2017

Strategies for U.S. City Government Enterprise Resource Planning System Implementation Success

Jennifer Miller
Walden University

Walden University

College of Management and Technology

This is to certify that the doctoral study by

Jennifer Miller

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

Review Committee
Dr. Cheryl McMahan, Committee Chairperson, Doctor of Business Administration
Faculty

Dr. Jamiel Vadell, Committee Member, Doctor of Business Administration Faculty

Dr. Al Endres, University Reviewer, Doctor of Business Administration Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2017

Abstract

Strategies for U.S. City Government Enterprise Resource Planning System

Implementation Success

by

Jennifer A. Miller

MS, University of Alabama, 2011

BS, Northwest Florida State College, 2009

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

February 2017

Abstract

Strategies for enterprise resource planning (ERP) system implementation success have been a focus of scholars since the 1990s. Researchers have demonstrated that ERP system implementation could cause both system failures and organization failures, affecting both operations and stakeholders. The theory of constraints was the conceptual framework for this single qualitative case study that explored ERP system critical success factors (CSFs) and strategies U.S. city governments use to successfully implement ERP systems. One city government in New Mexico with a successful ERP system served as the case study's population. Data were collected from semistructured interviews and relevant documents and then open coded and thematically analyzed. Triangulation was employed to increase the trustworthiness of interpretations. The primary themes that emerged from the analysis of this single case study revealed the importance of the city government adequately resourcing and staffing the organization, providing top management support, continuously communicating to clarify motivations for implementations, gaining concurrence, and maintaining a change management asset. Other city government end-users, managers, leaders, and vendors could benefit from results of this study by identifying and addressing the relevant principal CSFs, and then developing and deploying strategies for the implementation, control, and remediation phases to increase ERP systems' utility. City governments seeking to implement ERPs could effect social change by demonstrating fiscal stewardship of resources, adding fiscally efficient and efficacious operations directly supporting constituents, and increasing public confidence.

Strategies for U.S. City Government Enterprise Resource Planning System

Implementation Success

by

Jennifer A. Miller

MS, University of Alabama, 2011

BS, Northwest Florida State College, 2009

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

February 2017

Dedication

I dedicate this study to God for, "The Lord is my rock, my fortress, and savoir; my God is my rock, in whom I find protection." Psalms 18:2 NLT.

Acknowledgments

First and foremost, I thank God for allowing me the opportunity to pursue a doctorate degree despite numerous obstacles and sacrifices. With supreme gratitude, I also thank my committee chair, Dr. Cheryl McMahan, the most significant source of support words cannot adequately capture. You have been a blessing, inspiration, and scholarly example of excellence. Thank you to my second committee member, Dr. Vadell, for your frank and humorous thoughts of federal government. Thank you to my URR, Dr. Endres, for your meticulous reviews and positive contributions to this study. Thank you, DBA Program Director, Dr. Freda Turner, for your rapid responses and continuous availability to DBA students. Finally, thank you to my family and friends for your support, understanding, and love.

Table of Contents

ii

iii

List of Tables

List of Figures

Section 1: Foundation of the Study

This first section of this study begins with a background of the problem followed by the problem statement. Then, the research intent is in the purpose statement. The nature of the study provides the research method and design to support the next element, the research question. Next, I present questions used to address the research question. Finally, a list of operational definitions, assumptions, limitations, and delimitations is provided. This section concludes with a statement of the significance of this study and a review of the professional and academic literature.

Background of the Problem

Public sector and private sector organizations have implemented enterprise resource planning (ERP) systems for decades (Bahari, Yonnedi, & Djunid, 2015; DioGuardi, 2014; Ghosh, 2012; Shatat & Dana, 2016). The majority of ERP system implementations result in failure as determined by objective, subjective, or a combination of measures and analyses determined by stakeholders (Abdelmoniem, 2016; Amid, Moalagh, & Ravasan, 2012; Ghosh, 2012). The abundance of ERP system implementation failures and limited successes inspired me to undertake this study.

Researchers have employed all methodologies and several designs to determine success factors and failure factors in ERP system implementations. Researchers such as Dwivedi et al. (2015), Garg and Garg (2013), Nejib (2013), Gomes (2013), Savolainen, Ahonen, and Richardson (2012), Shaul and Tauber (2013), Stanciu and Tinca (2013), Taherdoost and Keshavarzsaleh (2015) identified implementation critical success factors (CSFs) as contributing to failure or success dependent on an organization's ERP system

implementation context. Arvidsson, Holmström, and Lyytinen (2014); Dennis and Walcott (2014); DioGuardi (2014); Khanna and Arneja (2012); and Stacey (2013) studied various ERP system implementation strategies and provided recommendations for successful ERP system implementations. Unfortunately, a fail-proof strategy or collection of CSFs for guaranteed success does not exist for general application among public sector or private sector organizations. While many studies concerning ERP system implementation in the private sector exist, research about ERP system implementation in the emerging public sector market remains scarce (Alves & Matos, 2012; Kelemen, 2014; Leonard & Higson, 2014).

Problem Statement

ERP system implementation decisions are irrevocable and could cause failures in organizations (Bharathi & Parikh, 2012). Ghosh (2012) suggested 60% of ERP projects fail while ERP system implementation failure rates are as high as 81%, resulting in significant resource and opportunity losses. The general business problem is some public sector and private sector organizations are being negatively affected by ERP system implementation problems resulting in implementation failure. The specific business problem is some managers of city governments in the United States lack ERP system implementation CSFs and strategies to successfully implement ERP systems.

Purpose Statement

The purpose of this qualitative single case study was to explore ERP system CSFs and strategies U.S. city government managers used to successfully implement ERP systems. Data came from end-users, managers, and leaders of a city in New Mexico.

These participants had direct participation experience in successfully implementing an

ERP system. Findings from this single case study may contribute to social change by

providing managers of private and public sector organizations CSFs and strategies for

implementing ERP systems. Managers who apply these CSFs and strategies may improve

organization environments and morale, increase value to constituents, and maximize

goods and services for city residents and visitors.

Nature of the Study

When a problem cannot be adequately studied with quantitative methods, a

qualitative approach or mixed method approach may be useful (Hyett, Kenny, &

Dickson-Swift, 2014; Yin, 2014). Yilmaz (2013) posited quantitative researchers use

numerical data to test hypotheses, measure results, and analyze data in order to generalize

results. In contrast, a single case study has limited generalizability (Shatat & Dana,

2016).

I collected what Yin (2014) called *rich and thick* data rather than numerical data.

Researchers use the mixed methodology to develop multiple perspectives of phenomena

from focus on real-life context understanding (Bernard, 2013). The mixed methodology

did not suit this study because the purpose did not entail developing multiple

methodological perspectives. Using the qualitative approach enables researchers to

collect data from multiple perspectives across a participant pool in a flexible manner,

which matched my research intent (Hyett et al., 2014).

Hyett et al. (2014) described case studies as increasingly popular with a level of

flexibility not available in other qualitative designs, such as phenomenology. A

phenomenological design did not suit this study, as I did not seek to explore meaning of a phenomenon (Yilmaz, 2013). Researchers use an ethnographic research design to explore a cultural group or multiple cultural groups. Neither the phenomenological nor the ethnographic design were appropriate for the study of a single, U.S. city government organization. Finally, Loh (2013) described a narrative research design approach as addressing exploration of detailed stories of participants' experiences. A narrative research design did not match an intent of gaining multiple ERP system implementation experiences because I sought to identify and explore general CSFs and strategies for implementing ERP systems for a city in New Mexico.

Research Question

What ERP system implementation CSFs and strategies do U.S. city governments use to successfully implement ERP systems?

Interview Questions

1. What were the main reasons/motivation for the ERP system implementation?

2. What was your role during the ERP system implementation process?

3. Why was/is the ERP system implementation important to your organization?

4. How do you define the success for this ERP system implementation?

5. What critical factors helped the organization overcome and facilitate ERP system implementation challenges?

6. What strategies helped the organization overcome and facilitate ERP system implementation challenges?

7. What were key barriers to applying the implementation strategies?

8. What other additional information would you like to add about critical success factors and strategies for implementing this ERP system?

Conceptual Framework

The theory of constraints (TOC) served as the conceptual framework for my study. Researchers viewed the TOC as a systems management philosophy applicable to every system (Balderstone & Mabin, 1998; Rahman, 1998; Şimşit, Günay, & Vayvay, 2014). Because of this view, I chose the TOC for my study of ERP system implementation CSFs and strategies. Coman and Ronen (1994) called the TOC a global managerial methodology for managers to focus on the most critical factors of management. Eliyahu Goldratt created the TOC in the 1980s within multiple papers and books (Rahman, 1998; Şimşit et al., 2015). In 1987, the TOC received formal recognition by scholars and practitioners, and Goldratt defined it as "an overall theory for running an organisation" (Goldratt, 1988, p. 453; Rahman, 1998).

In the TOC, a system must have one or more constraints that represent improvement opportunities (Rahman, 1998). Goldratt's theory consisted of five steps: a) identify the system's constraints(s), b) decide how to exploit the system's constraint(s), (c) subordinate everything else to the above decision, (d) elevate the system's constraint(s), and (e) if, in the previous steps, a constraint resolved, go back to Step 1, and do not allow inertia to cause another system constraint (Rahman, 1998; Şimşit et al., 2015). I designed a visual aid of the five steps of the TOC (see Figure 1.).

Management and leadership make three decisions: (a) decide what to change, (b) decide what to change to, and (c) decide how to cause the change (Rahman, 1998; Şimşit

et al., 2014). Finally, managers and leaders can use two measurements to guide further actions: global (e.g., profit, ROI, and cash flow) and operational (e.g., throughput, inventory, and operating expense) (Rahman, 1998). Boyd and Gupta (2004, p.352) summarized the TOC as "the higher the degree of throughput orientation, the greater organizational performance will be" with organizational mindset, performance measurement systems, and decision making as three throughput orientation dimensions.
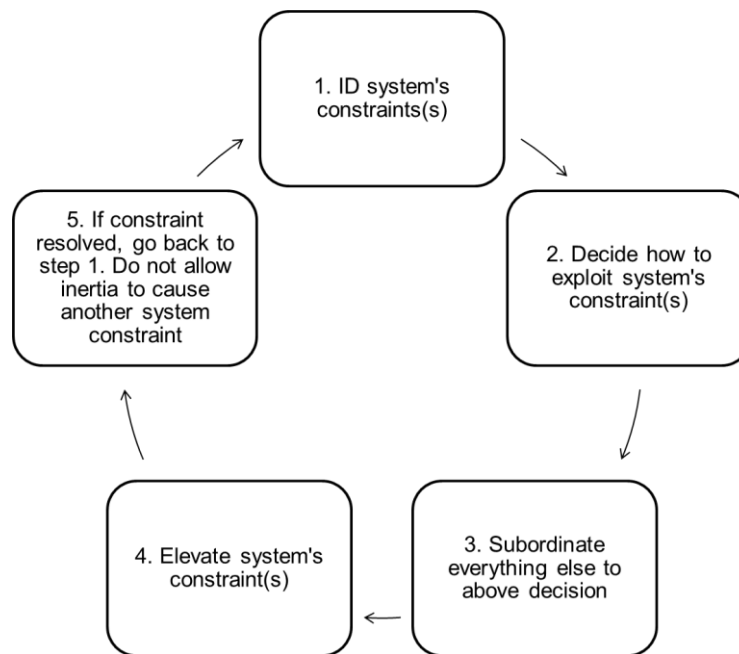
Figure 1. The five steps of the theory of constraints.

Public sector and private sector organizations continue to experience challenges during ERP system implementations (Alves & Matos, 2012). Ahmadi, Yeh, Martin, and Papageorgiou (2015) recognized organizations as dynamic systems where one factor change can trigger one or more other factors to change. Challenges during replacement of legacy systems and implementation of ERP systems include major constraints to improvement that the TOC addresses, such as resistance to change in organizations

(Aladwani, 2013; Alves & Matos, 2012; Balderstone & Mabin, 1998; Chayakonvikom, Fuangvut, & Prinyapol, 2016; Chiang, 2013; Garg & Garg, 2013; Giovani, Snider, & Balakrishnan, 2013; Stanciu & Tinca, 2013; Zouine & Fenies, 2014). Balderston and Mabin (1998) reported most applications of the TOC occurred in North America with more than 100 cases and no failures; the TOC reportedly works well if partially applied. Applicability to every system and a global management method for critical factors made the TOC an appropriate framework for this study of ERP system implementation CSFs and strategies.

