely to experience higher levels of system utilization (Ram, Corkindale, & Wu, 2015). This section of the literature review will explore the key strategies that organizations may employ to improve user preparation. User preparation strategies are important for ERP system organizational readiness. Researchers considered

organizational readiness an important factor in the success of an ERP implementation. Organizational readiness consists of several dimensions including (a) change management, (b) organizational learning capacity, (c) quality of training, and (d) knowledge sharing as important components of user preparation. Ram, Corkindale, and Wu (2015) found a positive relationship between organizational readiness, user preparation, and usage of the ERP system.

The assimilation of an ERP system into the processes and culture of an organization results from mutual interactions of social, cultural, and environmental factors. Pishdad and Haider (2013) discussed the importance of the organization's change management process. The ERP system will change the way a business operates and will likely change the culture of the organization. It is critical that the organization clearly and proactively communicate to employees how and when the system will affect their job responsibilities (Pishdad & Haider, 2013). The likelihood of high utilization of the ERP significantly increases when users adequately prepare for any change in their job processes and expectations (Pishdad & Haider, 2013). Mo and He (2015) indicated that organizations must consider organization change management as critical as technical proficiency for the success of the system. The change management topic relates to the importance of training previously mentioned in this literature review and is expected to emerge as a theme in this research.

Organizational learning capacity plays a key role in how the user will utilize the capabilities of the ERP system. Chou, Lin et al. (2014) proposed three conditions for optimal learning for ERP users to include (a) learning opportunity, (b) learning

willingness, and (c) learning capability. Learning in an organization does not occur without a proper setting and foundation. Saraf, Liang, Xue, and Hu (2013) discussed the importance for an organization to build absorptive capacity. Absorptive capacity is the ability for members of an organization to acquire and assimilate external knowledge. Creating learning infrastructure such as a dedicated help desk, mentoring programs, and focused learning workshops create an environment of learning for system users. A high absorptive capacity promotes learning and the ability to identify deeper uses for the ERP system (Saraf et al., 2013). Deep use of the ERP system increases the opportunity for the organization to obtain a positive return on its investment.

An ERP system demands a very high level of knowledge from its users for it to operate in an efficient manner. The learning process that the organization must endure is rigorous. The resulting changes can lead to a significant amount of user resistance (Ismail & Ridha, 2015). Ismail and Ridha (2015) studied the effect of organization culture on user learning and acceptance. An organization with open, results oriented, and people-centered culture increased its opportunity for user assimilation to the system (Ismail & Ridha, 2015). An atmosphere that included cooperation, collaboration, and teamwork encouraged the learning and knowledge transfer required to obtain a high level of utilization after the system went live.

Ahmad et al. (2015) emphasized the importance of the quality of training that the organization offers its users. The level of system usage will increase as users become comfortable with the capabilities of the system. Adequate training and user preparation was critical to providing users with the knowledge and confidence to learn and utilize the

ERP system (Ahmad et al., 2015). The complex nature of ERP systems requires extensive training to assist users in understanding how the system works. Dorobat and Nastase (2012) noted that organizations often neglect proper training of key end users. Deng and Wang (2014) identified the need for user training on postimplementation support. The support training can help users understand business processes, task interdependence, and workflows across the organization (Deng & Wang, 2014). The training focus on the integrated structure and business scope will help the user prepare for a higher level of utilization of the ERP system. Sykes (2015) also identified a positive relationship between training, system support, and user system preparation.

Goyette, Cassivi, Courchesne, and Elia (2015) defined knowledge sharing as the process of collecting the expertise of the collection of the organization and utilizing the knowledge to leverage business processes. System users are willing to share knowledge when they perceive that sharing will increase their intrinsic satisfaction (Chou, Chang et al., 2014). Hung, Ho, Jou, and Kung (2012) suggested that an organization must purposely cultivate a culture of knowledge sharing and relationship bonding. The culture of knowledge ensures the highest possible level of knowledge transfer to system users to encourage their willingness to learn and use the system.

Chen and Liu (2013) found that knowledge sharing has a positive influence on the effectiveness of the ERP system. Knowledge sharing across users in the organization is critical in both implementation and post-implementation phases. Shao, Feng, and Liu (2012) explored the influence of organizational culture on knowledge sharing for ERP systems. The authors identified that a development culture provides the best opportunity

for knowledge transfer and high usage of system capabilities. A development culture focuses on innovation and creativity (Shao, Feng, & Liu, 2012). It begins with executive leadership providing a clear vision on how the ERP supports the strategic vision of the organization.

Effective user training and knowledge transfer can lead to a state of infusion (Maas et al., 2014). Infusion is the deep and comprehensive usage of an information system. When users of the system can understand the ERP system for more than just navigation, they begin to use the system in sophisticated ways. The deep knowledge of the system leads to a feeling of empowerment for the user and eventually to a high level of user acceptance (Maas et al., 2014). The high level of user empowerment and acceptance leads the user to maximize the system's capabilities to improve their job responsibilities (Maas et al., 2014). At this point, the organization experiences a strong link between system utilization and improvement in business performance.

The literature review identified the extensive use of a qualitative method for research into information technology usage. Researchers apply the qualitative method to obtain information that will clarify a problem, understand why specific conditions exist, and the reasons for actions of people that live with the specific conditions (Venkatesh et al., 2013). For example, Poba-Nzaou and Raymond (2013) performed a qualitative case study to explore the level of ERP system adoption by users in an ERP system with custom development. Data collection occurred through semistructured interviews with managers in a Canadian manufacturing firm. The authors were able to provide a robust

description and explanation of strategies that an organization can employ to increase the usage of a custom developed ERP system.

The case study design provided a foundation for research regarding strategies that organizations employ to maximize the usage of an ERP system. The design included the collection of data through participant interviews that provided the insight necessary to understand the relevant organization strategies. The findings from the literature review supported the appropriateness of a qualitative method to address the central research question instead of a different method. The information obtained from the literature review supported the conclusion that a qualitative method benefits research on exploring perspectives of ERP directors and managers on strategies used to maximize the usage of an ERP system.

### **Transition**

The purpose of Section 1 was to provide a background of the issues involving the usage of ERP systems. A qualitative case study was the foundation for the research to understand why an organization invests significant resources to implement an ERP system, yet underutilizes its capabilities. User participation theory was the conceptual framework for understanding the factors that influence an organization's usage of an ERP system (Barki & Hartwick, 1994). A proper methodology and measurement plan to conduct the research developed through the identification of literature trends. Through the literature reviewed for this study, I identified the most critical factors that determine the success of strategies to maximize the usage of an ERP system. The study involved interviewing ERP directors and managers that have successfully executed strategies to



maximize the usage of an ERP system. The interviews were the foundation of the research project. Section 2 covers the method and design used to conduct the study and data collection strategies. Section 2 also includes research instruments, data analysis, information on participants, and ethical considerations. I will present the findings and analysis in Section 3.

## Section 2: The Project

In this single-site case study with a qualitative design, I explored the strategies ERP directors and managers in the IT department use to maximize the usage of ERP systems. Section 1 described the research problem and the academic literature supporting the development of this study. Section 2 begins with a restatement of the purpose of the study, followed by the role the researcher plays, and then a discussion of the research participants. In addition, Section 2 contains a discussion of the methodology selected to conduct the study, including the (a) research method and design, (b) description of the population and sampling, (c) ethical research, (d) data collection instrument, (e) data collection technique, (f) data organization techniques, (g) data analysis, and (h) reliability and validity of the study.

### **Purpose Statement**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. The targeted population consisted of four ERP directors and managers in the IT department from one organization in the Midwest region of the United States who have implemented successful strategies to maximize ERP system usage. The implication for positive social change is the potential to identify the perceived primary issues of ERP system underutilization, as underutilization results in suboptimal benefits to the organization and its employees, suppliers, and customers (Nwankpa, 2015). Optimization of benefits from the ERP implementation could allow the organization's leaders to direct their resources to causes that can benefit the health and welfare of employees and citizens

in the geographic region in which they operate. Successful and socially responsible organizations can provide capital and human resources to contribute to social initiatives that benefit employees, employees' families and communities.

### **Role of the Researcher**

In a qualitative study design, I was the data collection instrument (Xu & Storr, 2012). The role of the researcher is to select the appropriate research methodology and design, identify and recruit participants and collect, organize, and analyze the data. The researcher role includes the collection of data through conduction of open-ended semistructured interviews, observations of participants, and collecting other relevant documentation (Frels & Onwuegbuzie, 2013). Section 2 of the study describes the specific steps that I performed as the researcher for this study.

I developed the semistructured interview questions based on themes that emerged from the literature review. I conducted one-on-one, face-to-face interviews with the participants. One-on-one interviews provide the opportunity for a deeper exploration of the study topic (Englander, 2012). The interview questions are in Appendix D. Semistructured interviews require the preparation of questions in advance of the interview, but are open in nature allowing deep and open answers from the participant (DeMassis & Kotlar, 2014). The semistructured format allows adjustments to tailor certain questions for the interviewee. As appropriate, I investigated further based on the participants' particular response. Each of the interviews ended with an appropriate follow-up question.

To ensure the accuracy of the data collection, I audio recorded and fully transcribed the interviews for analysis. Qualitative research interviews are face-to-face verbal exchanges in which the researcher attempts to obtain information from the participant that is relevant to the central research (Rowley, 2012). Interviews are the most effective method to obtain a deep understanding of the participants' worldview of the described phenomena (Anyan, 2013). The interview of participants was the most important method used to obtain data for this study.

Qualitative researchers have freedom in the way they conduct the study interviews as well as with the methods used to analyze the data (Hyett, Kenny, & Dickson-Swift, 2014). I took notes and recorded observations during the face-to-face interviews. I collected documentation from the participants that provided additional insight and context to the conversation. I used an observational protocol for recording notes during the interview. I recorded observations such as location, date, time, demographics, environment, and interaction with others.

I am a professionally trained accountant with experience serving on an ERP implementation project. During my time on the implementation project, I developed a passion for understanding how an organization can successfully implement an ERP system. This study provided the opportunity to explore the issue deeply and to leave with the understanding of how I can positively influence the results of ERP implementation projects.

Qualitative researchers must attempt to minimize error and researcher bias (Hyett et al., 2014). Due to my professional experience, I was aware of the possible bias. I

remained unbiased by approaching the study as an independent observer acting only to gather data. I did not insert personal beliefs, asking open-ended questions, in the same order, to each participant to ensure consistency. I bracketed judgments about the study to mitigate bias and preconceived notions (Sorsa, Kiikkala, & Astedt-Kurki, 2015). I controlled my reactions to the interview responses. I used an interview protocol for each interview. The interview protocol (Appendix B) was essential to ensure that I followed the identical process for each participant. The interview protocol ensured that I completed each step in the process.

The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research Subjects of Research issued The Belmont Report in 1979 (Greaney et al., 2012). The Belmont Report documented the ethical principles and guidelines for the protection of humans (Greaney et al., 2012). The Belmont Report identified the distinction between practice and research, three basic ethical principles, and the application of the principles (Greaney et al., 2012). The three basic ethical principles include (a) respect of person, (b) beneficence, and (c) justice (Greaney et al., 2012). I followed the three principles during the execution of the study.

### **Participants**

Study participants included a purposive sample of four ERP directors and managers selected from one organization in the Midwest region of the United States that has employed strategies to maximize the usage of its ERP system. The sample size was appropriate to obtain the knowledge necessary to understand the strategies organizations

employ to maximize the usage of an ERP system. I conducted semistructured face-to-face interviews with each participant.

Purposive sampling allows the researcher to ensure that participants have the appropriate knowledge of the phenomenon under study (Robinson, 2014). Before contacting any of the participants, I (a) received approval to conduct research from the Institutional Review Board (IRB); (b) contacted organizations to introduce myself, the study, and solicit interest in participation in the study; (c) selected the study organization; and (d) began exploration of public documentation related to the selected organization.

Establishing a trusting relationship with participants is essential to obtain the information required to complete the study (Yin, 2014). Upon identification of the participants, I contacted each through email to explain the purpose of the study. I also explained the interview, confidentiality, and consent process. I asked participants to approve through email reply a consent form that includes (a) a description of the study, (b) my role as the interviewer, (c) time commitment to participate, (d) the rights of the participants, and (e) the data storage requirements.

Protecting the privacy and anonymity of each participant is important to ensure the integrity of the study (Yin, 2014). I concealed the names of the individuals and organization. I assigned a unique code to each participant to distinguish the participants and applied the unique code throughout the research. I protected the master list of participant codes in a locked safe in my home. I will destroy the list after 5 years.

## **Research Method and Design**

The intent of this study was to explore strategies that ERP directors and managers employ to maximize usage of ERP systems. I selected the research method and design after completing the problem statement (Reybold, Lammert, & Stribling, 2012). Based on my study and review of research methods and designs, I determined that qualitative case design was the best approach to studying the research question.