Operational Definitions

Constraints: For purposes of this study, constraints are performance limiting factors of organizations viewed as improvement opportunities (Rahman, 1998).

Critical Failure Actors (CFA): CFAs are individuals who actively participate in failure of ERP system implementations (Bintoro, Simatupang, Putro, & Hermawan, 2015).

Critical Failure Factors (CFF): In this study, CFFs are any factors of an organizational endeavor that impede success or contribute to failure (Amid, Moalagh, & Ravasan, 2012).

Critical Success Actors (CSA): CSAs are individuals who actively participate in success of ERP system implementations (Bintoro et al., 2015).

Critical Success Factors (CSFs): For purposes of this study, CSFs are a limited combination of areas of activities requiring continuous attention of leadership and

management within a business that when satisfactory, result in successful organization performance (Rockart, 1978).

Enterprise Resource Planning (ERP) System: ERP systems consist of comprehensive software packages with a design to support integration of information from distinct modules of organizations such as finance, accounting, human resources, manufacturing, et cetera (Yaghubi & Modiri, 2014).

ERP II: ERP II systems are a next generation ERP system enabling greater collaboration capacity and using electronic customer relationship management (e-CRM) for extended enterprise initiatives (Norton, Coulson-Thomas, Coulson-Thomas, & Ashurst, 2013).

Key Success Factor (KSF): In this study, KSFs include technical and non-technical factors further classified to people, process and organization, and technology that influence ERP implementation success through the stages of implementation (Hasibuan & Dantes 2012).

Organizational culture: For purposes of this study, organizational culture is a collection of experiences, values, beliefs, and behavior norms established among members of an organization (Chockalingam & Ramayah, 2013).

Assumptions, Limitations, and Delimitations

Assumptions

Silverman (2013) identified assumptions as realistic expectations researchers accept as true or possible. In a critical analysis of organizational change, Jansson (2013) described assumptions as ordinary and obvious, but accepted despite not being

consistently proven true. Different types of assumptions, such as Jansson's (2013), serve a role in researchers' analyses (Francis, 2014). I assumed participation and acceptance of study efforts of the U.S. city government organization and personnel who successfully implemented an ERP system and those individuals that facilitated contact of viable participants for completion of study.

I also assumed responses to interview questions were honest and accurate. Robinson (2014) mentioned risks associated with participant incentives and fictitious data. I assumed participants responded based on their individual experiences with the ERP system implementation rather than providing responses from a secondary source perspective or implementation experience at another place or time. I also assumed interviewees were able to recollect their ERP system implementation experiences accurately.

Limitations

Silverman (2013) defined limitations as uncontrollable insufficiencies, contexts, or stimuli that confine research studies. Marshall and Rossman (2014) explained limitations originate from a study's conceptual framework and study design as limitations provide acknowledgement of boundaries to study. Like Parthasarathy and Daneva's (2016) single case study design, this case study cannot be generalized to other contexts similarities may exist. Shatat and Dana (2016) posited that a single case study has limited generalizability and Kharuddin, Foong, and Senik (2015) stated small sample sizes limit generalizability. Researchers Alves and Matos (2012) described the public sector as an emerging ERP system market. Bias among participants' responses may exist for reasons

like Chockalingam and Ramayah (2013) found: some government organizations have declined pursuit of ERP systems indefinitely while entire sectors of countries avoid ERP system implementations. Researcher bias could be another limitation in data collection and member checking processes that Robinson (2014) described. A further potential limitation was inherent censorship associated with certain U.S. government organizations that limit data collection.

Delimitations

An instrumental, or delimited, case study focuses on a particular matter of the case (Hamilton & Corbett-Whittier, 2013). The focus of this study was a U.S. city government organization's CSFs and strategies for ERP system implementation resulting in conscious exclusion of the larger, private sector market of ERP system implementations or organizations outside of the United States. Delimitations provided a means for narrowing the scope of a research endeavor in conjunction with given limitations and assumptions.

The selection of a single U.S. city government organization that successfully implemented an ERP system within the prior 7 years was a delimitation. Other delimitations of this study included interviewing only those employees who experienced or participated in the U.S. city government organization's ERP system implementation, regardless of length of time involved. I interviewed available and interested former employees. Employees referred me to, and contacted, vendors who directly participated in the organization's ERP system implementation, but interviews did not occur with former or current vendors. Bounds associated with research design include time and

availability of participants (Yin, 2014). A final delimitation was my restricting the study domain to a single U.S. city government organization.

Significance of the Study

Contribution to Business Practice

Business leaders and managers seek efficient and effective practices for the benefit of shareholders and stakeholders. This study might be a significant contribution to public sector organizations as I explored CSFs and strategies U.S. city government managers use to successfully implement ERP systems. Existing ERP system implementation CSFs and strategies from the literature appear in this study, and, from my findings, I revealed additional CSFs and strategies. Organizations implement ERP systems for multiple advantages, affecting multiple avenues of operations in novel ways due to highly integrated management information system (MIS) capabilities (Abdinnour & Saeed, 2015; Somers & Nelson, 2004; Upadhyay, 2013). Findings from this study might provide information to help reduce resource waste and allow organizations to allocate additional resources to corporate social responsibility.

Organizational managers may discover multiple CSFs and strategies gleaned from this study, similar to other researchers' studies (e.g., Al-Sabaawi, 2015; Almajed & Mayhew, 2013; Cook, 2013; Galy & Sauceda, 2014; Gomes, 2013; Srivastava & Misra, 2014), including those within the areas of forecasting, planning, and staffing. For instance, I explored the existence of CSFs and strategies, failure factors and strategies, and investments through review and interpretation of ERP system users' responses. Interviewees' experiences provided business decision-makers evidence to justify

decisions concerning ERP system implementations. ERP system implementation success definitions vary, but project management elements appeared in Badewi and Shehab's (2016) and Sangar and Iahad's (2013) definition of success: a project completed within budget, on schedule, and with required functionality. Sangar and Iahad's definition extended to include stakeholder judgment that organization business processes perform better than before while Badewi and Shehab's (2016) included nonfinancial benefits. Individuals' perspectives of ERP system implementation success could contribute to identifying efficacious business practices and public sector practices.

Implications for Social Change

As stewards of taxpayer funds, government managers desire ERP system implementations with minimal issues (Cook, 2013; Dennis & Walcott, 2014). Likewise, constituents of government organizations and stakeholders of private sector organizations seek evidence of successful changes with minimal issues, like ERP system implementations. The ways organizations serve and interact with constituents could affect beneficial social change among individuals, businesses, and other organizations through greater transparency, trust, and enhanced data availability and accuracy.

Results of the study may benefit society and public sector organizations as this successful ERP system implementation exhibits fiscal stewardship of resources, efficiency gains, and fiscally sustainable operations supporting constituents and gaining public confidence. This study's findings could catalyze beneficial social change among end-users, managers, leaders, and vendors of organizations to identify, maximize, and utilize CSFs and strategy lessons learned from this study for smoother implementations.

These groups can review and implement CSFs and strategies for improved technology

adoption, better organizational morale during and after implementation, and greater

knowledge management to improve public opinions and reduce executives' concerns

about ERP system value and risks. Other organizations may consider the findings useful

for implementing an ERP system to efficiently collaborate and provide quality goods and

services to their respective communities, maximize services to community members, and

increase return on investment (ROI). As verified in Section 3, looking through the lens of

my conceptual framework of the TOC enabled me to explore how managers affect

beneficial social change in addressing multiple constraints during system implementation

management and continuous improvement endeavors that benefit the public by increasing

services to constituents, ROI for investors, and efficiencies and effectiveness of

organizational personnel.

A Review of the Professional and Academic Literature

The purpose of this qualitative single case study was to explore CSFs and

strategies U.S. governments use to successfully implement ERP systems. In conjunction

with data from end-users, managers, and leaders of a city in New Mexico, a review of the

professional and academic literature proved necessary to support data triangulation and

inform interview questions.

Onwuegbuzie, Frels, and Hwang (2016) advised that a literature review should

occur throughout a research process, and Onwuegbuzie and Weinbaum (2016) posited

researchers can maintain continuous awareness of a topic by reviewing literature.

Reviewing the professional and academic literature before and during the study helped

keep me aware of scholarly content about ERP system implementations including existing and new CSFs and strategies.

In preparation for, and throughout execution of the study, I scoured literature of online databases including Emerald Management, ABI/INFORM Complete, Business Source Complete, ProQuest, Google Scholar, and Academic Search Complete to obtain government reports and peer-reviewed journal articles regarding ERP system implementations. Search terms included *critical success factor**, *CSF*, *enterprise resource planning*, *ERP*, *critical failure factor**, *ERP implementation*, *ERP deployment*, *ERP success strateg**, *ERP system success strateg*,implementation success strategy*,* and combinations of these terms with Boolean operators. This study consists of 292 references. Ninety-four percent of the references were peer-reviewed, and 96% of the references were published within 5 years of the 2016 year of anticipated Chief Academic Officer (CAO) approval. Additional sources included government websites and reports, scholarly seminal books, and archives of professional association peer-reviewed publications.

I executed multiple iterations of review of existing literature to develop insights about the central research question. I also continued to review literature during the study as recommended by Onwuegbuzie et al. (2016). Analysis and synthesis efforts included comparison and contrasting of quantitative and qualitative studies in addition to reviews of literature. Onwuegbuzie and Frels (2014) and Onwuegbuzie and Weinbaum (2016) noted how analysis and interpretation of sources inform literature reviews and research synthesis.

Through critical analysis of search results and reviews of literature, thematic organization of professional and academic literature emerged. I organized themes using a thematic structure and incorporated the TOC literature. The conceptual framework literature appears first, followed by expected themes from interviews. Next, I provide a brief preface of the ERP system market and international sources of ERP system motivations. Then, my review contains ERP system public and private sector perspectives with respect to technology adoption, strategy and risks, CSFs, key success factors (KSFs), and ERP system CSF and KSF research. Next, I discuss knowledge management and creation, critical failure factors (CFFs), ERP system risks, ROI, cost risks, and culture factors. Prior to narrowing the focus on specific themes, I gave maximum consideration to public sector and private sector ERP system implementations.

Literature concerning ERP system implementations in the private sector appeared more frequently compared to other sectors. However, themes of technology adoption, CSFs, KSFs, CFFs, and ROI remained common topics for both the private sector and public sector. Examining professional and academic literature revealed an increasing trend of ERP system implementations, and included both qualitative and quantitative research of ERP system implementations (Myreteg, 2015). These ERP system implementation subareas provided multiple avenues of ERP system implementation exploration using the TOC conceptual framework (Balderston & Mabin, 1998; Boyd & Gupta, 2004; Goldratt, 1988; Rahman, 1998).

Conceptual Framework Literature

In terms of sectors and size, Şimşit et al. (2014) argued most sectors and nearly any company size could implement the TOC. Boyd and Gupta (2004) presented constraints management as a means to understand and improve complex systems, a description assigned to both legacy systems and ERP systems by multiple researchers (Alves & Matos, 2012; Dwivedi et al., 2015; Mu, Kirsch, & Butler, 2015; Tzeng & Chang, 2015). Goldratt's works include application of constraints management in ERP. The theoretical dimension of organizational mindset in the TOC correlates to ERP system implementation factors: underlying attitudes and management and leadership assumptions and beliefs (Boyd & Gupta, 2004). Other stakeholders and factors exist in the complex, constraint-filled ERP system implementations including end-users, multiple levels of management, IT department personnel, project team members, vendors, consultants, indirectly affected employees, business process experts, and even entire countries (Ansen, 2014; Bintoro et al., 2015). Coman and Ronen (1994) posited that MISs would be more effective with the TOC as the managerial methodology than other industry leading methodologies including operations scheduling parts of the TOC Operations solution known as Drum/Buffer/Rope production scheduling methodology. Finally, researchers can use the TOC as a lens to define and solve problems methodically in any setting concerning system change according to Boyd and Gupta (2004). The TOC is a framework ERP system implementation organizations could utilize to improve implementations (Alves & Matos, 2012; Boyd & Gupta, 2004).

I also considered information processing theory and general systems theory as conceptual frameworks. Narrow focus on uncertainty and organizational information processing with information processing theory as a framework did not fully capture a broad scope of success CSFs and strategies relative to ERP system implementations, while general systems theory proved to be too broad (Madapusi & Ortiz, 2014). A need for identifying impediments to success in systems and continuous improvement scenarios persisted, as found in the TOC (Balderstone & Mabin, 1998).

Similar to the general systems theory, the TOC includes both inanimate and animate agents, such as systems and humans in ERP system implementations (Balderstone & Mabin, 1998; Stacey, 2013; Von Bertalanffy, 1972). In the TOC, management and leadership make three decisions about how to address constraints: (a) decide what to change, (b) decide what to change to, and (c) decide how to cause the change (Rahman, 1998; Şimşit et al., 2014). In this study, managers of U.S. government organizations served as decision makers, and animate agents, in Goldratt's TOC while the ERP system and other sources of constraints were inanimate agents in the ERP system implementation. Then, the TOC five step continuous improvement process proceeded (Balderstone & Mabin, 1998; Rahman, 1998).

Technology adoption appeared in the research concerning origins of ERP systems, phases of ERP system implementations, and studies of technology adoption among multiple levels of users. Researchers also referenced technological changes, complexities, and adaptations to technologies in the literature, all examples of applied system management that the TOC addresses (Balderstone & Mabin, 1998; Ononiwu,

2013; Zouine & Fenies, 2014). The TOC researchers emphasized human behavioral tendencies and resistance to change, which are found among organizations (Balderstone & Mabin, 1998). Alternate theories in previous case studies provided potential means to understand why and how ERP system adoptions occur at multiple levels of an organization (Bharathi & Parikh, 2012; Hwang & Grant, 2014; Lanzolla & Suarez, 2012; Poba-Nzaou, Raymond, & Fabi, 2014).

The diffusion of innovation (DOI) theory received consideration as a conceptual framework for this study because of social system and communication elements; however, DOI theory often appeared as a framework for the study of various stages of diffusion of IT in organizations rather than a focus of constraints to success in organizations' ERP system implementations (Ha & Ahn, 2014). Poba-Nzaou et al. (2014) referred to the explanatory limitations of the DOI theory as a framework for case studies. A related framework of technology diffusion theory received consideration, but seemed better suited for an explanation of technology use after ERP system implementation (Lanzolla & Suarez, 2012). DOI theory and technology diffusion theory entailed a narrow framework whereas the TOC offered a broader framework of scope and time for any system and during any continuous improvement process (Balderstone & Mabin, 1998; Boyd & Gupta, 2004). For these reasons, I did not use DOI theory or technology diffusion theory.

Actor-network theory provided another potential framework to use in this study of ERP system implementation CSFs and strategies. Actor-network theory offers a means to address situations involving networks of human and nonhuman actors (Alter, 2013).

Elements addressed by actor-network theory included establishment and maintenance of such networks as observed in information systems (Alter, 2013; Elbanna, 2013). Elbanna (2013) supported use of actor-network theory for a conceptual study framework because ERP projects mirror actor networks, or resemble the construction of actor networks.

Despite attributes that would make this theory applicable for this single case study, actor network theory as a conceptual framework provides an information system researcher the choice to focus on some actors with the absence of others (Elbanna, 2013). Actor network theory's limitation for discovering relationships among networks did not support my intent of determining CSFs and strategies of U.S. city government ERP system implementations. Therefore, I did not select actor network theory as a framework for study.

Researchers studied CSFs, KSFs, and CFFs using both qualitative and quantitative approaches with general systems theory and derivatives of general systems theory to develop lists of CSFs and KSFs with frequent overlap regardless of the factor categorizations such as a people, technology, and business, or other conventions attributable to inanimate or animate agents (Bahari et al., 2015; Shaw, 2012; Von Bertalanffy, 1972). Altamony, Tarhini, Al-Salti, Gharaibeh, and Elyas (2016) identified change management, top management support, business process re-engineering, vendor support, and user involvement as the five main categories of ERP system CSFs. In a study of top KSFs among CSFs, Abu-Shanab, Abu-Shehab, and Khairallah's (2015) determined top management support, user training on software, interdepartmental communication and cooperation, and project team competence ranked highest of studied

KSFs and CSFs. Other specific CSFs and KSFs among the literature included top management support and commitment, project management, organization commitment, implementation team composition, education and training, data accuracy assurance, adaptation of performance measures, problem resolution, technical difficulties, and user expectations (Bahari et al., 2015; Madapusi & Ortiz, 2014; Ram et al., 2013c; Shaw, 2012).

Most researchers included ERP system implementation failures in generalized, statistical form without identifying specific failure factors or impediments to success (Amaya, Monroy, & Peláez, 2014; Amid et al., 2012; Garg & Garg, 2013; Ghosh, 2012; Mu et al., 2015; Stanciu & Tinca, 2013; Tzeng & Chang, 2015). For instance, Abdelmoniem (2016) claimed 75% of international ERP projects fail, while Umar, Khan, Agha, and Abbas (2016) surmised from the literature 70% of ERP projects did not produce expected benefits. In addressing failure factors, research commonly included objective, financial data to determine failure or success (Almahamid & Awsi, 2015; Galy & Sauceda, 2014; Hatamizadeh & Aliyev, 2012; Lu & Jinghua, 2012; Rajnoha, Kádárová, Sujová, & Kádár, 2014). Examples included ROI examined by each year after implementation and overruns or underruns of initially allocated budgets (Almahamid & Awsi, 2015; Galy & Sauceda, 2014; Hatamizadeh & Aliyev, 2012; Lu & Jinghua, 2012; Rajnoha et al., 2014; Tzeng & Chang, 2015). While quantitative data and mixed method data proved informative to this study, exploring a single case of an ERP system implementation with qualitative data in an emerging market seemed best.

A final theme of the literature review included ROI as a success measure of ERP system implementations. In several quantitative studies, researchers and participant individuals and organizations referred to ROI as a measurement tool to determine success (Almahamid & Awsi, 2015; Galy & Sauceda, 2014; Hatamizadeh & Aliyev, 2012; Lu & Jinghua, 2012; Myreteg, 2015; Rajnoha et al., 2014; Tzeng & Chang, 2015). Researchers of qualitative studies leveraged intangible forms of ROI to gauge success (Shkurti, Mbreshtani, & Maloku, 2014; Weng & Liu, 2013). Literature pertinent to ROI included objective, tangible data and intangible perspectives of ROI from the point of implementation until years post-implementation. Some researchers used a balanced scorecard approach of measure to ERP system performance after system implementation (Gajic, Stankovski, Ostojic, Tesic, & Miladinovic, 2014).

Despite contributions to ERP system implementation success strategies, factors, and ROI knowledge, case studies with models entailed use of multiple models and predefined CSFs (Gajic et al., 2014). For this study of a U.S. city government's ERP system implementation the intent was to determine CSFs and strategies rather than correlations or measures among strategies and factors. While use of scorecards and correlation modeling would provide potential linkages among strategies and success factors of ERP system implementations in the U.S. city government organization, the efforts would not have addressed the intended scope of the TOC – to repeatedly address constraints and apply solutions regardless of inanimate and/or animate agents of organizations (Balderstone & Mabin, 1998; Stacey, 2013; Shaw, 2012; Von Bertalanffy, 1972).

Expected Themes from Interviews

Review of the professional and academic literature influenced themes I expected from interviews of the U.S. city government organization participants. I anticipated finding similar and new motivations for ERP system implementation at this U.S. city government organization compared to the motivations described in existing literature such as legal mandate compliance and pressures for efficiency and effectiveness of organization operations. Themes concerning technology adoption might have included significant attention to human factors and challenges in adopting the ERP system. I expected negative comments about ERP implementation and positive comments about the resulting ERP system. The strategies of organizations and risks considered during the decision making process were likely be mentioned more by respondents who are higher in the organization hierarchy and were in leadership and/or management positions of the ERP system implementation. It was likely strategy would include preliminary work with the vendor to prepare for implementation. Similar to the literature, I expected potential themes to mirror the CSFs and key success factors (KSFs) including top management support and commitment, communication, training, and business processing re-engineering as contributing factors to the organization's success. Potential themes in interview data may have also included knowledge management and creation. I did not anticipate finding confirmation or mention of CFFs given the low amount of literature regarding CFFs. Although the single case study population and participants belonged to a U.S. city government, I did expect to find themes related to risk, ROI, and costs from the interviews. A theme concerning culture factors of the organization as related to the

ERP system implementation might have appeared. Finally, there was reason to expect to find a theme concerning the ERP system market and customization of the ERP system given the frequency of literature regarding ERP system customization.

In comparison to previous research and findings, this study of U.S. city government organization CSF's and strategies in ERP system implementations contained a smaller sample size than quantitative method studies. For instance, Venkatesh, Aarthy, Thenmozhi, and Balasubramanie (2013) used a questionnaire across four Indian institutions to garner 120 responses whereas this study was more similar to May, Dhillon and Caldeira's (2013) or Shaw's (2012) qualitative approach with 20 and fewer participants in each qualitative study. The type and location of government appeared less studied in both quantitative and qualitative professional and academic literature. Alves and Matos (2012) noted the lack of ERP implementation studies, empirical or qualitative, concerning the public sector while Tobie, Etoundi, and Zoa (2016) argued more case studies should be conducted. However, there is increased attention to the world's largest ERP implementation system, the U.S. DOD's ERP system implementation, a public sector entity of substantial size (Cook, 2012).

Enterprise Resource Planning System Market

Building on the allure of ERP systems, Hasibuan and Dantes (2012) posited sales of ERP systems have soared into the billions since 2004. Poba-Nzaou et al. (2014) reported that ERP software created the largest revenue streams in business applications software. Ali and Cullinane (2014) noted ERP systems may be the most popular new business software in the prior 15 years with more than 200 ERP systems providers in

existence. Soler, Feliks, ,and Ömürgönülşen (2016) posited ERP software is used by

every sector. Potentially the largest producer, SAP AG, controlled about 40% of the ERP

market and maintained the title of third largest software company, globally (Hasibuan &

Dantes, 2012). Additional ERP system vendors include Oracle and PeopleSoft since the

early 1990s (Lu & Jinghua, 2012; Supramaniam, Abdullah, & Ponnan, 2014). Tobie et

al. (2016) observed a tendency for large public organizations and large private

organizations to prefer SAP ERP systems, but noted SAP, Oracle, and Microsoft appear

to dominate the small and medium enterprise (SME) market. Smaller providers include

Institute of Business Modeling (IBM), Infosoft SD, and TPK solutions serving local and

foreign customers (Shkurti et al., 2014). Exact sizes of enterprises in the literature varied

by annual revenue, employee count, number of physical locations of enterprise, and by

industry classification. Haddara and Elragal (2013) posited most businesses are SMEs,

and most ERP vendors have different implementation procedures. Geographically, 70%

of organizations in America and Europe use information technology and communication

tools like ERP systems (Hatamizadeh & Aliyev, 2012).

Due to significant investments required of ERP systems, countries with higher

economic rankings have the highest sales of ERP systems and implementation rates as

reported by several researchers (Amid, et al., 2012; Hasibuan & Dantes, 2012). Bahari et

al. (2015) supported this idea of country status in correlation to ERP system acceptance

by reports that North America maintains 66% of the ERP market followed by Europe's

22% and Asia's 9% market share. In the past, ERP system solutions belonged to big and

complex organizations, but strategies of software-as-a-service (SaaS), platform-as-a-

service (PaaS), and infrastructure-as-a-service (IaaS) have enabled more organizations to pursue ERP solutions and growth in ERP markets (Stanciu & Tinca, 2013). Open-source software (OSS) remains another low cost method to create ERP system products for smaller business. Olson, Johansson, and De Carvalho (in press) offered Linux operating system as the most common name; however, another example of a common OSS is the Wikipedia online encyclopedia. Ghosh (2012) attempted to define an ERP failure; four of seven listed criteria included reference to lower returns than anticipated, exceeding budget limits, and higher maintenance and training costs as if to indicate the weight ROI bears in classification of ERP system failures. Potentially short-term failures of ERP system ROI could arise from high diversification as Lu and Jinghua (2012) reported firms with higher diversification showed lower performance immediately after implementation.