### **Research Method**

I chose a qualitative research method for the research study. Quantitative, qualitative, and mixed-method are the three types of research methods (Venkatesh et al., 2013). Qualitative researchers often use the approach to clarify a problem or identify groups or individuals affected by the problem. Qualitative researchers attempt to go beyond simple descriptions of the phenomenon to provide an in-depth understanding of the phenomenon (Anyan, 2013). Qualitative methods allow the researcher to understand why certain phenomenon exists and why people act the way they do regarding the phenomenon under study (Venkatesh et al., 2013). Qualitative research reduces thoughts, emotions, and behaviors to words. Quantitative research reduces thoughts, emotions, and behaviors to numbers (Yilmaz, 2013). The qualitative method was the most appropriate method for this study.

I was interested in understanding how individuals make decisions and take action in response to a particular phenomenon. Qualitative research methods can allow a researcher to learn and document a person's experiences that will produce a nuanced understanding of the phenomenon under study (Birkinshaw et al., 2012). Researchers use

qualitative methods when performing exploratory research (Barratt et al., 2011). I gathered data through interviews with participants, observations, and documentation.

When a researcher combines aspects of qualitative and quantitative methods in the same study, the researcher engages in a mixed-method study (Venkatesh et al., 2013). I did not evaluate variables in this study. Therefore, a mixed-methods or quantitative approach was not appropriate. In addition, no hypothesis existed for this study, which made the quantitative or mixed-methods approaches inappropriate (Ketokivi & Choi, 2014). A qualitative method was the most appropriate method for this study in exploring strategies organizations undertake to maximize the usage of ERP systems.

### **Research Design**

The design of this qualitative research study was a single-site case study. Research design is the plan for exploring research questions and drawing conclusions to prepare a study model or report (Lauckner, Paterson, & Krupa, 2012). The primary qualitative research study designs are ethnography, grounded theory, phenomenology, and case study (Kolb, 2012). The case study design aligns with the purpose of this study.

In a grounded theory study, the researcher attempts to develop theories that can fit with the phenomenon (Charmaz, 2014). Grounded theory was not appropriate for this study as I did not develop a new theory. An ethnographic study involves the exploration of daily lives, behaviors, and activities of a community or culture (Akerlind, 2012). This study did not involve the study of a community or culture over time; therefore, an ethnographic design was not appropriate for this study. The phenomenological design is appropriate when the researcher intends to interpret lived experiences from the



perspective of others (Englander, 2012). Rowley (2012) explained that the researcher in a phenomenological study looks for an understanding of and insights into experiences, behaviors, opinion, processes, and attitudes. I explored the lived experiences of the participants in the interviews. However, I also used observations and documentation. As I intended to interview only four ERP professionals from one organization, I would have had difficulty reaching data saturation in a phenomenological study. The phenomenological design was not appropriate for this study.

The inductive method of a case study allows for a rich description of the environment of an ERP implementation (Ketokivi & Choi, 2014). A case study approach is appropriate when the main research questions are *how* or *why* questions. A case study is also appropriate when a researcher does not have control over the behavior events and when the focus of the study is a current phenomenon (Yin, 2014). The case study approach allows for investigation of a phenomenon in a real-world context (Ketokivi & Choi, 2014). I gathered data with a methodological triangulation of participant interviews, observations, and documentation until I reached data saturation. The researcher can increase the validity of the case study findings with methodological triangulation (DeMassis & Kotlar, 2014). The multiple sources allow for the corroboration of evidence such that a single interpretation of data will not drive the results of the study (Houghton, Casey, Shaw, & Murphy, 2013). A single-site case study design is consistent with qualitative research and was the most appropriate design for this study.

### **Population and Sampling**

I selected the population for this qualitative study through a purposive sample size of four ERP directors and manager from an organization that successfully employed strategies to maximize the usage of its ERP system. The researcher can use purposeful sampling to find participants who are rich in the information providing deep knowledge of the phenomenon (Reybold et al., 2012). In purposeful sampling, the researcher judges which participants to select based on whom and what matters as data to the study criteria (Reybold et al., 2012). The purposeful sampling method was appropriate to gather data to support the research question of this study.

A critical step in the design of the study is the determination of the appropriate sample size. In a qualitative study, an adequate sample size is the one that sufficiently answers the research question (O'Reilly & Parker, 2012). The researcher will use sample size planning to estimate the appropriate number of participants for the selected study design. The goal is to reach the number of participants required to obtain data saturation. The researcher achieves data saturation when the data collected becomes repetitive (O'Reilly & Parker, 2012). Data saturation is important to ensure that the researcher collects quality and sufficient data to support the study (O'Reilly & Parker, 2012). I estimated that a sample size of four participants using methodological triangulation would achieve data saturation for this study.

I used criteria for selecting participants to include over the age of 18 and ERP directors and managers from a single organization that successfully employed strategies to maximize the usage of its ERP system. I conducted the participant interviews in a

private location that was convenient to the participant. The location of the interview is important to minimize possible distractions in an environment in which the participant is comfortable sharing information (Jacob & Furgerson, 2012). I was able to conduct all interviews with the participants in a quiet and private location.

### **Ethical Research**

Qualitative researchers have two primary and important responsibilities. First, the researcher must create knowledge through rigorous research processes. Second, the researcher must uphold ethical standards and principles (Damianakis & Woodford, 2012). Ethical standards and principles must protect participants and researchers, minimize harm, increase the overall good to society, assure trust, include research integrity, and satisfy institutional and professional needs. The research must consider guidelines from the perspective of analyzing and reflecting upon the actions of the individual in the phenomenon under study (Aluwihare-Samaranayake, 2012). Qualitative research must include ethical guidelines that consider the nuances of participating in a study as a researcher or participant.

I took steps in this study to provide assurance to participants that study actions are in place to protect their rights. I coordinated all ethical efforts with the study committee and Walden University IRB.

- I did not contact participants or otherwise collect study data until I received the Walden IRB approval number. The approval number for this study is 07-07-16-0515991, and it expires on July 6, 2017.

- Before participation, I asked participants to consent to the study by signing a study consent form. Before asking the participants to sign the consent form, I provided an invitation letter (Appendix A) that provided details of the study, a brief about the study, and a sample of interview questions. The consent form included an explanation that the interviews are audio recorded and that I will request additional supporting documentation. I discussed with the participants the risks and benefits of the study. The participants were encouraged to keep a copy of the informed consent form.
- I included phone and email contact information in the invitation letter should the participant choose to withdraw from the study at any point before the interview.
- Participation in the study was voluntary, and the participant could exit at any time by contacting me by phone or email. I ensured that the participants had the information necessary to make an informed decision about participating in the study.
- I emphasized that the decision to not participate involved no penalty.
- I offered no incentives for participation in the study.
- Confidentiality of participant information is essential to the integrity of the study (Yin, 2014). Data safeguards are an important component to ensure confidentiality. I will store all study information on a portable hard drive, with the portable hard drive stored in a personal safe in my home for 5 years with combination protection.

- I conducted the interviews in offices, conference rooms, or other private areas to reduce privacy risks.
- I concealed personal information through the application of pseudonyms and identifying codes. I did not use personal names in the study.
- Once the doctoral study is complete, I will transfer all data files to a flash drive. I will lock the flash drive in the combination protected personal safe for 5 years. After 5 years, I will destroy the information by deleting all files and formatting the flash drive.

### **Data Collection Instruments**

As the researcher in a qualitative case study, I was the data collection instrument. As the data collection instrument, my knowledge, experience, and skills are a critical determinant of the study results (Rowley, 2012). The six acceptable sources of data for a qualitative study are (a) archival records, (b) direct observations, (c) interviews, (d) participant observation, (e) documentation, and (f) physical artifacts (Yin, 2014). For this study, I collected data in the form of interviews, participant observation, and documentation.

I followed a case study protocol. A case study protocol ensured that I focused on the research topic and improved the reliability of the study (DeMassis & Kotlar, 2014). The case study protocol includes (a) an overview of the case study, (b) data collection procedures, (c) data collection questions, and (d) a guide for the case study report (Yin, 2014). I collected interview data through semistructured interviews. A semistructured interview requires the preparation of participant questions based on the identification of

themes. The interviewer presents participants the questions in a consistent and systematic process with the ability for the interviewer to add questions as required for further exploration (Jacob & Furgerson, 2012). I followed an interview protocol (Appendix B). In addition to the semistructured interviews, I collected observation data and relevant documentation.

I also performed member checking on the interview data to increase the reliability of the research (Houghton et al., 2013). After completion of the interview transcription, I asked the participants to review the transcript of their interview and to identify any errors. As this study was not quantitative, I did not calculate scores or variables for verification. I also performed data cleansing as a method to decrease the threats to validity. Data cleansing includes identifying and removing data that is not relevant to the study search criteria (White, Oelke, & Friesen, 2012). Once the transcription, member checking, and data cleansing were complete, I began coding and analysis.

### **Data Collection Technique**

I collected data for this study through interviews, observations, and documentation. I conducted face-to-face, semistructured interviews using the interview protocol in Appendix B. Semistructured interviews are the most effective method to collect experiences of the participants as the interviews provide the opportunity for participants to give rich descriptions of their experiences (Doody & Noonan, 2012). Semistructured interviews also allow the researcher to ask additional questions for further (Doody & Noonan, 2012). The semistructured interview technique was appropriate to collect data to support the research question of this study.

I developed the interview questions (Appendix D) based on the themes identified in the literature review. The interviews must be face-to-face to gather participant observation data. I contacted each participant to set a convenient time and place to meet for the interview. I called to confirm each interview at least 24 hours in advance. On the day of the interview, I arrived early in case of unforeseen circumstances. Upon arrival at the interview site, I recorded information in a notepad such as location, date, time, the environment, demographics, and participant interaction.

It is important that the interviewer build trust and establish rapport with the participant as the participant must feel comfortable to answer questions honestly (Doody & Noonan, 2012). I spent time getting to know the participant prior to the start of the interview to establish rapport. I then reviewed with the participant a copy of their signed consent form. Once I ensure that only the participant is present, I recorded the interview. Once the interview was complete, I collected all relevant documentation.

I did not conduct a pilot study; however, I invited participants to ask for clarification on any questions throughout the interview process to ensure that they understand the wording and meaning of the interview questions. I reminded participants that they had the option to answer none or some of the questions without penalty and that they had the option to end the interview at any time.

I protected the names of the organization and participants by labeling each separate interview with a code such as *Participant 1*. After completion of the interview transcription, I asked each participant to perform member checking. Member checking allows each participant to review the transcripts for discrepancies or errors. Member

checking increases the reliability of the study (Houghton et al., 2013). The participants completed member checking on their respective interview transcripts. I updated the transcripts for any identified discrepancies.

### **Data Organization Technique**

Methodological triangulation increases the validity of the case study findings (Choi, Chow, & Liu, 2013). I collected data through interviews, observations, and documentation. I recorded the participant interviews using the Audacity software on my laptop computer. I had a portable audio recorder available for a back-up. I tested both devices to ensure proper functioning before each interview. I brought a pen and notepad to each interview to record participant observations. I collected relevant documentation after each interview.

I labeled the data for each interview with a unique identification such as *Document 1*. I cleansed the data before beginning coding and analysis (White et al., 2012). The collection and storage of the data comply with all IRB requirements (Aluwihare-Samaranayake, 2012). I will have exclusive access to the data at all times from initial collection through the 5-year storage requirement. I will store all electronic data on a personal, password-protected hard drive. I will store the hard drive and all other study documentation in a locked safe in my home. After 5 years, I will delete and format the hard drive and shred all other documentation.

### **Data Analysis**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to maximize the usage of ERP



systems. The literature review identified key themes that are the basis for the interview questions. The participants answered 10 semistructured interview questions as one part of the methodological triangulation for this case study.

1. What is your perspective on the strategies your organization uses to obtain maximum usage of the ERP system?
2. What obstacles, if any, obstruct your organization's attempts to obtain maximum usage of the ERP system?
3. How are you addressing these obstacles?
4. How did you identify and address deficiencies in ERP usage?
5. What is your perspective on the depth to which the organization used members of your department in the design and development of the ERP system?
6. What strategies have you used to increase the level of user satisfaction in the ERP system?
7. What is your perspective on how the users of the ERP system perceive the usefulness of the ERP system?
8. What is your perspective on how easy it is for users to perform their assigned tasks in the ERP system?
9. What is your perspective on how effective the organization is in preparing users to use the ERP system?
10. What additional information can you provide to help me understand how your organization reaches the maximum level of ERP system usage?

The semistructured interview questions address the central research question of this study. I also collected relevant organization documentation and participant observation data. The methodological triangulation process provides a more thorough understanding of the research issue than one type of data (Choi et al., 2013). The documentation provided by participants provided a deeper understanding of the participants' interview responses.