As a resolution for ERP failures and continued market growth, Khanna and Arneja (2012) offered advice to ERP vendors to take action to aid organizations in reducing implementation costs through thorough ERP strategy and communications processes as costs of implementation can exceed ERP software application multiple times. A solid and spread communication strategy existed in GSECL's case, as well as training, Standard Operating Procedures (SOP)/Manuals, and availability of dedicated Trainers and Champions to achieve business goals, eliminate mainframe costs, integrate systems, and gain value proposed in the total cost of ERP system ownership (2013). Nazemi, Tarokh, and Djavanshir (2012) showed that ERP systems can provide value enhancements that empower value generators of process and operational efficiencies, information delivery, and new knowledge creation that fuel firms' strategic value

creation. Emphasis for collaboration and communication existed in Bintoro et al. (2015) too. These recommendations followed Khanna and Arneja's (2012) guidance for organizations to modify resource allocations throughout implementation phases. Top management intervention for proper allocation of financial and human resources seemed necessary to Seth, Kiran, and Goyal (2015) from the researchers' review of literature, and this idea also appeared in Bahari et al.'s (2015) study of tactical level ERP system adoption. Ghobakhloo, Hong, Sabouri, and Zulkifli (2012) identified financial resource constraints as a top determinant of information system implementation success and a CSF from a resource-based theory perspective. Ali and Cullinane (2014) also advised simulation modeling of resources for ERP system implementation prior to commencement of efforts to avoid unnecessary risk exposure and save resources.

Enterprise Resource Planning System Motivations

Pishdad and Haiden (2013) indicated three antecedent pressures caused organizations to change technologically: political, functional, and social. These institutional pressures appeared throughout research of ERP system implementation motivations. Thomas, Babb, and Spillan (2012) conducted a study of North and South American countries and determined 50.8% of SAP ERP systems have successful results in at least one success factor, furthering merits of SAP ERP system implementation despite price or cost. From a political and corporate social responsibility perspective, Lu and Jinghua (2012) empirically considered moderating effects of corporate governance on ERP investments with conclusions that supervision mitigates negative schedule and cost variations.

A combination of national leaders' federal statutes and policy required government agencies to transition to ERP systems in the 1990s, while swaths of private sector organizations transitioned voluntarily (Giovani et al., 2013; Murrin & Reger, 2013; Peng & Gala, 2014; Somers & Nelson, 2004; Staehr, Shanks, & Seddon, 2012; Weng & Liu, 2013). Narimani, Tabaeian, Khanjani, and Soltani (2014) argued ERP system implementations affect multiple areas of firm operations and performance. In addition to cost savings and integrated operations from ERP systems, increased data integrity, reflected in acceptable audit findings and modernization of legacy resource systems in U.S. government organizations, make ERP systems strategic organization solutions (DioGuardi, 2014; Frontz, 2012; Hwang & Grant, 2014; Kelemen, 2014; Murrin & Reger, 2013). Weng and Liu (2013) repeatedly touted internal control features of ERP systems regarding information management, risk control, fraud detection, efficiencies, lower error rates, and quality control. Similarly, Mundy and Owen (2013) conducted a case study to understand how ERP systems support reporting controls and processes and consequently compliance with regulations. Whether motivated by compliance or innovation solutions, ERP systems provide organizational benefits (Banerjee & Parmar, 2013; Gupta & Misra, 2016; Madapusi & Ortiz, 2014; May et al., 2013; Weng & Liu, 2014).

In a multiple case study, Zach, Munkvold, and Olsen (2014) identified key shortcomings of legacy systems including expensive operations, maintenance and development difficulties, and lack of consistently accurate data in a real-time manner for performance assessment and subsequent decision-making. Agrawal et al. (2015)

described Legacy systems as inflexible and rigid, costing some organization 70% of IT budgets. Other researchers of manufacturing firms emphasized the integrated, real-time benefits of ERP systems and significant positive efforts on organizations (Wickramasinghe & Karunasekara, 2012). In Ahmad and Mehmood's (2016) quantitative study, organizations achieved efficiencies, useful and accurate data, and improved response time and availability from ERP systems in place of retired legacy systems. Despite an abundance of research and educated opinions that ERP systems positively contribute to audit readiness and internal controls, Aryani (2014) noted that management access to accounting data increased while audit readiness and internal controls decreased post-ERP system implementation.

Bolten and Gomez (2012) indicated communication, growth support, and agility in rapidly changing business environments as other shortcomings of legacy systems. Agrawal et al. (2015) remarked organizations need nimbleness and agility for competitive advantages in markets. Shortcomings of legacy systems inspired key initiatives and results of an ERP system an organization implemented as part of a larger IT strategy in Khan and Frazee's (2014) case study. Beheshti et al. (2014) discovered the four most frequent strategic reasons for ERP system implementations included improvements to productivity or efficiency and reducing operational costs. The U.S. DOD and other U.S. government organizations proceeded with multiple information technology (IT) projects in the last 3 decades resulting in Defense Business System (DBS) acquisitions and significant strides in shared services (Dennis & Walcott, 2014; Tzeng & Chang, 2015). AlQashami and Mohammad (2015) studied higher education institutions (HEI) to argue

global and government trends have affected rates of HEI sector and government sector

adoptions of ERP systems. According to AlQashami and Mohammad (2015) HEI

motivations included providing integrated business operations, improving market

competitiveness, improving business processes and internal efficiency, reducing overhead

costs, and enhancing decision-making processes. Awareness of these various motivations

helps explain the purpose of this study in exploring the central research question: What

CSFs and strategies do U.S. city governments use to successfully implement ERP

systems?

Public and Private Sector Perspectives

Literature spanning both public and private sector perspectives of ERP system

implementations existed. For instance, Shaw (2012) used a qualitative case study to

study ERP system implementation in a U.S. city government organization while

Upadhyay (2013) studied Indian micro, small, and medium-scale enterprise ERP system

implementations. These two studies contained rich, thick descriptive information of user

experiences from periods of organization change throughout ERP systems'

implementation. Nwankpa and Roumani (2014) conducted research of U.S. firms and

links between organizational learning capability (OLC) and ERP system usage while

Sangar and Iahad (2013) provided a broader perspective of business intelligence (BI)

system CSFs. Iffat, Chaudhry, Bilal, and Rabail (2015) contributed empirically supported

CFFs from 450 respondents concerning BI system failures in Pakistan SMEs. Similar to

other research, Iffat et al.'s (2015) qualitative study contained individual perspectives

with descriptive data about CSFs beyond the United States. Thomas et al. (2012) noted

ERP system implementations deemed *disasters* among multinational corporations including Whirlpool and Hershey's Foods while Kelemen (2014) focused specifically on 5 years of ERP system implementations in global public sector. Almajali, Masa'deh, and Tarhini (2016) also provided general remarks of ERP system advantages, despite the majority of implementation failures and costs that once made it possible for only large enterprises to adopt ERP systems. On average ERP system acquisition and implementation costs are 2.43% of annual sales (Kanellou & Spathis, 2013). Studies of disastrous and disappointing ERP implementations contain individual opinions and descriptions reflective of a need for more exploratory research.

Combining private sector and public sector subjects, Garg and Garg (2013) expanded the list of unsuccessful ERP system implementations to include Nike, Waste Management, Inc., and Marin County based on empirical study but also interviews for cause-effect analysis. This analysis of cause-effect to prioritize failure factors or impediments in ERP system implementation relates to the TOC in that managers of implementation efforts could have benefitted from the five step improvement process and three step decision making process of the TOC (Balderstone & Mabin, 1998). Further, Hwang and Grant (2014) considered the global and local business perspective comparisons and contrasts of ERP system implementation in an empirical study, which also employed a holistic perspective of the system as found in Goldratt's TOC (Rahman, 1998). The ERP system implementation CSF comparative study by Saini, Nigam, and Misra (2013) surveyed participants of 17 countries including the US, Japan, Norway, Sweden, India, Israel, and Bangladesh to find significant technological factors, people

factors, and organizational factors for ERP system implementation success. Related to these studies, the TOC includes a prerequisite people factor of customer and employee satisfaction (Boyd & Gupta, 2004; Kanellou & Spathis, 2013; Saini et al., 2013). Among other literature, researchers used qualitative techniques to obtain perspectives of leadership, end-users, and consultants to derive conclusions including models, critical factors, and best practices for implementation or adoption of ERP systems worldwide (Banerjee & Parmar, 2013; Hwang & Grant, 2014; Gomes, 2013; Shaul & Tauber, 2012; Srivastava & Misra, 2014; Tarhini, Ammar, Tarhini, & Masa'deh, 2015). Similar to various perspectives of ERP system implementation, the theme of technology adoption appeared often in the literature.

Technology Adoption

ERP systems are technology-based creations from concepts and efforts of consolidation. Chayakonvikom et al. (2016) described ERP systems with origins in the 1960s as powerful information systems with a key attribute of integration among important business processes and activities. Bharathi and Parikh (2012) drew conclusions about integration goals pursued from ERP systems in a comparative study of CSFs for ERP adoption. These highly integrated systems of systems remain complex. ERP systems of today transformed from IT for manufacturing, accounting, and material management to what The Gartner Group identified as next generation MRP II software (Alturkistani, Shehab, Cranfield, & Al-Ashaab, 2015; Bahari et al., 2015, Yonnedi, & Djunid, 2015; Nazemi et al., 2012). Saraf, Liang, Xue, and Hu (2013) described ERP

systems as primarily intra-organizational systems. Systems, within and as part of, an organization ERP system include modules.

Some ERP systems consist of a Business Information (BI) module in addition to functional modules (Kharuddin et al., 2015). Guðmundsdóttir and Möller (2016) described BI as the combination of knowledge and information from information technology, human resources, and organizational processes for analysis of trends and reducing risks and unpredictability. Nofal and Yusof (2013) identified BI as a way and means managers understand business scenarios thereby enhancing organization behavior, profit, and competitive advantages. BI systems began as reactive components to record in isolation prior to integration with other systems to provide proactive management across modules of information (Ansen, 2014). Iffat et al. (2015) described BI systems as tools to change data into decision support sources. Additionally, Iffat et al. shared how BI systems can cause barricades, tribulations and risks thereby affecting critical factors of "community, processes, managing style, and traditions of the organization" (p. 1). Change of technical or nontechnical nature is a law of nature; Moore's Law, also known as the ability for processing power of computers to double every 2 years, applies to technological changes. The natural cycle of growth and decay of technical advances continues.

Modern technologies, like ERP systems, are complex compared to traditional technologies; complexities reflect in constraints (Balderstone & Mabin, 1998; Dwivedi et al., 2015; Rajan, & Baral, 2015; Stacey, 2013). Today, technology adoption relates to human behavior in the TOC – a frequent impediment, or constraint, to improvement

through change (Balderstone & Mabin, 1998). Ram, Corkindale, and Wu (2015) posited

dimensions of organizational readiness for adoption and use that included resources,

organization culture, implementation vision, personnel attitudes, and determination of

readiness for ERP system implementations. Staehr et al. (2012) also emphasized the

importance of resources in studies of ERP systems during postimplementation stages.

Results from empirical studies caused authors Staehr et al. (2012) and Ram et al. (2015)

to deem organizational readiness understanding during the adoption stage of ERP

systems being important due to influence of employee training, teamwork, and other

CSFs of ERP system implementations. Similarly, Coeurderoy, Guilmot, and Vas' (2014)

analysis results of technological change adoption indicated performance expectations,

supervisor influence, and self-efficacy directly influence speed of adoption. Kumar

(2015) studied key issues in ERP system planning and effective adoption to argue the

most critical components of success included: a strategy for success, a group of business

and functional specialists for the ERP, a framework analysis and specialized execution,

top administration support, venture management, selling strength and basic framework,

and client acknowledgement. Similar to empirical research, Ghobakhloo et al.'s (2012)

literature review of IT adoption success strategies contained support for IT courses and

training to avoid adoption failure while supporting implementation of new technology.

In studies of technology acceptance behaviors, Abbasi, Tarhini, Hassouna, and

Shah (2015) focused on social, organizational, and demographic factors of influence.

Individuals who share attitudes form movements among personnel. Lanzolla and Suarez

(2012) extended research of technology diffusion theory with a quantitative study to

define the presence of contiguous user bandwagons and explain technology adoption and

technology use disparities. Lanzolla and Suarez (2012) described a contiguous user

bandwagon as "the number of new users of the technology at the time of adoption by a

firm" (p. 838). Participants in Ali and Cullinane's (2014) study identified users as either

resistant to technological change or open and ready to try something new. Other

researchers grouped end-users into four groups with differing effects from ERP system

implementation and experiences: operational, technical, managerial, and strategic

(Wickramasinghe & Karunasekara, 2012). Giovani, Snider, and Balakrishnan (2013)

advised organizations implementing ERP systems to incorporate performance incentives

for increased motivation and user engagement from their cross-sectional study of

organizations. TOC researchers viewed customer and employee satisfaction as a

prerequisite to throughput orientation pursuits (Boyd & Gupta, 2004). Both behavior and

satisfaction affect technology adoption (Giovani et al., 2013).

     Related to work of users' acceptance of technology, Chou, Lin, Lu, Chang, and

Chou (2014) considered motivation theory, social cognitive theory, and economic

exchange theory in an empirical study of knowledge sharing after ERP system

implementations. Research findings on knowledge sharing vary by topic. Abu-Shanab,

Haddad, and Knight (2014) described knowledge sharing as important to knowledge

management and contributory to organizational learning, and learning organization

included an environment conducive to participation and knowledge sharing. Jeng and

Dunk (2013) studied knowledge management and creation of knowledge with empirical

results indicative of ERP system implementation success given the multi-pole, directional

hypotheses tested. Other researchers touted knowledge management as having a synergistic role in ERP system implementations, organizational performance, innovativeness, and other benefits (Azhdari, MousaviMadani, & ZareBahramabadi, 2012). Use or nonuse of technology can have direct impacts on success or lack of success organizations experience. Regarding IT, Azhdari et al. (2012) reported nearly 70% of all knowledge management articles of 1998 emphasized IT. While knowledge management processes and IT may add value and benefit an organization, knowledge management failures and successes are influenced by more than technical matters.

In a comparative study by Saini et al. (2013), four of nine people-related CSFs resulted in significant relation to success: cross-functional employee blending in teams, thoroughness of user training, empowerment of decision-making teams, and implementation team morale. Non-technical aspects of knowledge management included culture, behavior, and strategy (Azhdari et al., 2012). Of the CSFs Saini et al. (2013) provided, Chockalingam and Ramayah (2013) echoed those culturally oriented CSFs. Customization and cultural uniqueness of ERP system implementations appeared in Iizuka, Takei, Nagase, and Suematsu's (2014) study of Japanese firms as management styles are unique and customizations frequent. Meissonier, Houzé, and Bessière (2013) deemed organizational fit a main failure to ERP system implementations. Zouine and Fenies (2014) found greater significance for training and education as a CSF in the implementation phase and postimplementation project phase of ERP systems. Among 217 organizations in Australia, Ram, Corkindale, and Wu (2013c) noted training and education as CSFs in ERP system implementations and organizational performance.

Combined, training, knowledge management, and fit were sources of success for ERP system success in multiple phases.

Regardless of implementation phase, Seth et al. (2015) argued the importance of ERP system training analysis for ensuring users received adequate training. Stanciu and Tinca (2013) posited preparation and execution of training for all affected employees as a *golden* success factor. Li, Chang, and Yen (2017) described continuous learning as a way for users to create expertise in the changing and complex integrated enterprise environment an ERP system implementation creates. Similarly, Akça, Esen, and Özer (2013) studied education as the most significant tool to affect personnel behavior, performance, and acceptance of ERP systems. Akça et al. (2013) also argued for ERP system users require continuous education akin to Chayakonvikom et al.'s (2016) indicators supporting ERP system training before, during, and after ERP system implementations to avoid complete re-training. This incremental and allocated training resembled supportive findings of IT adoption research by Ghobakhloo et al. (2012). In a later study, Akça and Özer (2014) concluded education holds a significant role on ERP application success and organizational performance. Other researchers also deemed ERP system education and training a CSF in implementation (Chayakonvikom et al., 2016). Time to technology use and adoption was a CSF and knowledge related factor in existing research about organizations seeking ROI from ERP systems (Lanzolla & Suarez, 2012).

Multiple researchers studied perception as one attribute of ERP system acceptance. Abbasi et al. (2014) wrote of perceived usefulness (PU), a belief that use of a system enhances a task or performance, among individuals and groups as an influential

factor to technology acceptance. Value perception in adoption of ERP systems at an

individual level of decision-making affected adoption (Ram, Corkindale, & Wu, 2013a).

Researchers Ifinedo and Olsen (2015) argued organizations that valued the IT function

would have higher ERP application success. Abdinnour and Saeed (2015) studied user

perceptions of ERP systems during the preimplementation phase and the

postimplementation stage of ERP systems at an aircraft manufacturing organization with

findings reflective of adoption processes among users and contributive to

postimplementation success. Some research included focus on personnel levels in

organization hierarchies. Antoniadis, Tsiakiris, and Tsopogloy (2015) discussed

managers' and users' perceptions and attitudes related to ERP systems' adoption and

usage in Greece while Almahamid and Awsi's (2015) findings indicated top management

did not influence perceived ERP benefits, but vendor support did have a significant

positive effect. To increase understanding of end-users' acceptance of ERP systems,

Kwak, Park, Chung, and Ghosh (2012) explored global project-based sectors while

Amaya et al. (2014) studied qualifications and accountability of end-users' influences on

development and implementation of information systems. Totla, Mandot, and Gaur's

(2016) insights of CSFs for ERP models included change management as one of the most

frequent challenges to implementation, and normal tendencies for humans to resist

change in activities. Among Tolta et al.'s (2016) 15 CSFs, the focus on technical and

social and behavior issues supported the use of the TOC as a potential conceptual

framework to address design and ERP system implementation challenges.

Custom training, like customized ERP systems, existed in the literature. Abdinnour and Saeed (2015) asserted management could design customized training for users' positions in companies, addressing rumors and negative perceptions of ERP systems cultivating comfort and increased usage. One technique for customized training was gamification, which Alcivar and Abad (2016) studied to obtain results indicative of better user performance from gamified training compared to conventional training techniques. Ideas about voluntary acceptance among user stakeholders contributed to the highest ratios of information system success postimplementation in Amaya et al.'s (2014) study. This finding made Amaya et al.'s (2014) study results buttress arguments for human and organizational resource integration. *Fit* may facilitate voluntary acceptance of new technology according to Zouine and Fenies (2014).

The concept of organization fit appeared as a principal factor of ERP project implementation success in Zouine and Fenies' (2014) meta-analysis of Information System published articles, and as a *necessity* in Weng and Liu's (2013) recommendations for organizations considering implementation of ERP systems. Research concerning organizational fit included aspects of process fit, data fit, and user interface fit (Chou, Hung, & Chang, 2013). In Banerjee and Parmar's (2013) study and Stanciu and Tinca's (2013) two case studies, companies used a *Train the Trainer* approach of preparing employees to transition from a stand-alone paper-based environment to a fully integrated, ERP system. Similarly, Leonard and Higson (2014) described a scaffolding approach where experts support learners in specific practices to support organization learning. Employee morale started low, but experiencing benefits, adequate training, and

elimination of the alternate system compelled employees to adapt and overcome resistance; other researchers noted this phenomenon (Banerjee & Parmar, 2013; Gionvani et al., 2013). This pattern of change and improvement reflects the concepts of the TOC (Balderstone & Mabin, 1998). Somers and Nelson (2004) advocated having champions as technology acceptance means. Nwankpa (2015) ERP system usage antecedents and outcomes to determine organizational fit, extent of system implementation, technical resources, and training and support were key drivers of ERP implementation. Another means to address user resistance to change appeared in Aubert et al.'s (2013) case study of nine elements of communication quality, which included quality and content of communication about ERP system implementation. Of 117 ERP system implementation projects, Chou et al. (2013) identified support for ERP communication factors as influencing success, indirectly or directly. A Train the Trainers' method appeared in Ansen's (2014) study of universities and colleges of Africa preparing students for real business ERP systems with positive results in labor markets, economies, and graduate success. Kuo (2014) cited benefits of production automation and improved productivity as intangible ERP system benefits. Akça et al. (2013) provided summarized statements of software systems enabling automatization throughout organizations by integration of data, processes, and distribution points. Adding to arguments for success with ERP systems, software fit to business and cultures appeared in multiple studies (Iizuka et al., 2014; Staehr et al., 2012). Beyond fit, user involvement appeared throughout the literature concerning technology adoption.

Attention to users' involvement appeared in Matende and Ogao's (2013) case study that resulted in several recommendations to capitalize on social attributes of ERP system implementation including vendors, users, and human factors to achieve user adoption and success. Abbasi et al. (2015) utilized multiple theoretically supportive models to test social factors of technology acceptance. Kwak et al. (2012) used the technology acceptance model (TAM) to examine the significance of the model in project-based ERP system user acceptance while Rajan and Baral (2015) studied effects of individual, organization, and technological factors on ERP usage and end-user impacts in an Indian organization. Researchers used the TAM model to facilitate evaluation of ERP success by perceived ease of use and perceived usefulness of users while Task-Technology Fit (TTF) consists of cost/benefit framework (De Toni, Fornasier, & Nonino, 2015; Rajan & Baral, 2015). Like Lanzolla and Suarez (2012), Kwak et al. (2012) provided beneficial ways and means of increasing *acceptance* of ERP systems in organizations, which is a CSF. Giovani et al. (2013) declared benefits of new technology were largely dependent on user traits and attitudes to support recommendation for compensation-based incentives to motivate users. However, multiple ways and means contribute to successful ERP system implementations as the TOC supports in the three step decision making process for managers (Balderstone & Mabin, 1998). Having considered numerous technology adoption areas of ERP implementation concern within the available literature, discussion concerning strategy and risks surrounding ERP system implementations follows.

Strategies and Risks

Strategies and risks for successful ERP system implementations were common areas of interest among reviewed research. Dey, Clegg, and Cheffi (2013) stated ERP system implementation risk is because of technical complexity and organizational transformation requirements. Dey et al. (2013) viewed risk categories of project management processes, organizational transformation, and information technology across ERP system project phases of planning, implementation, and postimplementation. ERP implementation risks were technical, schedule, operational, business, and organization according to Dey et al. (2013). Relatedly, Khanna and Arneja (2012) studied ERP system implementation strategy selection and three basic risks from people, process, and technology. These three components of ERP system implementations appeared repeatedly in research of both CSFs and CFFs strategies and risks of ERP system implementations overlapped. This overlapping relationships among CSFs, CFFs, and risks is captured in Figure 2. Khanna and Arneja (2012) stated the foundation of ERP system implementation was people, process, and technology, adding "Failure to use one of these or failure to use it in the best possible manner can result in failure" (p. 479). Similarly, Aladwani (2013) argued ERP system implementation strategies consist of three groups: organization, technical, and people. Related to Khanna and Arneja's three basic risks, Thomas et al. (2012) identified all major issues and challenges of ERP system implementations as belonging to categories of people, technology, and business whereas Bahari et al. (2015) referred to levels of position: operational, tactical, and strategic.

Figure 2. The overlapping relationships among CSFs, CFFs, and risks.

In two groups of factors, Rahnavard and Bozorgkhou (2014) studied strategic and tactical groups with additional segmentation to internal and external factors. Alanne, Kähkönen, and Niemis' (2014) work consisted of three main categories and 11 sub-categories of organization ERP development problems. Research of individual categories and multiple categories existed. Researchers Seth et al. (2015) claimed top management support, business process reegineering, change management, training, user involvement, and communication were CSFs of ERP systems. Thomas et al. (2012) reported the "people and business related CSFs outnumber technological factors" (p. 21) while Poba-Nzaou et al. (2014) focused on risks of adopting mission-critical ERP system applications to address many technology risks of open source software (OSS). These efforts to group and further divide strategic and risk factors have resulted in disagreements about the utility of OSS in implementing ERP systems.

OSS remains attractive because of reliability and quality enhancement from independent peer review and rapid evolution; OSS lower implementation costs are also

attractive compared to ERP system implementation (Olson et al., in press). Additionally, Lee and Lee (2012) posited three OSS advantages for globalized firms: greater adaptability for business processes and local regulations, decreased reliance on sole suppliers, and reduced costs. Kanellou and Spathis (2013) posited average ERP system acquisition and implementation costs as 2.43% of annual sales. Like Kwak et al. (2012), Khanna and Arneja (2012) offered five basic types of transition strategies for ERP system implementation dependent upon contextual variables of organizations while Poba-Nzaou et al. (2014) shared advantages of OSS compared to propriety and in-house ERP system varieties. To summarize responses to risk, Aloini, Dulmin, and Mininno (2012a) described risk management as one way to support introductions of complex information systems. For ERP projects, Aloini et al. (2012a) claimed using risk management techniques helped manage all sources of uncertainty in projects. Based on available literature, OSS remained an attractive alternative to EPR systems, but additional consideration for the role of people remained.