After completion of the interview, I listened to the audio recordings and transcribed the interviews. The Audacity software can replay recordings in slower motion, which allowed me to type the interview questions and participant responses word for word. After the initial transcription, I performed a data cleansing process. Data cleansing is the removal of all data that is not relevant to the research topic (White et al., 2012). Upon completion of data cleansing, I coded and analyzed the remaining data. Each participant received a unique code such as *Participant 1*, which allowed only me to identify the actual participant. I maintained a separate document that lists the participants' names and codes. Observation data matched with participants with a label such as *Observation 1*. I used the following steps to analyze the data (a) organize the dataset; (b) get acquainted with the data; (c) classify, code, and interpret the data; and (d) present and write up the data.

The conceptual framework for this study was the user participation theory. I compared the user participation themes identified in the data to prior literature findings on user participation theory. I began the interpretation and data analysis process with the review of the transcribed interview, participation observations, and organization

documentation (Vaismoradi, Turunen, & Bondas, 2013). The final step was to interpret the data and develop conclusions.

### **Reliability and Validity**

Reliability and validity relate to the precision and accuracy of the research (Elo et al., 2014). The terms have different meanings in qualitative and quantitative research. In quantitative research, reliability means the consistency or degree to which a research instrument measures a given variable consistently. Validity refers to the accuracy of the research data (Yilmaz, 2013). Qualitative research uses tools like semistructured interview protocols to reach an acceptable level of credibility, trustworthiness, and authenticity to achieve validity. Reliability in qualitative research refers to dependability and auditability of the study process (Yilmaz, 2013). When recruiting participants, I clarified the intent of the study and emphasized the importance of their confidentiality. I mitigated my opinions and personal bias to ensure a fair analysis of the data. I followed interview protocol (Appendix B) by asking all participants the same questions in the same order. I also followed case study protocol, including member checking and review of the transcript.

#### **Reliability**

Qualitative research is reliable when the research produces stable and comparable results over time (Houghton et al., 2013). I followed interview protocol (Appendix B) until I reached saturation. I ensured reliability by following the interview protocol during the interviews. I furthered reliability by asking the same interview questions in the same

order to all participants. The researcher can advance reliability and validity through the attainment of permission from the participants to audio record the interviews (Jacob & Furgerson, 2012). Data cleansing and coding also ensured reliability and validity (White et al., 2012). Upon completion of the transcription of the interviews, I also asked the participants to review the transcript for errors and omissions.

### **Validity**

Credibility, dependability, transferability, and confirmability are components of validity (Sinkovics & Alfoldi, 2012). I ensured credibility by describing the phenomena from the viewpoint of the participants. Transcript verification by the participants ensured that I captured the participant's viewpoints accurately. Transferability refers to the application of the research results to similar organizations. A case study researcher will focus on a small sample, rather than the generalizability of the study findings (Yin, 2013). Confirmability refers to the extent that the study results align with previous study findings, in particular when a researcher applies a similar case study method (Yin, 2013). I reviewed previous study findings to determine the extent to which the results of this study align.

I obtained methodological triangulation through the procurement of data from interviews, observation, and documentation (DeMassis & Kotlar, 2014). The multiple sources of data allow for the formation of patterns and themes, which increased the validity of the study (Yin, 2013). The completion of member checking ensured that I recorded the meaning of the participants' answers (Houghton et al., 2013). The methodological triangulation also served to obtain data saturation, strengthening the

validity of the study. Data saturation is evident when the data become repetitive, and the data collection process yields no new information (O'Reilly & Parker, 2012). I interviewed sufficient participants to obtain data saturation.

Elo et al. (2014) discussed the importance of trustworthiness of the data analysis within a qualitative study. The trustworthiness of analysis results depends on the availability of deep, appropriate, and saturated data. The researcher must follow a logical and detailed path through the data analysis process to ensure results are trustworthy. The research must report the results of the study in a clear and understandable manner to bring validity to the study (Elo et al., 2014). I followed traditional text analysis procedures to increase the trustworthiness of the study results.

### **Transition and Summary**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to maximize the usage of ERP systems. The research question was appropriate for a qualitative single-site case study design for data collection. Section 2 provided the foundation of the research for this study. Through a qualitative case study approach, the research focused on exploring strategies that organizations use to maximize the usage of an ERP system. Section 2 also detailed the roles of the researcher, the participants in the study, and ethical considerations. Finally, Section 2 outlined the data used in the research to include population and sampling techniques, collection instruments, collection techniques, organization techniques, data analysis, reliability, and validity. Data collection through the study design was important to the completion of valuable, reliable research that can

benefit both business and society by providing strategies that can potentially optimize the benefits from an ERP system. I will present the findings and analysis in Section 3.

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

#### **Introduction**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. The central research question guided my understanding of the perspectives of ERP directors and managers regarding strategies that they employed to maximize usage of ERP systems. I collected data to support the research question using a purposeful selection of the participants who answered open-ended interview questions. I recorded, transcribed, and analyzed the participants' answers to the interview questions. Coding of the data identified common themes and guided the analysis and results of the study.

I reviewed the organization's website to understand the structure, mission, and strategy of the organization. I collected artifacts from the participants that included information system diagrams and business organization structures. The findings of the study revealed five distinct themes regarding strategies to obtain maximum usage of ERP systems. The five themes were (a) user participation, (b) user involvement, (c) user attitude, (d) user system satisfaction, and (e) user preparation. The identified themes are consistent with the user participation theory, the conceptual framework for this study.

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

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. The central research question for this study focused on determining the strategies ERP directors and managers in the IT department use to obtain maximum

usage of an ERP system. The data collection instrument consisted of the following 10 interview questions:

1. What is your perspective on the strategies your organization uses to obtain maximum usage of the ERP system?
2. What obstacles, if any, obstruct your organization's attempts to obtain maximum usage of the ERP system?
3. How are you addressing these obstacles?
4. How did you identify and address deficiencies in ERP usage?
5. What is your perspective on the depth to which the organization used members of your department in the design and development of the ERP system?
6. What strategies have you used to increase the level of user satisfaction in the ERP system?
7. What is your perspective on how the users of the ERP system perceive the usefulness of the ERP system?
8. What is your perspective on how easy it is for users to perform their assigned tasks in the ERP system?
9. What is your perspective on how effective the organization is in preparing users to use the ERP system?
10. What additional information can you provide to help me understand how your organization reaches the maximum level of ERP system usage?

The study participants and supporting documentation provided rich perspectives on the strategies ERP directors and managers in the IT department use to obtain



maximum usage of an ERP system. The presentation of the findings includes descriptions of the participant sample, discussion of the five identified themes, how these data supported the central research question, and alignment with existing research. Finally, I will validate the choice of the user participation theory as the conceptual framework for this study.

The research consisted of four face-to-face, semistructured interviews with 10 predetermined questions presented to ERP directors and managers from one organization in the Midwest region of the United States, who have implemented successful strategies to maximize ERP system usage. The participants interviewed were IT leaders with previous experience implementing and operating ERP systems. The selection of four participants allowed for an accurate identification of the perspectives of ERP leaders about strategies to maximize the usage of ERP systems.

From the data collected and analyzed, I found the first theme, user participation, as the most common strategy to increase usage of ERP systems. All participants emphasized the early and deep participation of the user in the development of the ERP as critical to obtain maximum usage of the system. The next two themes, user involvement and user attitude, address important psychological factors that increase user's feeling of ownership and value in the ERP system. The fourth theme, user system satisfaction, describes the importance of the user's perception of the value of the system and whether or not it is easy to use. The final theme, user preparation, discusses strategies that an organization can use to ensure that all users have the skills and knowledge necessary to perform assigned tasks confidently within the ERP system.

An important component in each of the themes is the timing of execution of the strategies. The participants emphasized that any combination of these strategies is effective only if executed from the very beginning of the implementation of the system. An ERP system implemented without the inclusion of some of the strategies described in the following five themes has a high probability of failure from suboptimal usage. The foundation for sustained maximum usage of the system is established only during the implementation of the system.

### **Theme 1: User Participation**

The first theme emphasized the participants' perspective of the importance of user participation in the development of the ERP system. The user participation theory predicts that increasing the level of user participation in the ERP system development process will increase the level to which users will adopt and utilize the system (Barki & Hartwick, 1994). Consistent with the user participation theory, each of the participants discussed the need to include the users in the development of the ERP system from the very early stages of system development. Users that feel ownership and inclusion in the development of the system are more likely to use the system after go-live (Bano & Zowghi, 2015). Two participants mentioned the importance of understanding the business needs for the eventual system users as part of the software selection process (P3, P4). User participation in the software selection will increase the likelihood that the implemented solution will fit the user's needs thus increasing the rate of utilization.

The participants' supporting statements are listed in Table 5.

Table 5

*Table 5. Theme 1. User Participation*

Participant	Participant Comment
P1	<p>The way to be effective is to understand your stakeholders early on.</p> <p>We involved users all along the way.</p> <p>Having a dedicated team from both the business and IT taken out of their day to day roles and focused on the project. Where there's focus, there are better results and where they are not pulled into a hundred different directions.</p> <p>We are very diligent about including users in every function of a new system.</p>
P3	<p>The process of developing systems is a difficult problem. Not having the right level of key user participation is a major obstacle.</p>
P4	<p>We had the business people involved in the selection of the software from the beginning.</p> <p>The integration of the actual users of the system is critical from the beginning. The key is to get integration of users with the project team.</p> <p>We make sure to involve the most important user from the beginning of development. The key users will be the organization's high performers.</p>

Two participants emphasized the importance of the participation of key system users throughout the system development process (P3, P4). Key users act as change agents, influencing others to learn and accept the ERP system (Mitra & Mishra, 2016). Participation of users that have an influence on peers and bring unique skill sets can greatly improve the quality and fit of the system, thus driving higher levels of overall user acceptance. Another participant suggested that business process reengineering projects

completed as part of the new system design can greatly increase the participation of key users (P3). Key users that can translate important business requirements to new processes that align with the ERP solution will also drive an increase in overall user acceptance of the system. User participation to drive postimplementation enhancements will also increase the likelihood of user acceptance of the system (Ju, Wei, & Tsai, 2016). The strategy to rely on key system users throughout the development of the ERP system is consistent with findings in the literature review.

Participants also mentioned the importance of building a strong team culture within the system implementation team (P1, P4). Positive group cohesion is a factor to influence strong team performance (Mitra & Misha, 2016). A culture that encourages open and honest discussion of ideas and accepts feedback from users will encourage further and deeper participation of the users during the implementation period. An important part of the culture is the establishment of accountability to the success of the program. Three participants emphasized that organization must accept full responsibility for the results and effectiveness of the system after it is implemented (P1, P2, P3). It is critical that the organization include business users of the system in this direct responsibility, not just the implementation team. The participants suggested that user participation throughout the development process would drive the responsibility of success to the business users.

## **Theme 2: User Involvement**

The second theme emphasized the involvement of users in the ERP system. The user participation theory defined user involvement as a psychological state that reflects

the importance and personal relevance of the system to the user (Barki & Hartwick, 1994). An ERP system user that believes that the system is relevant and important to the success of the organization is more likely to utilize the system. The commitment and support of the ERP system from the executive level of organization leadership is critical in creating an environment that encourages users to take ownership of the success of the system (Ha & Ahn, 2013). The theme of user involvement was an important part of each participant's discussion of eventual system usage.

The participants' supporting statements are listed in Table 6.

Table 6

*Table 6. Theme 2. User Involvement*

Participant	Participant Comment
P1	I think business ownership is absolutely key.  Project expectations are in the performance goals of both the business and IT and that there is dedicated business leadership on the program.  The first and primary concern is that it should not be an IT-driven project. It should be run by the business.
P2	The company needs to be held accountable to the success of the system.
P3	Make sure the project sponsor has enough clout and influence to ensure success.  Executive sponsorship is critical.  You have to go into it with an organizational commitment from the beginning.
P4	Change starts at the top. Executives stating clearly what the goals and objectives of the system are and also what the key principles are.

Two participants discussed the importance of a business owned ERP implementation project (P1, P3). The leaders of the business operations must commit to the success of the system (Mo & He, 2015). The commitment demonstrates to the users of the system that their involvement with the system is critical to the success of the business. The organization can demonstrate commitment by including direct system implementation project goals into the performance goals of the business teams.

Two participants mentioned management's ability to remain flexible with the details of the system implementation as an important indicator to the users of management's support of the system (P3, P4). An organization can develop its flexibility to improve the system functionality through the establishment of open communication paths with its technical partners (Andersson, 2016). Users that see their business leaders listen to their feedback and make appropriate adjustments will more likely feel involvement with the system, eventually increasing their willingness to learn and use the system.

### **Theme 3: User Attitude**

The third theme involved the attitudes of users of the ERP system. The user participation theory describes user attitude as a psychological state that refers to the affective or evaluative feelings that a person has towards a new system (Barki & Hartwick, 1994). All of the participants mentioned the importance of building trust with the users of the system. Users build trust in the system in various ways. One participant mentioned the impact of the go-live as critical in building user trust (P1). A relatively

smooth transition to the new system will go a long way to building the trust that users require to want to use the system. System performance has a significant positive influence on user attitude towards the ERP system (Bobek, Rohadia, & Sternad, 2016). The participant pointed out that users will value a system that they can trust to work more than a system loaded with features, some of which are unreliable. Another participant provided a similar comment, focusing on system stability (P2). The participant recommended a strategy where all but the most critical system changes stop during the testing phase before go-live. Changes to the system without the benefit of a complete testing cycle can introduce the risk of system instability at go-live. The reason for the strategy is to promote user trust in the new system.

The participants' supporting statements are listed in Table 7.

Table 7

*Table 7. Theme 3. User Attitude*

Participant	Participant Comment
P1	<p>We can change user attitude through training that is tailored to their situation.</p> <p>Management communication is absolutely critical in ensuring usage.</p> <p>Focus on a quality solution with appropriate release cycles afterward to focus on highest risk. As you get closer to go-live, it's more important to consider stability. That is how you gain the trust of users.</p> <p>Nothing kills users more than a rocky implementation. They have a lot of distrust of the system from the beginning.</p>

Three of the participants discussed the importance of management communication to drive a positive user attitude toward the system (P1, P3, P4). Users that understand the purpose and advantages of the ERP system will experience a higher intention to use the system (Alok & Mocherla, 2016). Early, consistent, and focused communication to system users allow users to gain the required comfort with the system that will eventually lead to extended usage of the system (Ju et al., 2016). Other strategies mentioned by participants that can improve user attitude include providing robust support resources (P2, P4) and providing training that is relevant to each user's job responsibilities (P1, P2, P3, P4). Strategies that consider methods to improve user attitudes towards the ERP will promote user motivation to learn, accept, and use the system.

#### **Theme 4: User System Satisfaction**

The fourth theme emphasized the importance of user system satisfaction with the ERP system. The technical acceptance model describes the drivers of user system satisfaction as perceived usefulness of the system and the perceived ease of use of the system (Kwak et al., 2012). When a user believes that the ERP is useful to their performance at no additional or reduced effort, the user will experience a high level of satisfaction. A high level of user satisfaction is more likely to result in user acceptance and the maximum usage of the system (Nwankpa & Roumani, 2014). Two participants stated the importance of clear and open communication to system users during the development stages (P2, P3). The organization must set appropriate expectations for what the system is expected to produce for the business and its users. Meeting or exceeding



those expectations will increase the probability that users will be satisfied with the ERP system after implementation.

The participants' supporting statements are listed in Table 8.

Table 8

*Table 8. Theme 4. User System Satisfaction*

Participant	Participant Comment
P1	<p>We work with the software suppliers to improve system design from a user perspective.</p> <p>Having on site people after go-live to help with problems for the right period. And then if the problem can't be addressed, you must communicate when it can be. What is the resolution path?</p> <p>Tailor your communication to the stakeholder community that you are affecting.</p>
P2	<p>I would like to see us invest more money to improve the usability of our systems.</p> <p>You have the right people there to listen to the user feedback, to adjust.</p> <p>For casual users, the systems are very difficult to learn and use.</p> <p>I am not sure companies spend the time to make sure the user experience is maximized. Projects just run out of time.</p>
P3	<p>I think user satisfaction, some of it goes to how you use the tools, or what version of the tools you pick.</p> <p>The complexity of the environment is an obstacle. You must focus on simplification.</p> <p>From blueprint into the design the more you can get them involved in seeing the solution, and touch it, and be part of it.</p>
P4	<p>If the system does not provide the easiest way for users to do their jobs, they will find another way outside of the system.</p>

One participant discussed the influence of proper selection of system tools on user satisfaction (P3). System tools that align well with business processes tend to drive more satisfaction with the system. The strategy is consistent with a recent study that found when a user experiences a high level of perceived usefulness of the system tools, the user will experience a higher intention to use the system (Alok & Mocherla, 2016). Two participants mentioned the strategy of spending the required time to understand the users' business processes, and then working with the software providers to change system designs that may be disharmonious (P1, P2). Delivering tools that more closely align with the organization's business processes will drive a higher level of system satisfaction (P3). One participant mentioned the importance of the quality of the system at go-live as a factor that can drive increased user system satisfaction. The participants state that a system that is reliable and consistent will greatly increase the level of trust that users have with the system. Another participant added that the quality of support provided to users after implementation will also increase the level of trust (P3). Organizations must consider an array of strategies such as early and consistent communication, setting reasonable expectations, selection of the proper tools, system quality, and user support to increase user satisfaction in the system.

#### **Theme 5: User Preparation**

The fifth theme emphasized the importance of user preparation before beginning use of the ERP system. Both the user participation theory and the user acceptance model emphasize the importance of user preparation. Organizations that adopt strategies that focus on preparing users for the implementation and use of an ERP system are more

likely to experience higher levels of system utilization (Mitra & Mishra, 2016). All four of the participants indicated that a thorough change management plan is a critical component of user preparation before the implementation of an ERP system (P1, P2, P3, P4). The change management plan can include training and various types of communication from the very beginning of the implementation of the system.

The participants' supporting statements are listed in Table 9.

Table 9

*Table 9. Theme 5. User Preparation*

Participant	Participant Comment
P1	You have to focus your training, change management, and a tie into the benefits of the system for people to get comfortable.  Communication is absolutely critical in ensuring usage.
P2	Training is another way to address usage obstacles. But it has to be useful to the users.
P3	Change management is important in the proper preparation for a new system.  I don't think users always perceive the system as a good thing. It is a typical change management issue.
P4	We tend to have a "super user" strategy. That is, we hope someone learns the system well on their own, becomes a super user of the system, and then trains other users.  Create a tailored plan for the users. It's a change management plan coupled with training, coupled with communication. Constant communication is absolutely critical.

All of the participants emphasized the quality of the training for system users for successful preparation (P1, P2, P3, P4). Competency-based training is an important tool to extend the knowledge required for effective use of an ERP system (Charland, Cronan,

Leger, & Robert, 2015). The organization should develop system training that is tailored to the various levels of users in addition to the different job functions. Training can take place in stages through the system development process, transitioning from a focus on the high level the reasons that the business needs the system to step-by-step training on specific job functions.

Two participants mentioned that training and education of users is a skill that the organization itself must practice and learn (P3, P4). Organizations that can efficiently train users on new systems will provide users a better opportunity to adopt to the new systems (Chou, Lin et al., 2014). Another participant mentioned the development of a knowledge sharing strategy that encompasses more than traditional training (P4). Traditional training in the EPR setting delivers typically only about 25 percent of the knowledge required for competent use of the system (Chayakonvikom, Fuangvut, & Prinyapol, 2016). The strategy provides opportunities for knowledge sharing in both formal and informal ways from the implementation team to key users to all users of the system.

### **Research Question**

The central research question for this study focused on the strategies ERP directors and managers in the IT department use to obtain maximum usage of an ERP system. Leaders may employ strategies from the findings to maximize usage of an ERP system. The central research question was: What strategies do ERP directors and managers in the IT department use to maximize the usage of ERP systems? I answered

the central research question through 10 interview questions answered by four participants and supporting documentation and artifacts.

The participants' responses to the interview questions, as annotated in Appendix D, provided depth and conformity to ERP leader strategies to maximize the usage of ERP systems. The participants answered interview questions (Appendix D), and five themes emerged, answering the central research question. The five themes were (a) user participation, (b) user involvement, (c) user attitude, (d) user system satisfaction, and (e) user preparation. Question 10 focused on any additional information participants might be able to share, and all participants repeated information that they previously shared. There was no new information, which achieved data saturation.

The following subsection describes participant responses to the interview questions, which provided data to answer the central research question. The participants' responses to the interview questions enhanced the study by providing perspective and rich data to answer the research question.

**Interview Question 1: What is your perspective on the strategies your organization uses to obtain maximum usage of the ERP system?**

The participants' responses regarding organizational strategies to maximize ERP system usage consistently focused on the importance of setting a strong foundation for the system in the implementation phase. The implementation of an ERP will require changes in organization culture. The users must participate directly in the cultural changes to accept and utilize the system (Thakur, 2016). Two participants identified the primary concern of an ERP implementation is that the business must run the project. IT

cannot drive such a complex and important project to a successful completion (P1, P3). Three participants emphasized the importance of alignment between business strategy and results to the business case for the ERP implementation (P1, P2, P3). One participant continued that the organization must include the specifics of the business case strategy in the performance goals of both the business and IT (P1).

Two participants discussed the requirement of dedicated business leadership on the implementation project (P1, P4). The organization must be careful to limit project leaders that maintain dual roles of responsibility. The participant extended the concept to the entire implementation team. The success of the implementation project, which will ultimately lead to maximum usage of the system, begins with a dedicated team of people taken from both the business and IT. The organization must remove team members from their day-to-day jobs to allow focus on the project (P1, P4). In conclusion, the participants emphasized that the level of usage of an ERP system is in large part determined by the processes and expectations put in place during the implementation period. A business driven implementation with dedicated teams focused completely on the project allows for the establishment of a culture that places a high value on importance and usefulness of the system once implemented.

**Interview Question 2: What obstacles, if any, obstruct your organization's attempts to obtain maximum usage of the ERP system?**

All of the participants identified inadequate executive support as the obstacle that inhibits the organization from maximum use of the ERP system. Two participants mentioned the importance of consistent sponsor leadership (P1, P3). The project sponsor

must have sufficient clout in the organization to drive the organization to a culture that will accept and use the system. Sponsorship changes are a major obstacle that organizations must face due to the length of the implementation and the high level of organization change that the system drives (P1). Another participant cautioned organizational fatigue as a key obstacle (P3). The leaders of the organization must commit completely to the system before the implementation begins. During projects of the length of an ERP implementation, the business will likely have changes in its priorities, leadership, and in the market. Key resources will move to new responsibilities, and costs will increase over initial expectations. The organization can simply tire of the project (P1). Organizations that lose focus in any of these areas during and immediately after implementation can send a message to users that the system is no longer important or critical to success (Ha & Ahn, 2013). If users do not see that commitment from the business leaders, the incentive to learn and use the system will decrease.

**Interview Question 3: How are you addressing these obstacles?**

One participant identified the importance that the organization acknowledges that it is completely responsible for the success or failure of the system (P3). Organizations must use significant levels of consulting support to obtain the experience and skills necessary to complete a complex project such as an ERP implementation. Organizations that abdicate responsibility for the implementation send a message to users that the project is not important, thus usage of the system is not a priority (Stanciu & Tinca, 2013). Organizations must resist the urge to attach the responsibility for project success or failure to the consultants (P1).

Two participants emphasized the importance of system design (P3, P4). A successful system begins with a comprehensive design that considers how the business processes within the organization work together. An organization that considers the design of the system from a user's perspective has a higher likelihood of user acceptance after implementation (Weli, 2014). The participants recommended deep business involvement in the selection of the software from the beginning, providing the opportunity for user-centered design.

**Interview Question 4: How did you identify and address deficiencies in ERP usage?**

One participant described the tools that are available that can help an organization identify system usage. The organization can monitor key business processes such as customer invoicing and accounts payable to help identify system usage levels. Standard financial statement reporting is also a tool that can help monitor system usage (P1). Two participants mentioned that there are numerous tools available that will assist the organization with the monitoring of very specific activity within the system. Usage monitoring tools are a cost efficient way for the organization to identify specific gaps in system processes where it is likely that users are performing tasks outside of the ERP system (P1, P2).

Two participants emphasized the importance of the culture established by leadership (P1, P4). Lack of system usage likely traces to gaps in leadership. Organization leaders that do not exhibit a high level of support for the ERP system will increase users' resistance to change (Shaheen, 2016). Leadership must exhibit to the



organization a commitment to the system and communicate its importance to the organization's success. Leaders must ensure that the organization clearly aligns its goals with the expectations of how the ERP systems can assist with the achievement of the goals. Two participants described the importance of learning from failure in this area (P3, P4). Through failure, people can learn how to approach the problem more productively in future similar projects.

**Interview Question 5: What is your perspective on the depth to which the organization used members of your department in the design and development of the ERP system?**

One participant discussed the importance of business ownership of the ERP implementation (P1). The business leaders must agree with the proposed design and system solution to allow for any chance that in the end, business users will adopt the system. The business leaders also must align the goals and objectives of their organizations to capabilities of the system (P4). A project led by IT or consultants has a high probability of not meeting the needs of the business users, thus likely ending in the low adoption of the system (Sadki et al., 2015). The business organization must lead the project effort.