Focused on a specific element of ERP system implementation success, Rout, Das, and Hota (2013) explored people. From six papers and analysis, Rout et al. (2013) identified a majority of CSFs were associated with human resources. Ghosh (2012) noted that software frequently failed to meet organizational needs because of reluctance to change from users with attachments to status quo, an occurrence captured in the work of De Toni et al. (2015). Ghosh's (2012) findings about human behavior constraints resemble human constraints of the TOC (Balderstone & Mabin, 1998). Alghalith's (2012) recommendations of major training efforts of firms for employees to develop clear

understanding of ERP system processes, horizontal integration, and broad competencies

could remedy reluctance to change. Management and employees also need to grasp clear

lines of control and responsibility for position management (Alghalith, 2012; Dezdar &

Ainin, 2012). In adapting to systems, Alghalith (2012) described productivity

improvements and needs to decrease and reallocate staff because of ERP system

implementations. Concerning technology, Thomas et al. (2012) posited that most

companies glean maximum benefits when treating technology as a strategic and

executive point of view in decision making about deploying ERP systems. Researchers

(Rout et al., 2013) recommended training, re-skilling, educating users, and developing

transition programs for individuals as CSFs. The authors' recommendations for users

aligned with the TOC emphasis on continuous improvement (Boyd & Gupta, 2004; Rout

et al., 2013).

Critical Success Factors and Key Success Factors

CSFs have origins in works of Daniel (1961) and Rockart (1978) though

Subiyakto, Ahlan, and Sukmana (2014) claimed deductive and inductive CSF studies

extend back to the 1970s. Rockart (1978) built upon Daniel's work by explaining the

CSF method as an approach for defining Chief Executive Officer (CEO) information

needs. Rockart (1978) also provided for necessity and capability of CSFs to vary in

criticality according to individual managers and organizations. Boynton and Zmud

(1984) explained that CSFs at an operational level help ensure critical organization

information processing needs receive explicit attention. In 1981, Rockart collaborated

with Bullen to create *A Primer on Critical Success Factors* with elaboration for how to

determine inherently dynamic CSFs at the individual manager level. Dynamism from

CSFs stems from flexible linkages among corporations' tactical and strategic objectives

and appears in several organizational or managerial actions (Boynton & Zmud, 1984).

Vasiliev and Levochkina (2015) stated CSFs change over time and are subject to change

for external and internal environments. Mathias, Oludayo, and Ray (2014) called ERP

system success factors complex, and best utilized if managers focused on applying those

factors that best applied to the particular situations managers face. This tendency for

CSFs to fluctuate in content and importance resembled a strength, weakness, opportunity,

and threat (SWOT) analysis as linked to an organization's external and internal

environment.

   The literature contained other researchers' findings about CSFs. Soja (2015)

considered definitions of CSFs beyond Rockart's (1978) and Daniel's (1961) emphasis

on competitive performance and prosperity including attributes of organizational success:

company condition, personnel attitudes, and stakeholder perspectives. Daniel presented

CSFs from a perspective of organizational change as a major crisis among leading

companies and foreshadowed use of ERP systems for critical areas of organizations

including finance and accounting. Some researchers described CSFs as the few things

required to go well that ensure success for a manager or an organization, and thereby

representing managerial or enterprise areas with demands for special, continual attention

(Boynton & Zmud, 1984).

   In Ram et al.'s (2015) observation of ERP CSFs, ERP CSFs were related to the

implementation stage. Other researchers claimed CSFs as factors necessary to ensure

successful ERP system implementation through multiple stages (Nizamani et al., 2015).

De Toni et al. (2015) conducted a qualitative and quantitative method study concerning

the relationship between effectiveness of ERP system implementation phases and success

based on key-user perceptions. Ahmadi et al. (2015) and Zouine and Fenies (2014)

described three ERP implementation process phases: preimplementation, implementation,

and postimplementation. However, Ononiwu (2013) claimed implementation was the

third phase and Ahmad and Mehmood (2016) described implementation as the most

tedious of phases. After review of 50 papers, Ahmad and Cuenca (2013) revealed

organizational factors as most important in ERP system implementations of SMEs;

organizational CSFs consisted of 80% of the top ten CSFs the authors studied. While

Sangar and Iahad (2013) provided a generic definition of BI systems, Akça and Özer

(2014) concluded CSFs lack a universal definition as attributes change among industries.

Additionally, CSF definitions change over time and among companies (Gajic et al.,

2014).

Since inception, researchers continued to identify more CSFs. Shaul and Tauber

(2012) reported studying 94 CSFs throughout ERP system life-cycles. Narimani et al.

(2014) stated difficulty existed in defining success of information systems as shared

among practitioners and academics. More generally, Chou et al. (2013) identified project

success as the measure of achievement of predetermined goals, inclusive of time, cost,

and function. Other researchers declared project success as completion on time, within

budget, and per stakeholders' expectations (Ram & Corkindale, 2014). The earliest

known authors (Daniel, 1961; Rockart, 1978; Rockart & Bullen, 1981) set a foundation

of CSFs in organizations and linkages to information systems and subsequently, ERP

systems.

For clarification, KSFs include technical and non-technical factors further

classified to people, process and organization, and technology that influence ERP

implementation success through the stages of implementation (Hasibuan & Dantes 2012).

CSFs are a limited combination of areas of activities leadership and management give

continuous attention to achieve successful organization performance (Rockart, 1978). In

sum, KSFs are narrow sets of factors influential to ERP system implementation while

CSFs are broader collections of areas leaders and managers of organizations focus.

Enterprise Resource Planning System CSF and KSF Research

ERP system implementations began within the private sector, and private sector

research dominates the literature (Alves & Matos, 2012). Today, both quantitative and

qualitative research of CSFs exists for organization leadership and management

implementing or considering implementation of ERP systems. Myreteg (2015) remarked

of a shift in qualitative to quantitative research in ERP systems. Upadhyay (2013)

referred to CSFs of people, processes, and technology with the addition of a conducive

organizational climate to facilitate ERP system implementations. Literature supported

adequate resources as a CSF, a quantified point of Hasibuan and Dantes' (2012) analysis

that project budget can have up to a 31.5% contribution toward ERP system

implementation success. Similar to Upadhyaya, Saini et al. (2013) grouped more than 20

comparative studied CSFs into three CSF categories: organizational factors, technological

factors, and people factors. Srivastava and Misra (2014) confirmed and added to

Upadhyay's CSFs with 16 CSFs including forecast accuracy, decision maker awareness, and strategy clarity. From a field study of 94 CSFs, Shaul and Tauber (2012) outlined 15 categories of dynamic attributes of categories and ERP life-cycle phases. In some studies, researchers like Soltan, Jusoh, Mardani, and Bagheri (2015) narrowed to only technological factors and further limited focus to just four CSFs: ERP data accuracy, ERP implementation team, ERP implementation strategy, and ERP communication. Gomes (2013) continued broad thinking of success factors with declaration of comprehension and application of *Project Management Body of Knowledge* (PMBoK) concepts as success factors of ERP system implementations. Young and Poon (2013) posited that PMBoK concepts may be useful, but also require top management support for effectiveness given the researchers' 15 case studies.

Project management. Aligned with project management concepts, Narimani et al. (2014) claimed successful information systems may distill to on-time completion, budget underruns, and provision of features that match specifications and function correctly. The TOC received recommendation as a way of management by Coman and Ronen (1994) in consideration of information systems tendencies to exceed budgets, schedules, and malfunction at greater frequency than other industries. Other researchers noted significant influence of effective Project Management on technical CSFs (Almajed & Mayhew, 2013; Seth et al., 2015; Ram et al., 2013c). A shortage of project management skills appeared an issue related to implementation failure in the empirical study of Garg and Garg (2013), and among eight managers Wainwright and Shaw (2013) interviewed concerning an IT pathology modernization project with ERP systems of a

public entity. Dezdar and Ainin (2012) declared effective project management a CSF

because of the core assessment criteria applied to ERP projects and commonality of

people wanting system implementation complete within allotted times and within budget.

Ram et al. (2013c) also studied and identified project management as a CSF for ERP

system implementation and ERP performance in organizations. Findings from Aloini et

al.'s (2012b) demonstrative case study, with an emphasis on risk management, indicated

ineffective project management techniques appeared most frequently in addition to

inadequate change management and inadequate ERP system selection. In Ghosh and

Biswas' (2017) study of key issues of successful ERP systems, the skills of project

managers and efficient project management had crucial effect on ERP system success.

Williams, Williams, and Morgan (2013) indicated a designated project manager or

champion, and team necessary for leading a successful ERP system implementation.

Upadhyay, Kundu, and Nair (2016) advised top management serve as project sponsor and

project champion for the life of an ERP system implementation. However, Badewi and

Shehab (2016) argued project managers should not be accountable for aspects of success

like ROI and user satisfaction. From a stakeholder's perspective, project management

ranked among the top 51 CSFs identified by Tarhini et al. (2015), and Iizuka et al. (2014)

considered project management influential to users' IT satisfaction. Kanellou and

Spathis (2013) concluded accounting benefits precipitated accountant and IT professional

satisfaction with ERP system implementation. Among interviewed participants, a

consensus formed for criticality of project management in ERP system and IT project

implementations (Ali & Cullinane, 2014; Almajed & Mayhew, 2013). Shaw (2012)

echoed CSFs of existing researcher's findings and leaderships' aspirations and challenges to achieve ROI.

Enterprise resource planning system life cycle. Overlapping the multiple CSFs of Upadhyay (2013), Hasibuan and Dantes (2012) approached study of KSFs throughout an ERP system implementation life cycle. This life cycle perspective consisted of five stages and five measurement indicators in a quantitative study of 20 KSFs among 10 industries (Hasibuan & Dantes, 2012). Hasibuan and Dantes (2012) decided the most critical KSFs for ERP stages included package selection, change management, user training, and communication ranging from less than 1 year to greater than 5 years. These KSFs appeared in quantitative, qualitative, and mixed method studies of ERP systems. Dorobăţ and Năstase (2012) studied user training and the implementation training phase as CSFs of ERP system implementations. KSFs of user training and change management appeared in Shaw's (2012) case study findings with a single local U.S. government organization and among the top eight CSFs in Abu-Shanab et al.'s (2015) study of ERP system implementation CSFs in a Jordan case. Soja's (2015) study results compared CSFs of developed countries and Polish ERP system adoptions, which also indicated training and change management among the top eight of CSFs. Next, is a discussion of literature addressing managing vendor relationships during ERP system life cycles.

Vendor relationships. Hasibuan and Dantes (2012) categorized vendor relationships as nontechnical KSFs of ERP system implementation, but Rockart (1978) viewed vendor relationships as a CSF with attention from leadership and management to achieve organization success. Thus, vendor relationships of ERP vendors and partners

met definitions of both types of factors. Sarker, Sarker, Sahaym, and Bjørn-Andersen's

(2012) case study of CSFs and arguably ROI, included cocreation in relationships of ERP

vendors and partners. The researchers found alliances and relationships among vendors

and partners created value through bartering, layering, merging, governing, adapting, and

policing for successes of both parties (Sarker et al., 2012). Successes from collaboration

and careful selection of the correct ERP system suppliers and consultants existed in the

findings of Ononiwu's (2013) and Ijaz, Malik, Lodhi, Habiba, and Irfan (2014) and

reflects the TOC's orientation dimensions (Balderstone & Mabin, 1998). In Soltan,

Jusoh, and Bagheri's (2015) study of ERP system postimplementation success, the

researchers considered the role of external consultant support and trust as one of three

dimensions of external environment factors affecting success. Consultants and technical

experts provided configuration knowledge and assimilation knowledge, or explicit

knowledge and tacit knowledge, respectively (Chiang, 2013). Researchers have argued

that knowledge management improves competitive advantages, economic value, and

serves as a CSF and KSF for ERP system implementations (Azhdari et al., 2012;

Hasibuan & Dantes, 2012). Concerning value for corporate growth and sustainability,

Frazee and Khan (2012) focused on ERP system vendor fit for a firm and the selection

process. Zach and Munkvold (2012) posited that shortages of experience in

implementation teams' personnel can lead to unnecessary, costly ERP system

customizations. Increased value can result from avoiding unnecessary customization

costs. Iizuka et al. (2014) highlighted reduced costs and facilitation of software

maintenance from fewer customizations. Mutually beneficial arrangements between

vendors and customers can result in success through generation of value as private sector organizations seek to generate value for shareholders.