Another participant described how the IT department can provide important support to a business led implementation (P3). Once the organization selects a software solution, the project leadership team should develop guiding principles on how the organization will use the solution (P1, P3, P4). An example of a guiding principle is related to customization of the software. The business may decide that customization is

acceptable only if the business can provide a financial case that proves that the customization will differentiate the organization in the market. If the customization does not provide differentiation, the organization will accept the standard process provided by the software. The standard process might require the business change its practices. However, if the effort is not business driven, the solution will likely receive low adoption upon implementation (Mitra & Mishra, 2016). IT can assist the business with options regarding available standard processes as well as guide the business through customization options.

**Interview Question 6: What strategies have you used to increase the level of user satisfaction in the ERP system?**

Two participants indicated that business user involvement in the entire implementation process is critical to user satisfaction with the system (P1, P3). The inclusion of users from the beginning of system blueprinting through design and testing will increase the likelihood adoption after go-live. The early and often user participation in the design and development of the system serves to make the users feel part of the solution (P1, P3).

Another participant discussed the impact of software selection on eventual user satisfaction. The organization must consider the perspective of the business process and user expectations when selecting the software solution (P3). The organization should not drive the selection based on the IT technical perspective. The organization may have options between older and established solutions versus the latest technology. Organization leaders must resist the temptation of always selecting with the new

technology. If the older solution is a better fit with user processes and design, it may be the best selection as users will be more satisfied with system functionality. Two participants mentioned that the organization has often had success working directly with the software supplier to incorporate user design ideas directly into the software (P1, P2). The strategy of working with software suppliers can reduce the risk and cost of customization while providing a solution that is likely more satisfying to the users.

**Interview Question 7: What is your perspective on how the users of the ERP system perceive the usefulness of the ERP system?**

The user's perception of new system usefulness is a difficult issue. In many cases, users do not perceive that a new system is good. To the extent the organization ties a user to legacy processes, the user may not want to change (Alok & Mocherla, 2016). One participant noted a difference in user's perception of new system usefulness based on their relative longevity working in the legacy systems. Users with longer work histories tend to perceive a lower usefulness of a new system. Users with shorter tenures in the legacy system are more apt to perceive usefulness in a new system (P1, P4). The observation is consistent with recent findings that employees with longer tenures at an organization tend to resist acceptance of a new ERP system (Alok & Mocherla, 2016).

Another participant identified change management as an important precursor of user perception of the usefulness of the new system (P3). User participation in the change management strategy will increase the likelihood that users will accept and use the ERP system (Ju et al., 2016). The clear communication of the importance and value of the new system to the business strategy can help users understand the larger need for the system.

Change management can help users see past their day-to-day processes to understand how the new system can benefit the business and how they can play a part in the business' success.

**Interview Question 8: What is your perspective on how easy it is for users to perform their assigned tasks in the ERP system?**

Three of the participants discussed the design of traditional ERP systems regarding how difficult the systems are for users to adopt (P1, P3, P4). User adaption to the ERP system will only occur when users have a positive attitude toward the system (Mitra & Mishra, 2016). The traditional ERP systems were designed by cultures that did not consider or care about user perspectives on the use of the system. The focus of the design was technology driven, not user driven (P1). The lack of user-driven design resulted in processes that are not intuitive for users. Typically, users have to develop their handwritten instructions to remember how to perform their tasks in the system. The designers of the ERP systems assumed that users would value the technology over the processes and interfaces.

Very recently, the system designers began to change this perspective. Two participants mentioned that SAP is working on a new version of its software that for the first time considered user input in its functions and interfaces (P3, P4). Consistent with recent study findings, the participants anticipate that an improved ease of use with the SAP system will eventually drive a higher level of user acceptance and usage (Sadki et al., 2015).

**Interview Question 9: What is your perspective on how effective the organization is in preparing users to use the ERP system?**

Three participants emphasized the importance of understanding the stakeholders of the ERP system from the beginning of the implementation (P1, P3, P4). The organization must consider a strategy that will involve users throughout the entire implementation process. All participants described successful user preparation as a comprehensive and thoughtful plan that the organization tailors to its various user groups (P1, P2, P3, P4). User preparation includes the inclusion of users in the design and testing of the system. The preparation plan also includes components of communication, change management, and training. Ineffective training on an ERP system can lead to user resistance to the use of the system (Chayakonvikom et al., 2016). A preparation plan of providing user training a few weeks before go-live is not sufficient to drive usage of the system after go-live.

Two participants suggested a user preparation strategy to include a component for post go-live support (P2, P4). The quality of system support has a significant positive influence on user's intention to use the ERP system (Bobek et al., 2016). On-site support of users for a period after go-live can provide the final piece of preparation for users. The support team must have the ability to listen to the user's feedback and implement adjustments to the system processes as necessary. The organization must also provide clear communication to the users that the organization values their feedback with a clear path to resolving issues that they cannot fix immediately.

**Interview Question 10: What additional information can you provide to help me understand how your organization reaches the maximum level of ERP system usage?**

One participant described the importance of a stable go-live to the user's acceptance of the system (P1). A stable system at go-live will allow users to trust the system such that they will spend the time learning and accepting the system. Instability at go-live often leads to a distrust of the system that discourages users from investing their time and efforts in learning to use the system. The participant emphasized the importance of a comprehensive testing plan that includes the participation of the users. Proper testing is a critical determinant of a stable go-live (P1).

Another participant also mentioned a stable go-live as critical for user acceptance. The participant cited programming and design changes injected late in the testing phase as an issue that increases the risk of an unstable go-live (P2). The implementation team must carefully weigh the benefit of such late changes versus the increased risk. A strategy to mitigate this risk is the plan to provide sufficient post go-live support of continuing enhancements to the system. Users will likely accept the postponement of many late changes if they are comfortable that the organization will continue to invest in the system after go-live (P1).

**Applications to Professional Practice**

An organization that can maximize the utilization of its ERP system can enhance its cost competitiveness and overall financial performance (Kharuddin, Foong, & Senik, 2015). The findings of the study added to the body of knowledge regarding strategies to

maximize the usage of an ERP system by identifying five themes that drive usage of ERP systems. The five themes were (a) user participation, (b) user involvement, (c) user attitude, (d) user system satisfaction, and (e) user preparation. The significance of the study may present findings for leaders of organizations who are considering investing in an ERP system to implement strategies that will maximize the usage of ERP systems. The results of the study also added to the body of knowledge by creating an awareness of the importance of considering the level of utilization of ERP systems. Organization leaders could choose to ignore the consideration of system usage early in the developmental process. Ignoring usage strategies early in development increases the risk that users will later choose not to adopt the new system.

The findings, conclusions, and recommendations resulting from this study could be important because they are expected to enable ERP directors and managers to advance the understanding of strategies that they can employ to maximize the usage of ERP systems. The results of this study might inform organization practice by introducing successful strategies for increasing ERP system usage. Business leaders may benefit from the strategies through successful ERP system implementations that may provide the opportunity to achieve the return on investment goals set when the organization decided to implement the system (Ram, Corkindale, & Wu, 2013a). Leaders who apply the doctoral study to professional practice may lead their organization to sustained positive financial results.

### **Implications for Social Change**

An effective and efficient ERP system can provide greater economies of scale, reduced operating costs, and increased profits (Schniederjans & Yadav, 2013). The implications for positive social change include the potential optimization of benefits from the ERP system that could allow the organization's leaders to direct their resources to causes that can improve the health and welfare of the geographic population in the operational region.

Identifying strategies to maximize ERP system usage can assist leaders with implementing strategies that will increase user acceptance and adoption of an ERP system. The five themes that emerged from the study were (a) user participation, (b) user involvement, (c) user attitude, (d) user system satisfaction, and (e) user preparation. I aligned the results of the study with prevailing research conducted by previous researchers based on the user participation theory as the conceptual framework. Deep and meaningful participation in the development of an ERP system by users has a significant influence on subsequent levels of user involvement, user attitude, and system usage (Bano & Zowghi, 2015). A fully utilized ERP system can increase the performance of an organization (HassabElnaby et al., 2012). Increased organization performance can lead to organizations that provide increased support to their communities.

### **Recommendations for Action**

Organizations that implement ERP systems incur enormous risk due to the significant amount of resources required for implementation. Organizations may fail to achieve the return on investment goals when they are unable to fully utilize the ERP



system (Katerattanakul, Lee, & Hong, 2014). The study results apply to organizations of any size that implements an ERP system and may create awareness of the need for strategies to maximize the usage of the ERP system.

Organization leaders that decide to dedicate significant time, capital, and human resources to the implementation of an ERP system should consider the importance of system usage to the eventual success of the system. I recommend that organization leaders include several of the strategies identified in this study as key components of the overall implementation plan. Strategies to include users early in the development of the system are particularly important. Even the most technologically advanced ERP systems will fail to produce positive returns on the organization's investment if the people that perform key business tasks do not adopt the system (Nwankpa, 2015). The organization must take full responsibility for the success of the system. The organization cannot push responsibility for the execution of the system implementation to outside consultants and expect results that its business users will accept and adopt the system. I plan on disseminating the results and distributing the findings of the study to information technology research journals and publications. Consulting organizations that assist companies with ERP system implementations can also use the results of the study.

### **Recommendations for Further Research**

I conducted a qualitative case study to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. I studied how ERP leaders strategize to ensure that their organization maximizes the capabilities of the ERP system. I identified common themes among participant experiences and

perspectives. The qualitative case study was appropriate for this research as I was investigating leaders' experiences and perspectives.

Qualitative research is a method to clarify a problem or identify groups or individuals affected by the problem. Qualitative methods can also increase the understanding of why things are the way they are and why people act the way they do (Venkatesh et al., 2013). Further quantitative research to determine the relative impact to user system adoption of the variously identified strategies could expand the body of knowledge, and add to the depth and breadth of the research. I interviewed a small sample and reviewed documentation and artifacts relevant to strategies that maximize the usage of an ERP system. The small sample size of four participants limited the transferability of the results (Yin, 2014). Quantitative research with larger sample size could help determine the relationship between two or more constructs.

Based on the findings of the research, recommendations for further study regarding ERP system usage would add to the existing literature on information system user participation. Recommendations offered in this doctoral study may provide ERP leaders with awareness and a better understanding of the importance of the usage of an ERP system. The findings from this doctoral study could assist leader of large or small organizations with their efforts to implement a successful ERP system.

### **Reflections**

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. The participants were engaged in the interviews and anxious to share their

experiences and perspectives. I collected information on the business problem from leaders with distinct perspectives. I used open-ended questions during the interview process. During the interviews, I observed the passion that the participants had for the work that they do for their organization. The participants recognized the impact that their decisions and strategies have on the effectiveness of the entire organization. Each shared examples of experiences where their work made a positive difference to the organization that they served. All of the participants recognized the business problem of the study as a problem that drives many of their decisions on each implementation project that they lead. Each participant was eager to share their experiences, both positive and negative, to add to the body of knowledge. I enjoyed the opportunity to share in the enthusiasm that each participant had for solving the business problem of the study.

### **Conclusion**

During the past several years, organizations have invested a vast amount of capital in implementing ERP systems with the goal to remain competitive in the global marketplace (Elkhani, Soltani, & Ahmad, 2014). Researchers estimate that over 80% of Fortune 500 firms have implemented an ERP system (Maas et al., 2014). However, implementation failure rates exceed 80% (Sykes, Venkatesh, & Johnson, 2014). Implementing strategies to maximize ERP usage can provide an organization with enhanced productivity through integration, standardization, and simplification of business processes (Madinios, Chatzoudes, & Tsairidis, 2012). ERP leaders need an understanding of how to maximize the utilization of their ERP systems.

The purpose of this qualitative single-site case study was to explore the strategies ERP directors and managers in the IT department use to obtain maximum usage of ERP systems. I used a qualitative case study with purposeful selection to understand the experiences and perspectives of ERP directors and managers. The central research question was: What strategies do ERP directors and managers in the IT department use to maximize the usage of ERP systems?

Organizations benefit from an ERP system only to the extent that its users accept and utilize the full capabilities of the system (Bobek et al., 2016). The findings from the study concluded that user participation early in the ERP system development is the most important opportunity to implement strategies that maximize the usage of the system. Executive leadership can also instill a positive environment that encourages users to maximize system capabilities. Organization leaders can use the findings from this study to identify and execute strategies from the beginning of an implementation that will provide the greatest opportunity for success. I recommend that future researchers investigate the relative influence of the strategies identified in the study through quantitative methods to provide leaders guidance on the relative influence of the various strategies on ERP system usage.

## References

- Ahmad, S., Ibrahim, S., & Garba, S. (2015). Enterprise resource planning (ERP) systems in banking industry: Implementation approaches, reasons for failures and how to avoid them. *Journal of Computer Sciences and Applications*, 3, 29-32.  
doi:10.12691/jcsa-3-2-2
- Akerlind, G. (2012). Variation and commonality in phenomenographic research methods. *Higher Education Research & Development*, 31, 115-127.  
doi:10.1080/07294360.2011.6428455
- Ali, B., & Younes, B. (2013). The impact of ERP system on user performance. *Journal of Theoretical and Applied Information Technology*, 52, 325-342. Retrieved from <http://www.jatit.org/>
- Al-Jabri, I., & Roztocki, N. (2015). Adoption of ERP systems: Does information transparency matter? *Telematics and Informatics*, 32, 300-310.  
doi:10.1016/j.tele.2014.09.005
- Alok, S., & Mocherla, J. (2016). Predicting the behavioral intention to use ERP: An empirical study on the manufacturing industry. *IUP Journal of Operations Management*, 15(1), 7-24. Retrieved from: <http://iupindia.in/>
- Aluwihare-Samaranayake, D. (2012). Ethics in qualitative research: A view of the participants' and researchers' world from a critical standpoint. *International Journal of Qualitative Methods*, 11, 64-81. Retrieved from <http://www.ijqm.ualberta.ca/>

- Andersson, A. (2016). Communication barriers in an interorganizational ERP-project. *International Journal of Managing Projects in Business*, 9, 214-233.  
doi:10.1108/17554211111162480
- Anyan, F. (2013). The influence of power shifts in data collection and analysis stages: A focus on qualitative research interview. *Qualitative Report*, 18(18), 1-9. Retrieved from <http://www.tqr.nova.edu/>
- Bano, M., & Zowghi, D. (2015). A systematic review on the relationship between user involvement and system success. *Information and Software Technology*, 58, 148-169. doi:10.1016/j.infot.2014.06.011
- Barki, H., & Hartwick, J. (1994). Measuring user participation, user involvement, and user attitude. *MIS Quarterly*, 18, 59-82. doi:10.2307/249610
- Barratt, M., Choi, T., & Li, M. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, 29, 329-342.  
doi:10.1016/j.jom.2010.06.002
- Bavarsad, B., Rahimi, F., & Norozy, P. (2013). Determinants and consequences of implementation enterprise resource planning system on financial performance. *Interdisciplinary Journal of Contemporary Research in Business*, 4, 939-959. Retrieved from <http://www.seu.ac.lk/>
- Birkinshaw, J., Brannen, M., & Tung, T. (2012). Reclaiming a place for qualitative methods in international business research. *Journal of International Business Studies*, 42, 573-581. doi:10.1057/jibs.2011.19

- Bobek, S., Rohadia, S., & Sternad, S. (2016). ERP solutions acceptance in different business environments. *International Journal of Innovative Research & Development*, 5, 103-108. Retrieved from <http://www.ijird.com/>
- Cao, J., Nicolaou, A., & Bhattacharya, S. (2013). A longitudinal examination of enterprise resource planning system post-implementation enhancements. *Journal of Information Systems*, 27(1), 13-39. doi:10.2308/isys-50398
- Cavaye, A. (1995). User participation in system development revisited. *Information & Management*, 28, 311-323. doi:10.1016/0378-7206(94)00053-1
- Charland, P., Cronan, T., Leger, P., & Robert, J. (2015). Developing and assessing ERP competencies: Basic and complex knowledge. *Journal of Computer Information Systems*, 56(1), 31-39. doi:10.1080.08874417.2015.11645798
- Charmaz, K. (2014). Grounded theory in global perspective: Reviews by international researchers. *Qualitative Inquiry*, 20, 1074-1084. doi:10.1177/1077800414545235
- Chayakonvikom, M., Fuangvut, P., & Prinyapol, N. (2016). The incompatibility of end-user learning styles and the current ERP training approach. *International Journal of Information and Education Technology*, 6, 481-487. doi:10.7763/IJiet.2016.V6.736
- Chen, G., & Liu, Y. (2013). Study on knowledge transfer influence on ERP implementation performance from inherent angle of enterprises. *Information Technology Journal*, 12, 7555-7561. doi:10.3923/itj.2013.7555.7561

- Choi, T., Chow, P., & Liu, S. (2013). Implementation of fashion ERP systems in China: Case study of a fashion brand, review, and future challenges. *International Journal of Production Economics*, 146, 70-81. doi:10.1016/j.ijpe.2012.12.004
- Chou, H., Chang, H., Lin, Y., & Chou, S. (2014). Drivers and effects of post-implementation learning on ERP usage. *Computers in Human Behavior*, 35, 267-277. doi:10.1016/j.chb.2014.03.012
- Chou, H., Lin, Y., Lu, H., Chang, H., & Chou, S. (2014). Knowledge sharing and ERP system usage in post-implementation stage. *Computers in Human Behavior*, 33, 16-22. doi:10.1016/j.chb.2013.12.023
- Damianakis, T., & Woodford, M. (2012). Qualitative research with small connected communities: Generating new knowledge while upholding research ethics. *Qualitative Health Research*, 22, 708-718. doi:10.1177/1049732311431444
- DeMassis, A., & Kotlar, J. (2014). The case study method in family business research: Guidelines for qualitative scholarship. *Journal of Family Business Strategy*, 5, 15-29. doi:10.1016/j.jfbs.2014.01.007
- Deng, X., & Wang, T. (2014). Understanding post-implementation support for enterprise systems: An empirical study of IT personnel's customer-oriented citizenship behaviors. *Journal of Information Systems*, 28(2), 17-39. doi:10.2308/isys-50743
- De Toni, A., Fornasier, A., & Nonino, F. (2015). The impact of implementation process on the perception of enterprise resource planning success. *Business Process Management Journal*, 21, 332-352. doi:10.1108/BPMJ-08-2013-0114



- De Waal, B., & Batenburg, R. (2014). The process and structure of user participation: A BPM system implementation case study. *Business Process Management Journal*, *20*, 107-128. doi:10.1108/BPMJ-05-2012-0045
- Doody, O., & Noonan, M. (2012). Preparing and conducting interviews to collect data. *Nurse Researcher*, *20*(5), 28-32. doi:10.7748/nr2013.05.20.5.28.e327
- Dorobat, I., & Natase, F. (2012). Training issues in ERP implementations. *Accounting and Management Information Systems*, *11*, 621-636. Retrieved from <http://www.cig.ase.ro/>
- Elghany, M., Elghany, M., & Khalifa, N. (2015). Best-of-breed of ERP systems: Pros and cons. *International Journal of Computer and Information Technology*, *4*, 527-531. Retrieved from <http://www.ijcit.com/>
- Elkhani, N., Soltani, S., & Ahmad, M. (2014). The effects of transformational leadership and ERP system self-efficacy on ERP system usage. *Journal of Enterprise Information Management*, *27*, 759-785. doi:10.1108/JEIM-06-2013-0031
- Elo, S., Kaariainen, M., Kanste, O., Polkki, T., Utriainen, K., & Kyngas, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, *4*(1), 1-10. doi:10.1177/21582244014522633
- Englander, M. (2012). The interview: Data collection in descriptive phenomenological human scientific research. *Journal of Phenomenological Psychology*, *43*, 13-35. doi:10.1163/156916212X632943

- Esteves, J. (2014). An empirical identification and categorization of training best practices for ERP implementation projects. *Enterprise Information Systems*, 8, 665-683. doi:10.1080/17517575.2013.771411
- Frels, R., & Onwuegbuzie, A. (2013). Administering quantitative instruments with qualitative interviews: A mixed research approach. *Journal of Counseling and Development*, 9, 184-194. doi:10.1002/j.1556-6676.2013.00085.x
- Gajic, G., Stankovski, S., Ostojic, G., Tesic, Z., & Miladinovic, L. (2014). Method of evaluating the impact of ERP implementation critical success factors: A case study in oil and gas industries. *Enterprise Information Systems*, 8, 84-106. doi:10.1080/17517575.2012.690105
- Gallagher, K., Worrell, J., & Mason, R. (2012). The negotiation and selection of horizontal mechanisms to support post-implementation ERP organizations. *Information Technology & People*, 25, 4-30. doi:10.1108/09593841211204326
- Galy, E., & Saucedo, M. (2014). Post-implementation practices of ERP systems and their relationship to financial performance. *Information & Management*, 51, 310-319. doi:10.1016/j.im.2014.02.002
- Goyette, S., Cassivi, L., Courchesne, M., & Elia, E. (2015). The ERP post-implementation stage: A knowledge transfer challenge. *International Journal of Information Systems and Project Management*, 3(2), 5-19. doi:10.12821/ijispm030201

- Greaney, A., Sheehy, A., Heffernan, C., Murphy, J., Mhaolrunaigh, S., Heffernan, E., & Brown, G. (2012). Research ethics application: A guide for the novice researcher. *British Journal of Nursing, 21*, 38-43. doi:10.12968/bjon.2012.21.1.38
- Ha, Y., & Ahn, H. (2013). Factors influencing the performance of enterprise resource planning (ERP) systems in the postimplementation stage. *Behavior and Information Technology, 33*, 1065-1081. doi:10.1080/0144929X.2013.799229
- HassabElnaby, H., Hwang, W., & Vonderembse, M. (2012). The impact of ERP implementation on organizational capabilities and firm performance. *Benchmarking: An International Journal, 19*, 618-633. doi:10.1108/14635771211258043
- Hoch, J., & Dulebohn, J. (2013). Shared leadership in enterprise resource planning and human resource management system implementation. *Human Resource Management Review, 23*, 114-125. doi:10.1016/j.hrmr.2012.06.007
- Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-study research. *Nurse Researcher, 20*(4), 12-17. doi:10.7748/nr2013.03.20.4.12.e326
- Hung, W., Ho, C., Jou, J., & Kung, K. (2012). Relationship bonding for a better knowledge transfer climate: An ERP implementation research. *Decision Support System, 52*, 406-414. doi:10.1016/j.dss.2011.09.007
- Hyett, N., Kenny, A., & Dickson-Swift, V. (2014). Methodology or method? A critical review of qualitative case study reports. *International Journal of Qualitative Studies on Health and Well-being, 9*, 1-12. doi:10.3402/qhw.v9.23606

- Ismail, A., & Ridha, M. (2015). Success factors and potential problems in applying of enterprise resource planning (ERP) systems. *European Journal of Business and Management*, 7, 129-134. Retrieved from <http://www.iiste.org/>
- Jacob, S., & Furgerson, S. (2012). Writing interview protocols and conducting interviews: Tips for students new to the field of qualitative research. *Qualitative Report*, 17(42), 1-10. Retrieved from <http://www.tqr.nova.edu/>
- Jayawickrama, U., Liu, S., & Smith, M. (2014). An ERP knowledge transfer framework for strategic decisions in knowledge management in organizations. *International Journal of Innovation, Management and Technology*, 5, 301-308.  
doi:10.7763/IJIMT.2014.V5.530
- Ju, P., Wei, H., & Tsai, C. (2016). Model of post-implementation user participation within ERP advice network. *Asia Pacific Management Review*, 2016, 1-10.  
doi:10.1016/j.apmrv.2015.11.001
- Katerattanakul, P., Lee, J., & Hong, S. (2014). Effect of business characteristics and ERP implementation on business outcomes. *Management Research Review*, 37, 186-206. doi:10.1108/MRR-10-2012-0218
- Ketokivi, M., & Choi, T. (2014). Renaissance of case research as a scientific method. *Journal of Operations Management*, 32, 232-240. doi:10.1016/j.jpm.2014.03.004
- Kharuddin, S., Foong, S., & Senik, R. (2015). Effects of decision rationality on ERP adoption extensiveness and organizational performance. *Journal of Enterprise Information Management*, 28, 658-679. doi:10.1108/JEIM-02-2014-0018

- Koch, S., & Mitteregger, K. (2016). Linking customization of ERP systems to support effort: An empirical study. *Enterprise Information Systems, 10*, 81-107.  
doi:10.1080/17517575.2014.917705
- Kolb, S. (2012). Grounded theory and the constant comparative method: Valid research strategies for educators. *Journal of Emerging Trends in Educational Research and Policy Studies, 3*, 83-86. Retrieved from  
<http://jeteraps.scholarlinkresearch.com/>
- Kwak, Y., Park, J., Chung, B., & Ghosh, S. (2012). Understanding end-users' acceptance of enterprise resource planning (ERP) system in project-based sectors. *Transactions on Engineering Management, 59*, 266-277.  
doi:10.1109/TEM.2011.2111456
- Lauckner, H., Paterson, M., & Krupa, T. (2012). Using constructivist case study methodology to understand community development processes: Proposed methodological questions to guide the research process. *Qualitative Report, 17*(13), 1-22. Retrieved from <http://www.tqr.nova.edu/>
- Maas, J., van Fenema, P., & Soeters, J. (2014). ERP system usage: The role of control and empowerment. *New Technology, Work, and Employment, 29*, 88-103.  
doi:10.1111/ntwe/
- Maditinos, D., Chatzoudes, D., & Tsairidis, C. (2012). Factors affecting ERP system implementation effectiveness. *Journal of Enterprise Information Management, 25*, 60-78. doi:10.1108/17410391211192161