Knowledge Management and Creation

Among ERP system implementations, and continued successes, Jeng and Dunk (2013) leveraged multiple case studies and web-based surveys of multinational corporations to quantitatively support anticipated success from both knowledge management and knowledge creation. Yaghoubi and Hojatizade (2014) described knowledge creation as new knowledge development within an organization, and knowledge acquisition as new knowledge searched for, recognized, and assimilated from outside an organization. Knowledge management and knowledge creation appeared as consistently human based CSFs of ERP system implementations throughout the literature. Similar to Bharathi and Parikh's (2012) study of India firms' adoptions of ERP systems and CSFs, Madapusi and Ortiz (2014) studied Indian firms' measures of success relative to technical competence with findings supportive of suggestions to progressively implement ERP systems and focus on implementation team technical competence factors for increased benefits. Norton et al. (2013) conducted case study investigations among seven ERP II vendors and fewer client firms to develop 19 CSFs of ERP II system implementations. Six of 19 CSFs were new contributions to study of ERP CSFs including training and job redesign, implementation strategy and timeframe, communication plan, balanced team, project champion, and managing cultural change (Norton et al., 2013). Yaghoubi and Hojatizade (2014) argued the fastest growing and most profitable organizations have the best quality of knowledge workers. Arguably,

training and job redesign would constitute knowledge management and knowledge

creation. Maditinos, Chatzoudes, and Tsairidis (2012) considered human inputs of ERP

system implementations in influences of effectiveness at organizations. Through testing

of four directional hypotheses, Maditinos et al. (2012) found knowledge transfer, as

related to knowledge management and knowledge creation, an attribute of ERP system

implementation success that organizations should seek to model in future ERP system

implementations. Users of ERP systems have a role in knowledge creation, knowledge

management, and knowledge transfer, but technology acceptance is necessary.

      Concerning technology acceptance, Abbasi et al. (2015) identified social and

organizational factors of top management support, individual perception of use, and peer

influences for successful technology acceptance and building knowledge. The TOC

dimensions of orientation support Abbasi et al.'s (2015) technology acceptance behavior

factor identification (Boyd & Gupta, 2004). Norton (2015) echoed factors from Abbasi

et al.'s (2015) study when indicating project team competence, knowledge management,

and training and job redesign were CSFs to ERP system implementations. Supplementary

to Maditinos et al. (2012), Yaghubi and Modiri (2014) and Gomes (2013) indicated top

management support and commitment consistently ranked as a most important CSF in

ERP system implementations for training, education, and knowledge management among

users. According to Soja (2015), top management support was the most cited CSF

among reviewed literature. Some researchers specifically studying top management

support from a total quality management (TQM) and organizational citizenship behavior

(OCB) framework in relation to ERP system implementations deemed the factor the most

quoted CSF in literature (Nizamani et al., 2015). Galy and Sauceda (2014) also added

top management support as the most often cited CSF in ERP system implementation

from review of the literature; however, the researchers pointed to management providing

emotional support and maintaining employee morale and motivation to accept

technology, acquire knowledge, and share knowledge. Top management support and

commitment also ranked among the top CSFs of 51 CSFs shared by stakeholders in

Tarhini et al. (2015) work. One pair of researchers, Saade and Nijher (2016), argued top

management support remained critical throughout an ERP system implementation, but

most important at earlier stages. Garg and Garg (2013) viewed a shortage of adequate top

management support as a failure factor with potential as a success factor. Stanciu and

Tinca (2013) claimed management support provided objectives and direction as well as

resources and responsibility for ERP projects to avoid risk factors like inadequate user

training, hence declaration of management support as a golden success factor in addition

to abilities to share information and manage implementation change.

Even among SMEs, with the greatest knowledge and experiences to impart, top

management remained a significant determinant of IT usage behaviors among users,

organizational support, and performance in businesses (Ghobakhloo et al., 2012).

Ghobakhloo et al. (2012) indicated sufficient IT knowledge and understanding of

consequences created a supportive environment for IT adoption when declaring the

importance of education, training, knowledge, and attitudes about IT. Concerning

conducive knowledge sharing and management organization factors, Ahmad and Cuenca

(2013) cited interdepartmental communication and management support as causes of

ERP system implementation failures. The CSF of management support and commitment

appeared in researchers' reviews of CSFs in 50 papers at a frequency of 100% (Ahmad &

Cuenca, 2013). Finally, Matende and Ogao (2013) presented case study findings

surrounding user participants in ERP system implementations. Researchers Matende and

Ogao (2013) made an argument for intentional user involvement during ERP system

implementations to reap success with information systems as a whole, especially due to

social attributes of ERP system implementations including vendors with expertise to

share, users with different functional perspectives, and general contextual human factors

of resistance. From review of the literature, an abundance of CSFs existed and some

CSFs may be CFFs depending on the viewpoints of end-users and managers (Wainwright

& Shaw, 2013).

Critical Failure Factors

Among ERP system implementation research, lesser amounts of peer-reviewed

research existed for CFFs (Amid et al., 2012; Bintoro et al., 2015; Elbanna, 2013). A

distinct focus existed, and remained, toward successful ERP system implementations and

maximization of competitive advantages and ROI, potentially at the cost of

acknowledging failure factors. Ravasan and Mansouri (2014) noted the importance of

identifying CFFs and the lack of research about ERP system implementation CFFs

compared to ERP system implementation CSFs. Elbanna (2013) proposed that ERP

system failures contributed to increasing attention to failures, but Ravasan and Mansouri

(2014) asserted a widely accepted definition for ERP system failure does not exist.

Sources of failure, competitive pressure, and environmental uncertainty have motivated

organization leadership and management to implement ERP systems and other information technologies (Akça & Ozer, 2014; Amini & Sadat Safavi, 2013; Ghobakhloo et al., 2012; Ram, Wu, M. L., & Tagg, 2014). Amid et al. (2012) claimed less than one percent of published articles from 1998 to 2007 about ERP topics included CFFs (p. 228). Bintoro et al. (2015) referenced an annual report of the International Data Group (IDG) that lists failed ERP system implementations and considered roles of CSAs and CFAs in ERP system implementations. Denic, Vujovic, Stevanovic, and Spasic (2016) argued ERP system implementation failure tends to result from implementation problems rather than software problems. Garg and Garg (2013) described failure of ERP system implementations as not achieving a satisfactory amount of ROI, and that rates of failure fall within a 60-90 percent range for reasons such as budget, schedule, and performance plan conflicts. Ghosh (2012) focused on reluctance to change as a cause of failure in ERP system implementation failures across industries and sectors. Galy and Sauceda (2014) claimed lack of employee morale and motivation as a most important failure factor of ERP implementations. Ghosh's findings of reluctance to change among organizations serving as impediments to success and Galy and Suaceda's (2014) conclusions about employees relate to Goldratt's TOC organizational mindset dimension (Boyd & Gupta, 2004).

In addition to humans, unexpected events can cause system failures. Bloch, Blumberg, and Laartz (2012) pointed to unpredictable high-impact events as *black swans*, a point when IT project budget overruns exceed 200 percent. Perhaps counterintuitive, Madapusi and Ortiz's (2014) found a focus on consultants and data accuracy factors lead

to decreases in performance benefits among firms. Ahmadi, Yeh, Papageorgiou, and

Martin (2015) argued for data correctness and precision. Alghalith (2012) provided

further support in a case assessment of Aramco, and advised firms to employ a Data

Manager with broad knowledge enabling an owner of data to bear responsibility for data

integrity and reconciliation. Other researchers offered how failures may be from lack of

holistic and structured comprehension of organizational innovation processes involved in

ERP projects, particularly in adoption stages (Ram et al., 2013a). The TOC has been a

means of problem identification and solution in ERP (Boyd & Gupta, 2004). From

observation and experience, an absence of data can be as fatal as awareness of failure

factors (Alghalith, 2012; Shaul & Tauber, 2013).

Other research on CFFs includes Alanne et al. (2014) study of ERP development

networks (EDNs) as sources of challenge for ERP system implementations because of

imbalances in power, divergent objectives, and temporal organizational involvement.

From over 40 case studies, Alanne et al. (2014) affirmed four challenges identified in

existing literature and three different challenges among stakeholders, and dual objectives

of vendors. These challenges are relative to constraints, or opportunities for

improvement, in the TOC (Rahman, 1998). Shaul and Tauber (2012) indicated several

major points of failure exist in ERP system planning life-cycle phases. Trbka and Soja

(2012) studied the type of preimplementation analysis influence on implementation

approach with preimplementation analysis a pivotal stage of defining scope of an ERP

system solution inclusive of organizational and technical aspects. Also focused on

preimplementation phases, Iffat et al. (2015) identified CFFs of BI system

implementations from more than 400 respondents including: processes, managerial style, and organizational traditions. Dorobăţ and Năstase (2012) researched the specific phase of ERP system implementation training to declare user training a CSF and user training and education the third most important reason for ERP system implementation failure. Dorobăţ and Năstase's findings supported Ram, Corkindale, and Wu's (2013b) conclusions that training and education remained CSFs for ERP system implementation success and ERP system performance; however, Dorobăţ and Năstase indicated training issues are CFFs. Pecherskayaa, Averinaa, Kamaletdinovb, Tretyakovac, and Magomadovad (2016) stated insufficient training and the repercussions created ERP project failures. After review of hundreds of research articles, Bintoro et al. (2015) deemed CFF articles as focused on tactical or technical content while CSF articles contained greater amounts of strategic content. Meissonier et al. (2013) concluded failure stems from the way an ERP system is implemented rather than the system itself. Perspectives before and during ERP system implementations may contribute to implementation CFFs (Ghobakhloo et al., 2012).

While CFFs may not have been plentiful or explicitly outlined in research, Sun, Ni, Lam, and Ng (2016) did identify and consider critical issues in ERP adoption from the perspective of 10 ERP experts to better understand ERP project challenges and avoid challenges to cultivate key stakeholders' perspectives of crucial elements for implementation successes. Sun et al. (2016) used a quantitative study to focus on stages of ERP system implementation in Hong Kong while Sun et al. (2015) focused on step-by-step performance assessment and improvement methods of ERP system implementation

59

with case studies. Elbanna (2013) described top management support as attendance of meetings and events, visits to project offices, responsiveness to e-mails, promotion of the project, and reading and responding to project progress reports. Elbanna's definition received further support in Dezdar and Ainin's (2012) encouragement for top managers to spend time engaging with committees and supervising implementation. Leadership, and top management support, repeatedly appeared as a critical success factor or key success factor in research; however, value in user, expert, consultant, and functional perspectives can be leveraged from failures and unsuccessful implementations to create future successes through addressing lessons learned (Ali & Cullinane, 2014; Dorobăţ & Năstase, 2012; Gajic et al., 2014; Garg & Garg, 2013; Peng & Gala, 2014; Pishdad & Haider, 2013; Gomes, 2013; Tarhini et al., 2015; Wainwright & Shaw, 2013). Regarding information systems projects in general, Young and Poon (2013) found top management support almost always necessary for project success. Pishdad and Haiden (2013) deemed management support and championship "the most important factor of ERP project success" (p.653) while Bali and Madan (2015) decided top management was an organizational CSF of commercial software. This importance of top management and management support appeared in other combinations. For instance, Hoch and Dulebohn's (2013) proposed use of shared leadership for ERP system and human resource (HR) system implementations contained a recommendation transferred from other ERP system implementations for benefitting others.

Six influential factors of Ha and Ahn's (2014) work spanned ERP system implementation, and postimplementation, including internal ERP competency,

continuous process improvement, and continuous system integration. These influential

factors contained elements of Goldratt's TOC in practice (Ha & Ahn, 2014; Rahman,

1998). Ha and Ahn's overarching categories also resembled Meissonier et al. (2013)

arguments that organizational fit can be a main failure in ERP system implementations.

Chou et al. (2013) found ERP system implementation success influenced by

organizational fit in addition to factors of ERP knowledge and communication from study

of 117 ERP projects. Similar to Ha and Ahn, Pishdad and Haiden (2013) referred to

criticality of user competence and continuous system upgrades for success with ERP

system implementations and development of best practices. Ghosh (2012) added to Ha

and Ahn's (2014) influential factors with highlights of how difficulty with accepting

change contributes to ERP system implementation phase failure rates as high as 81%, and

entire ERP project failure rates of 60%.

 User resistance ranked as a frequent failure source in studies because of users'

fear of ease of use, employment security, value, and task changes (Amini & Sadat Safavi,

2013; Ghobakhloo et al., 2012; Shaul & Tauber, 2012). Wickramasinghe and

Karunasekara (2012) identified that users may need to create new job relationships, share

information, and make novel decisions that result in user resistance of newly

implemented ERP systems. Among other elements of ERP system difficulty Mu, Kirsch,

and Butler (2015) listed user resistance, underestimation of technical difficulties, and

unrealistic expectations. Other researchers, Bala and Venkatesh (2013), advised ERP

system implementations cause tension in organization and disruptions in job demands

and job control. Stanciu and Tinca (2013) claimed user resistance a factor of failure and

negative results in their study of two cases of ERP system implementation. User

resistance frequently appears as a constraint in the TOC (Balderstone & Mabin, 1998).