- Mahdavian, M., & Mostajeran, F. (2013). Studying key users' skills of ERP system through a comprehensive skill measurement model. *International Journal of Advanced Manufacturing Technology*, 69, 1981-1999. doi:10.1007/s00170-013-5144-1
- Markus, M., & Mao, J. (2004). Participation in development and implementation: Updating an old, tired concept for today's IS contexts. *Journal of the Association for Information Systems*, 5, 514-544. Retrieved from <http://citeseerx.ist.psu.edu/>
- May, J., Dhillon, G., & Caldeira, M. (2013). Defining value-based objectives for ERP planning systems. *Decision Support Systems*, 55, 98-109. doi:10.1016/j.dss.2012.12.036
- Meissonier, R., Houze, E., & Lapointe, L. (2014). "Cultural intelligence" during ERP implementation: Insights from a Thai corporation. *International Business Research*, 7(12), 14-28. doi:10.5539/ibr.v7n12p14
- Mitra, P., & Mishra, S. (2016). Behavioral aspects of ERP implementation: A conceptual review. *Interdisciplinary Journal of Information, Knowledge, and Management*, 11, 17-30. Retrieved from: <http://www.ijikm.org/>
- Mo, J., & He, W. (2015). The organizational change dilemma of ERP implementation in a small manufacturing company. *Journal of Business Case Studies*, 11, 95-104. Retrieved from <http://www.cluteinstitute.com/>
- Nazemi, E., Tarokh, M., & Djavanshir, G. (2012). ERP: A literature survey. *International Journal of Advanced Manufacturing Technology*, 61, 999-1018. doi:10.1017/s00170-011-3756-x

- Nwankpa, J. (2015). ERP system usage and benefit: A model of antecedents and outcomes. *Computers in Human Behavior, 45*, 335-344.  
doi:10.1016/j.chb.2014.12.019
- Nwankpa, J., & Roumani, Y. (2014). Understanding the link between organizational learning capability and ERP system usage: An empirical examination. *Computers in Human Behavior, 33*, 224-234. doi:10.1016/j.chb.2014.01.030
- O'Reilly, M., & Parker, N. (2012). "Unsatisfactory saturation": A critical exploration of the notion of saturated sample sizes in qualitative research. *Qualitative Research, 13*, 190-197. doi:10.1177/1468794112446106
- Palanisamy, R., & Foshay, N. (2013). Impact of user's internal flexibility and participation on usage and information systems flexibility. *Global Journal of Flexible Systems Management, 14*, 195-209. doi:10.1007/s40171-013-0044-7
- Pattanayak, S., & Roy, S. (2015). Synergizing business process reengineering with enterprise resource planning system in capital goods industry. *Social and Behavioral Sciences, 189*, 471-487. doi:10.1016/j.sbspro.2015.03.194
- Pishdad, A., & Haider, A. (2013). ERP institutionalization: Exploring the influential factors. *Journal of Enterprise Information, 26*, 642-660. doi:10.1108/JEIM-07-2013-0046
- Poba-Nzaou, P., & Raymond, L. (2013). Custom development as an alternative for ERP adoption by SME's: An interpretive case study. *Information Systems Management, 30*, 319-335. doi:10.1080/10580530.2013.832963

- Poonam, G., & Agarwal, D. (2014). Critical success factors for ERP implementation in a Fortis hospital: An empirical investigation. *Journal of Enterprise Information Management, 27*, 402-423. doi:10.1108/JEIM-06-2012-0027
- Qureshi, M., & Abdulkhalaq, A. (2015). Increasing ERP implementation success ratio by focusing on data quality and user participation. *International Journal of Information Engineering and Electronic Business, 3*, 20-25. doi:10.5815/ijieeb.2015.03.03
- Rajan, C., & Baral, R. (2015). Adoption of ERP system: An empirical study of factors influencing the usage of ERP and its impact on end user. *IIMB Management Review, 27*(2), 1-13. doi:10.1016/j.iimb.2015.04.008
- Ram, J., Corkindale, D., & Wu, M. (2013a). Enterprise resource planning adoption: Structural equation modeling analysis of antecedents. *Journal of Computer Information Systems, 54*(1), 53-65. Retrieved from <http://www.iaicis.org/>
- Ram, J., Corkindale, D., & Wu, M. (2013b). Examining the role of system quality in ERP projects. *Industrial Management and Data Systems, 113*, 350-366. doi:10.1108/02635571311312659
- Ram, J., Corkindale, D., & Wu, M. (2013c). Implementation critical success factors (CSFs) for ERP: Do they contribute to implementation success and post-implementation performance? *International Journal of Production Economics, 144*, 157-174. doi:10.1016/j.ijpe.2013.01.032



- Ram, J., Corkindale, D., & Wu, M. (2014). ERP adoption and the value creation: Examining the contribution of antecedents. *Journal of Engineering and Technology Management*, 33, 113-133. doi:10.1016/j.jengtecman.2014.04.001
- Ram, J., Corkindale, D., & Wu, M. (2015). Examining the role of organizational readiness in ERP project delivery. *Journal of Computer Information Systems*, 55(2), 29-39. Retrieved from <http://www.iaicis.org/>
- Ram, J., Wu, M., & Tagg, R. (2014). Competitive advantage from ERP projects: Examining the role of key implementation drivers. *International Journal of Project Management*, 32, 663-675. doi:10.1016/j.ijproman.2013.08.004
- Remus, U. (2012). Exploring the dynamics behind knowledge management challenges: An enterprise resource planning case study. *Information Systems Management*, 29, 188-200. doi:10.1080/10580530.2012.687309
- Reybold, L., Lammert, J., & Stribling, S. (2012). Participant selection as a conscious research method: Thinking forward and the deliberation of “emergent” findings. *Qualitative Research*, 13, 699-716. doi:10.1177/1468794112465634
- Robinson, O. (2014). Sampling in interview-based qualitative research: A theoretical and practical guide. *Qualitative Research in Psychology*, 11, 25-41. doi:10.1080/14780887.2013.801543
- Rouhani, S., & Ravasan, A. (2013). ERP success prediction: An artificial neural network approach. *Scientia Iranica*, 20, 992-1001. doi:10.1016/j.scient.2012.12.006
- Rowley, J. (2012). Conducting research interviews. *Management Research Review*, 35, 260-271. doi:10.1108/01409171211210154

- Sadki, B., Bengourram, J., Latrache, H., & Mabrouki, M. (2015). Towards an organizational change management by an expert system. *Journal of Control Science and Engineering*, 2, 79-90. doi:10.17265/2328-2231/2015.02.003
- Saraf, N., Liang, H., Xue, Y., & Hu, Q. (2013). How does organizational absorptive capacity matter in the assimilation of enterprise information systems? *Information Systems Journal*, 23, 245-267. doi:10.1111/j.1365-2575.2011.00397.x
- Saravanan, R., & Sundar, C. (2015). Derivation and validation of a conceptual model for ERP implementation success factors: An Indian context. *Journal of Theoretical and Applied Information Technology*, 78, 132-146. Retrieved from <http://www.jatit.org/>
- Schniederjans, D., & Yadav, S. (2013). Successful ERP implementation: An integrative model. *Business Process Management Journal*, 19, 364-398. doi:10.1108/14637151311308358
- Shaheen, G. (2016). Resistance to change in implementation of ERP projects. *Journal of Strategy and Performance Management*, 4, 24-38. Retrieved from: <http://www.jspm.org/>
- Shao, Z., Feng, Y., & Liu, L. (2012). The mediating effect of organizational culture and knowledge sharing on transformational leadership and enterprise resource planning system success: An empirical study in China. *Computers in Human Behavior*, 28, 2400-2413. doi:10.1016/j.chb.2012.07.011

- Shatat, A. (2015). Critical success factors in enterprise resource planning (ERP) system implementation: An exploratory study in Oman. *Electronic Journal of Information Systems Evaluation, 18*, 36-45. Retrieved from <http://www.ejise.com/>
- Simon, M., & Goes, J. (2013). *Dissertation and scholarly research: Recipes for success*. Seattle, WA: Dissertation Success LLC.
- Sinkovics, R., & Alfoldi, E. (2012). Progressive focusing and trustworthiness in qualitative research. *Management International Review, 52*, 817-845.  
doi:10.1007/s11575-012-0140-5
- Sorsa, M., Kiikkala, I., & Astedt-Kurki, P. (2015). Bracketing as a skill in conducting unstructured qualitative interviews. *Nurse Researcher, 22*(4), 8-12.  
doi:10.7748/nr.22.4.8.e1317
- Stanciu, V., & Tinca, A. (2013). ERP solutions between success and failure. *Journal of Accounting and Management Information Systems, 12*, 626-649. Retrieved from <http://cig.ase.ro/>
- Sykes, T. (2015). Support structures and their impacts on employee outcomes: A longitudinal field study of an enterprise system implementation. *MIS Quarterly, 39*, 473-495. Retrieved from <http://www.misq.org/>
- Sykes, T., Venkatesh, V., & Johnson, J. (2014). Enterprise system implementation and employee job performance: Understanding the role of advice networks. *MIS Quarterly, 38*, 51-72. Retrieved from <http://www.misq.org/>
- Tarhini, A., Ammar, H., Tarhini, T., & Masa'deh, R. (2015). Analysis of the critical success factors for enterprise resource planning implementation from

stakeholders' perspective: A systematic review. *International Business Research*, 8(4), 25-40. doi:10.5539/ibr.v8n4p25

Thakur, A. (2016). Enterprise resource planning (ERP) implementation in technical educational institutes: Prospects and challenges. *International Journal of Multifaceted and Multilingual Studies*, 3(2), 1-5. Retrieved from: <http://www.ijmms.in/>

Tian, F., & Xu, S. (2015). How do enterprise resource planning systems affect firm risk? Post-implementation impact. *MIS Quarterly*, 39, 39-60. Retrieved from <http://www.misq.org/>

Tsai, W., Lee, K., Liu, J., Lin, S., & Chou, Y. (2012). The influence of enterprise resource planning (ERP) systems' performance on earnings management. *Enterprise Information Systems*, 6, 491-517. doi:10.1080/17517575.2011.622414

Tsai, W., Lee, P., Shen, Y., & Lin, H. (2012). A comprehensive study of the relationship between enterprise resource planning selection criteria and enterprise resource planning system success. *Information and Management*, 49, 36-46. doi:10.1016/j.im.2011.09.007

Usmanji, P., Chu, M., & Khosla, R. (2013). Does the extent to which an ERP system is human-centered contribute to user satisfaction with that system? *Accounting and Management Information Systems*, 12, 595-625. Retrieved from <http://www.cig.ase.ro/>

- Usmanji, P., Khosla, R., & Chu, M. (2013). Successful product or successful system? User satisfaction measurement of ERP software. *Journal of Intelligent Manufacturing, 24*, 1131-1144. doi:10.1007/s10845-012-0645-6
- Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing and Health Sciences, 15*, 398-405. doi:10.1111/nhs.12048
- Venkatesh, V., Brown, S., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly, 37*, 21-54. Retrieved from <http://www.misq.org/>
- Verdouw, C., Robbmond, R., & Wolfert, J. (2015). ERP in agriculture: Lessons learned from the Dutch horticulture. *Computers and Electronics in Agriculture, 114*, 125-133. doi:10.1016/j.compag.2015.04.002
- Weli, I. (2014). Manager satisfaction in using the enterprise resource planning (ERP) system and the managerial performance. *Australasian Journal of Information Systems, 18*(3), 119-135. Retrieved from <http://journal.acs.org.au/>
- White, D., Oelke, N., & Friesen, S. (2012). Management of a large qualitative data set: Establishing trustworthiness of the data. *International Journal of Qualitative Methods, 11*, 244-258. Retrieved from <http://www.ijqm.ualberta.ca/>
- Xu, M., & Storr, G. (2012). Learning the concept of researcher as instrument in qualitative research. *Qualitative Report, 17*(21), 1-18. Retrieved from <http://www.tqr.nova.edu/>

- Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education, 48*, 311-325. doi:10.1111/ejed.12014
- Yin, R. (2013). Validity and generalization in future case study evaluations. *Evaluation, 19*, 321-332. doi:10.1177/1356389013497081
- Yin, R. (2014). *Case study research design and methods*. (5<sup>th</sup> ed.). Thousand Oaks, CA: SAGE.
- Zhang, S., Gao, P., & Ge, Z. (2013). Factors impacting end-users' usage in ERP in China. *Kybernetes, 42*, 1029-1043. doi:10.1108/K-11-2012-0099

## Appendix A: Invitation Letter

Dear Potential Research Participant:

As a director or manager in the IT department with ERP system experience, thank you for your time. I am conducting a doctoral study regarding ERP system utilization. The purpose of this study is to explore the strategies ERP directors and managers in the IT department use to maximize the usage of ERP systems. If you agree to participate in this study, I will conduct an interview with you that will last approximately 30 to 60 minutes. I may also request that you share organization documents that support your interview responses regarding ERP usage maximization strategies. Your participation in the study is completely voluntary.

Your information is confidential, and I will not release the specifics of any interview with anyone. I will use the information to determine various trends and relationships along with the other interview data to form conclusions on the strategies employed to maximize the usage of ERP systems. After potential interviewees agree to participate in the study, I will be providing more information during the interview.

While the study may be published in the ProQuest Dissertation Database, the individual interviews with each participant will be kept confidential. No individual other than my doctoral study committee at Walden University will have access to the interview transcripts. I will not release information that could impact your position within your organization.

Thank you for your consideration.

Sincerely,

Edward J. Schaffer

## Appendix B: Interview Protocol

### **Interview:** Strategies to Increase the Usage of Enterprise Resource Planning Systems

1. I will begin the face-to-face interview with introductions and an overview of the research topic.
2. I will ensure that the interview location is private, and no other individuals are present.
3. I will review with the participant the previously approved consent form.
4. I will advise the participant that I am sensitive to their time commitments and thank them for their participation in the study.
5. I will remind the participant that I will record the interview and that all conversation will remain strictly confidential.
6. I will begin the recording in Audacity on my laptop, announcing the participant's identifying code, as well as the date and time of the interview.
7. I will bring a pen and notepad to record participant observations during the interview. I will record any behavior in the participants during the interview that may be relevant to the study, such as reaction to questions.
8. I will record observations such as location, date, time, demographics, and environment.
9. The interview will last approximately 45 minutes to cover the interview questions along with any follow-up questions.




10. I will explain the concept of member checking. I will ensure that each interview question is thoroughly explained, and confirm the answer provided by the participant is recorded as intended by contacting the participant by email with transcribed data. I will request verification of the accuracy of collected data within 5 business days.
11. After confirming that any questions or concerns of the participant are answered to the satisfaction of the participant, I will conclude the interview by thanking the participant for their assistance with the study.

## Appendix C: Letter of Cooperation



June 15, 2016

Dear Edward Schaffer,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Strategies to Obtain Maximum Usage of Enterprise Resource Planning Systems within . As part of this study, I authorize you to contact IT directors or managers to recruit study participants, obtain consent from selected participants, schedule interviews with selected participants, and ask participants to verify the accuracy of the data collected during the interview. I authorize you to request organization documentation directly relevant to the study as support for answer provided in the interviews. I also authorize you to disseminate results of the study to the organization and the study participants. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: providing a private room to conduct the interviews. We reserve the right to withdraw from the study at any time if our circumstances change.

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

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

Sincerely,



Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verify any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

## Appendix D: Interview Questions

### Central Research Question

What strategies do ERP directors and managers in the IT department use to maximize the usage of ERP systems?

### Interview Questions

1. What is your perspective on the strategies your organization uses to obtain maximum usage of the ERP system?
2. What obstacles, if any, obstruct your organization's attempts to obtain maximum usage of the ERP system?
3. How are you addressing these obstacles?
4. How did you identify and address deficiencies in ERP usage?
5. What is your perspective on the depth to which the organization used members of your department in the design and development of the ERP system?
6. What strategies have you used to increase the level of user satisfaction in the ERP system?
7. What is your perspective on how the users of the ERP system perceive the usefulness of the ERP system?
8. What is your perspective on how easy it is for users to perform their assigned tasks in the ERP system?
9. What is your perspective on how effective the organization is in preparing users to use the ERP system?

10. What additional information can you provide to help me understand how your organization reaches the maximum level of ERP system usage?

## Appendix E: Invariant Constituents to Interview Questions

Table E1

*Table E1. Strategies Used to Obtain Maximum Usage of the ERP System*

What is your perspective on the strategies your organization uses to obtain maximum usage of the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
The first and primary concern is that it should not be an IT driven project. It should be run by the business.	2	50%	P1, P3
There must be alignment between business strategy and results to whatever the business case with ties directly to performance goals. Most system failures are determined before implementation	3	75%	P1, P2, P3
There must be dedicated business leadership on the program.	2	50%	P1, P4
There must be dedicated teams from both the business and IT taken out of their day to day roles and focused on the project.	2	50%	P1, P4
Be cautious of certain leadership roles on the project that also have roles outside of the project.	1	25%	P1
The company needs to be held accountable to the success of the project.	3	75%	P1, P2, P3
We push for standard, vanilla procedures.	1	25%	P2
We like to involve users in business operations reengineering before new systems are designed.	1	25%	P3
			<i>(table continues)</i>

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
The integration of the actual users of the system is critical from the beginning. The key is to get integration of users with the project team.	2	50%	P3, P4

Table E2

*Table E2. Obstacles Obstructing Attempts to Obtain Maximum Usage of the ERP System*

What obstacles, if any, obstruct your organization's attempts to obtain maximum usage of the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
The organization has to be in it for the long haul. Beware of fatigue financially or organizationally. You have to go into it with an organizational commitment from the beginning. You get the maximum usage when you don't quit halfway through or a third of the way through.	1	25%	P3
You're going to have to juggle resources. People get tired, or maybe it costs too much. You have changes in the market or the business results.	1	25%	P1
Priorities can change. Leadership changes. Organization gets tired. Knowledgeable resources want to move on.	1	25%	P1
The biggest obstacle is that the projects are so long.	2	50%	P1, P3
Leadership at the top needs to have consistency. The sponsor of the project has enough clout and influence to ensure success.	2	50%	P1, P3
There has to be alignment across leaders that this is the right thing to do.	3	75%	P1, P2, P4
Corporate policy sometimes requires use of ancillary systems that are not compatible with the ERP.	1	25%	P2
Lack of consistent executive support is a common problem.	4	100%	P1, P2, P3, P4

*(table continues)*

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
The organization must understand what value the new system is trying to drive. You must understand the current state, not implement current state.	2	50%	P3, P4
The process of developing systems is a difficult problem. Not having the right level of key user participation is a major obstacle.	1	25%	P3



Table E3

*Table E3. Steps to Address Obstacles*

How are you addressing these obstacles?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
We assigned business leaders, brought in dedicated teams.	2	50%	P1, P2
With outside consultants, we needed their expertise, but we did not abdicate our responsibilities for the project.	1	25%	P1
We kicked off the data work stream and invested in starting the process early.	1	25%	P1
From a usage perspective, there won't be buy-in from the users in the long run. We had the business people involved in the selection of the software from the beginning. We consider the impact of system design on the user.	2	50%	P3, P4
We look for opportunities to adjust user interaction to fit better how they work.	2	50%	P2, P3
Executive leadership must emphasize criticality of the system. They must communicate this importance beginning in development.	2	50%	P2, P3
Organizations must acknowledge responsibility for system results.	1	25%	P3
We make sure to involve the most important user from the beginning of development. The key users will be the organization's high performers.	2	50%	P3, P4
We have to be open to ideas from the users and maintain flexibility to make changes where it makes sense.	2	50%	P3, P4

*(table continues)*

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
We use an iterative development process to get timely user feedback. We have to be prepared to make adjustments from the feedback.	1	25%	P3
The complexity of the environment is an obstacle. You must focus on simplification.	1	25%	P3

Table E4

*Table E4. Identification of Deficiencies in ERP Usage*

How did you identify and address deficiencies in ERP usage?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
There are some obvious metrics because you have to invoice, you have to pay people.	1	25%	P1
There's a lot of metrics that you can use that are more business metrics such as the P/L or balance sheet.	1	25%	P1
There are numerous usage monitoring tools available. We would run reports to identify where they weren't utilizing the system.	2	50%	P1, P2
You could technically tell they weren't using it. It was more of a cultural issue, what's going on here? That was more of a leadership issue and lack of alignment of goals.	2	50%	P1, P4
Through failure, you learn what not to do next time.	2	50%	P3, P4
Development of specific training modules to address areas of low usage.	1	25%	P2
The organization must thoughtfully set targets for user adoption and measure results against the targets.	1	25%	P3

Table E5

*Table E5. Use of Members in Design and Development*

What is your perspective on the depth to which the organization used members of your department in the design and development of the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
I think business ownership is absolutely key.	1	25%	P1
A best practice is when you decide on a software solution you have to come up with guiding principles on how you will use that solution.	3	75%	P1, P3, P4
Only customize based on our business, where we are differentiated in the market.	1	25%	P1
If you are going to customize, you have to have a business case, and you are going to present to executive leadership.	1	25%	P1
Organization tends to just re-do what they already have, but the tool doesn't work that way. It creates performance challenges, or users don't like it.	3	75%	P1, P2, P3
We must align business goals to the system's capabilities.	1	25%	P4
The IT organization serves as support for the business led implementation. High-quality support is critical for users to adopt.	1	25%	P3

Table E6

*Table E6. Strategies to Increase Level of User Satisfaction*

What strategies have you used to increase the level of user satisfaction in the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
One is user involvement in the project ongoing. That's number one.	2	50%	P1, P3
From blueprint into the design, the more you can get the users involved in seeing the solution, and touching it, and being part of it, the more satisfied they will be.	2	50%	P1, P3
We are very diligent about including users in every function of a new system.	1	25%	P1
I think user satisfaction is tied to how you use the tools, or what version of the tools you pick.	1	25%	P3
We work with the software suppliers to improve system design from a user perspective.	2	50%	P1, P2
We invest extra money to improve the user interfaces.	1	25%	P2
We try to think about the commercialization of the software. That is, align EPR characteristics to commercial systems that people are used to.	2	50%	P3, P4

Table E7

*Table E7. Perception of the Usefulness of the ERP System*

What is your perspective on how users of the ERP system perceive the usefulness of the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
If the user grew up in our organization, they might not think any new system is a good new solution.	2	50%	P1, P4
For someone who has been in the solution for several years, that they will see the value of having the integration and your data is now in one spot, and you can change things more quickly.	1	25%	P1
I don't think users always perceive the new system as a good thing. This is a typical change management issue.	1	25%	P3
Users that work in the system all day find the ERP very useful.	3	75%	P2, P3, P4

Table E8

*Table E8. Perception of the Ease of Use of the ERP System*

What is your perspective on how easy it is for users to perform their assigned tasks in the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
Traditional ERP's are not that easy to use.	3	75%	P1, P3, P4
The ERP system is not intuitive. You'd have to have a cheat sheet to help you do your job every day.	4	100%	P1, P2, P3, P4
The ERP software providers are led by cultures that don't really care what the user thinks. This is how it works. This is the way it is. You'll figure it out over time. You'll learn to love it.	1	25%	P1
Casual users of the system typically find it difficult to perform tasks.	3	75%	P2, P3, P4
The new version of SAP considers improved user interface. That will help tremendously with ease of use.	2	50%	P3, P4
If the system does not provide the easiest way for users to do their jobs, they will find another way outside of the system.	1	25%	P4

Table E9

*Table E9. Effectiveness of User Preparation*

What is your perspective on how effective the organization is in preparing users to use the ERP system?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
The way to be effective is to understand your stakeholders early on.	3	75%	P1, P3, P4
We involve users along the way.	3	75%	P1, P3, P4
You have to focus your training, change management on the users to get people comfortable.	4	100%	P1, P2, P3, P4
You need to bring in users to help test.	1	25%	P1
Create a tailored plan for the users. It's a change management plan coupled with training, coupled with communication. Constant communication is absolutely critical.	4	100%	P1, P2, P3, P4
Tailor your communication to the stakeholder community that you are affecting.	1	25%	P1
The communication plan is absolutely critical in ensuring usage.	3	75%	P1, P3, P4
You have the right people available to the users during and after go-live to listen to user feedback, to adjust.	2	50%	P2, P4
The organization should practice training its employees to get better at it.	2	50%	P3, P4

*(table continues)*



Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
We tend to have a “super user” strategy. That is, we hope someone learns the system well on their own, becomes a super user of the system then trains other users.	1	25%	P4
ERP initiatives are simply change initiatives. The technology just happens to be the tool to implement the change.	1	25%	P3

Table E10

*Table E10. How the Organization Maximizes ERP System Usage*

What additional information can you provide to help me understand how your organization reaches the maximum level of ERP system usage?

Invariant Constituents	# of participants to offer this experience	% of participants to offer this experience	Participants offering this experience
To ensure a quality deployment, a well-thought out testing plan is critical.	1	25%	P1
Nothing kills users more than a rocky implementation. They have a lot of distrust of the system from the beginning.	1	25%	P1
If you have stability issues, you are not going to get the users comfortable.	1	25%	P1
Focus on a quality solution with appropriate release cycles afterward to focus on highest risk.	1	25%	P1
It's critical to consider system stability. That is how you gain the trust of users.	1	25%	P2
Making the user feel comfortable that there is funding available for post go-live enhancements and optimization.	1	25%	P1
The organization must thoughtfully consider how to maximize the user experience.	2	50%	P2, P3