Williams et al.'s (2013) study of public sector organizations included interviewee

reports of strong feelings that resistance could have been mitigated with project

management, planning, and training. Aladwani (2013) posited user resistance to ERP

systems and related innovations stemmed from two sources: perceived risk and habit.

Resistance to change can mature into detrimentally higher amounts of customization of

ERP systems for functional and social reasons as presented by Zach and Munkvold

(2012), and Chou et al.'s (2013) findings of organizational fit as related to user resistance

and motivational barriers. Venkatesh, Aarthy, Thenmozhi, and Balasubramanie (2013)

reported companies that adopted predefined business logic and models rather than

customized ERP systems had longer times to implement future changes. Maas, van

Fenema, and Soeters (2014) noted that requiring ERP system users to follow standardized

processes, including limited access based on organizational roles, improves internal

controls, but actually requires users to adjust former work processes. Troubled

acceptance of change appeared in behavior and business processes despite 20 years of

global ERP system implementations (Ghosh, 2012; Shkurti et al., 2014). As conveyed in

Figure 3, collective experiences captured in the literature yielded both CSFs and CFFs,

with a comparative shortage of CFFs despite some overlap.
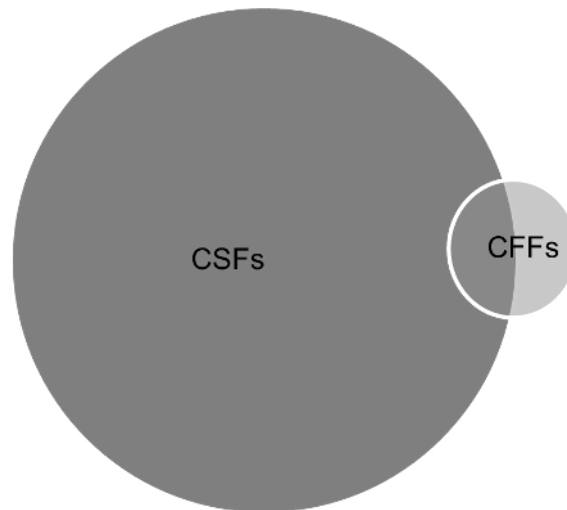
Figure 3. Perceived relative frequencies and relationship of CSFs and CFFs in

the study's references.

Enterprise Resource Planning System Risks

Risks during ERP system implementations arguably existed in CSFs and CFFs.

However, risks frequently appeared associated with failure factors in literature (Rajnoha

et al., 2014). Goals of researchers included recommendations for management,

elimination, and reduction of risks in ERP system implementations concerning schedule,

technology, and cost (Ghosh, 2012; Rajnoha et al., 2014). Tzeng and Chang (2015)

reported that existing Defense Business System (DBS) acquisitions, specifically U.S.

DOD ERP programs, included billion-dollar cost overruns, up to 6 year schedule delays,

and unmet capabilities. DOD is not an isolated case. Bernroider (2013) noted ERP

project completion averages 18.9 months with an approximate standard deviation of 13

months. Delays, costs, and shortages of value have plagued large IT projects (Bloch,

Blumberg, & Laartz, 2012; Kanellou & Spathis, 2013; Mathias et al., 2014). For

instance, Tzeng and Chang determined data concerning the status of U.S. DOD ERP

programs and DBS acquisitions existed, leading the researchers to assert a challenge to derive and act on information contributed to implementation challenges. Rajnoha et al. (2014) described exogenous risk factors as associated with organization environments, outside of an entities' control while endogenous risks existed within an organization. Value of in-house expertise was a serious risk for ERP system implementing organizations (Ha & Ahn, 2014; Venkatesh, Aarthy, et al., 2013). In any matter of risk, minimization or elimination of all possible risk was an ERP system implementation organizational goal.

Some literature contained risk reduction recommendations. Ahmad and Mehmood's (2015) focus on sustainability and the triple bottom line included advice to organizations to carefully contemplate ERP system upgrades and implementations based on experiences of multiple organizations. One set of researchers referred to their experience and determined that lack of defined, disciplined, and quantifiable customization plans of ERP systems led to failures (Asgar & King, 2016). Aloini, Dulmin, and Mininno (2012b) provided a Risk Analysis of ERP projects case study in development of a risk management framework in relation to management of risk factors and associated CSFs from proper application. Tzeng and Chang (2015) posited knowledge-based management approaches as a way to reduce risk, attain more successful programs, and facilitate better investment decisions. Pishdad and Haiden (2013) encouraged managers to use organizational change management practices or to risk suffering failure in ERP projects. Supportive of Pishdad and Haiden's (2013) recommendations, Simatupang, Govindaraju, and Amaranti (2016) posited successful

ERP projects require change management to address change in the technical, process, and organization structures. Recommendations for risk reduction could arise from application of the TOC's five step process and three step decision making process for managers facing ERP system implementation risks (Balderstone & Mabin, 1998).

Specific efforts of organizational change management and efforts of organizational readiness included full commitment of top management to supply training and education for users (Garg & Garg, 2013; Pishdad & Haiden, 2013; Ram et al., 2013c; Ram et al., 2015; Gomes, 2013; Tarhini et al., 2015). This practice of commitment exists in Goldratt's TOC when considering management attitudes, assumptions, and beliefs as an organizational mindset dimension of throughput orientation (Boyd & Gupta, 2004). Despite financial costs, building buy-in repeatedly appeared as a means to mitigate risk of rejection from users in ERP system implementations. Zouine and Fenies (2014) observed challenges with selecting appropriate plans for end-user training and education as a significant reason for ERP system failures. Management of risk entails adequate planning and preliminary efforts of ERP system vendor selection as emphasized by Frazee and Khan (2012). Rahnavard and Bozorgkhou (2014) supported use of consultants and specialists for effective system deployments. Having explored CFFs with consideration to risk, the next topic is ROI from ERP system implementation.

Return on Investment

ERP systems have tangible and intangible costs as posited by Hwang and Grant (2014), and cited by Hanks' (2014) analysis of risks and actual ROIs of DOD's ERP system implementation efforts. Bazhair and Sandhu (2015) noted various tangible and

intangible benefits from implementation of an ERP system. Among others, financial

benefits included profits, market price, and firm performance while nonfinancial benefits

included customer satisfaction, quality, and user satisfaction (Amini & Sadat Safavi,

2013; Galy & Sauceda, 2014; Kanellou & Spathis, 2013). In the TOC, Goldratt provided

two measurements – global and operational; global consists of three points: net profit,

ROI, and cash flow (Rahman, 1998). Popularity of ERP systems stemmed from potential

returns on investments for organizations in addition to motivating factors previously

mentioned like quality control, communication, transparency, logistic support, and

industry specific benefits. Galy and Sauceda (2014) recognized companies implement

information systems with expectations to accrue financial benefits through ROI. These

expectations align with the TOC support for financial benefits in the present and future

(Rahman, 1998). Lu and Jinghua (2012) arrived at varying conclusions after considering

firms' return on assets (ROA) among IT system investments, specifically ERP systems

and moderating effects of corporate governance, diversification, and industry growth.

Aubert et al. (2013) claimed ERP systems are not successful unless both the information

technology project and business transformation projects are successful addressing various

stakeholder perspectives. However, as noted by Bernroider (2013), assessing

performance of ERP projects against fluctuating stakeholder perceptions proved difficult

for managers.

   Concerning success, some researchers relied on empirical data supportive of CSFs

associated with both ERP system implementation success and postimplementation

performance improvements (Ram & Corkindale, 2014). Shkurti et al. (2014) posited

capability for ERP systems to automate processes and transactions with potential

reduction in operating costs. In Akça et al.'s (2013) study, gains from ERP systems

included lower output costs, lower expenses, and improved resource management leading

to better financial performance. Stanciu and Tinca (2013) stated ERP solutions aid in

organizational assurance of resource optimization that contributes to financial benefits

and increases in reputation and trust of organizations among stakeholders. Schniederjans

and Yadav (2013) added to the researched factor of trust in successful ERP system

implementations with focus on vendor, system, and consultant trust. Furthermore, the

information age requires organizations have an intangible information competitive edge,

which ERP systems can facilitate (Bazhair & Sandhu, 2015; Shkurti et al., 2014).

Despite the frequency of ERP system implementations, Yaghubi and Modiri

(2014) claimed 65% of organization leaders think ERP systems could harm their

businesses because of implementation issues. Maas et al.'s (2014) claims that more than

60% of ERP systems fail support organization leaders' thoughts. Ali and Cullinane

(2014) posited SMEs have higher potential for bankruptcy from failed ERP system

implementations, and Kharuddin et al. (2015) suggested low rates of ERP system

adoption are from fear of failure, high costs, and time and skill prerequisites. However,

Almajed and Mayhew (2013) claimed failure rates continued to increase without

specification of organization type. Galy and Sauceda (2014) also provided reasons for

negative views of liability and undervaluation of IT endeavors in reporting past, difficult

experiences influence organization management. Also noteworthy, users' perceptions of

technology inexplicably change (Mathias et al., 2014). Woolman (2014) outlined

qualitative and quantitative advantages of Enterprise Performance Solution Systems (EPSS) including net impacts on revenue, profits, and gross sales. Kuo (2014) added quantifiable merit in how ERP systems can provide organizations with five sets of financial ratios. Debt to asset ratio decreased year after year, turnover of fixed assets and total assets increased, short-term solvency as measured by current ration and acid test ratio increased, profitability ratios per share and in profit margin increased, and cash flow ratio increased repeatedly. Increasing attention on corporate growth and sustainability also caused firms to implement ERP systems as in Frazee and Khan's (2012, 2014) case studies. Motivations of ERP systems as part of larger IT strategies may include customer satisfaction, corporate growth and sustainability, and boosts to profitability in specific areas of quality, costs, lower delivery lead time, higher employee productivity, and management of functional elements of a supply chain (Kanellou & Spathis, 2013; Khan & Frazee, 2014; Makokha & Ochieng, 2014).

Other motivations for ERP system implementation may be control and accounting practice diversity of global operations, like those in the case studies of Stanciu and Tinca (2013). Ahmad, Haleem, and Ali Syed (2014) identified regulatory and compliance issues, standardization goals, and competition as motivations for ERP system implementations. Tasevska, Damij, and Damij (2014) noted several Macedonian SMEs implemented ERP systems because of legal requirements, and Bitsini (2015) remarked some African organizations' requirements exist in specific laws and government regulations, which differ from Western countries. Soja (2015) posited countries with transition economies and changing laws and regulations influence ERP system

implementations. From reviewing literature on multiple ERP systems, Nazemi et al.

(2012) provided five main reasons for firms' pursuing ERP projects (a) standardization

and speed of processes, (b) standardization of human resources information, (c)

integration of financial information, (d) integration of customer order information, and

(e) reductions to inventory. Government programs with goals of quality improvement

and efficiency of services may inspire such IT introductions too (Brook, 2013;

Wainwright & Shaw, 2013). For instance, creators of Financial Improvement and Audit

Readiness (FIAR) mandates applicable to the U.S. DOD helped influence pursuit of an

intangible audit opinion with subsequent cost savings, data integrity, and statutory

compliance (DioGuardi, 2014; Frontz, 2012; Johnson, 2011; Murrin & Reger, 2013).

The FIAR mission combines improvement of financial information for decision makers

with outcomes of accurate, reliable, and relevant U.S. DOD information that is subject to

future audits (Department of Defense, 2015; Johnson, 2011). One main goal of the Chief

Financial Officers (CFO) Act of 1990 included systematic measurement of performance,

cost, and integration of systems to provide managers the right information at the right

times resulting in better decisions (Fitz, Hauer, & Steinhoff, 2015; Johnson, 2011). The

CFO Act of 1990 applies to each U.S. federal government agency. Like other U.S.

government federal agencies affected by the CFO Act of 1990, DOD will prepare an

annual collection of financial statements with management's assertion of audit readiness

(Johnson, 2011). Similar to DOD, Gujarat State Electricity Corporation Limited

(GSECL) received direction to restructure and standardize, which resulted in an ERP IT

solution (Banerjee & Parmar, 2013). GSECL senior executives reported lists of

advantages and benefits, but such success is not as common as desired (Banerjee & Parmar, 2013).

Globally, governments have transitioned to digital means of providing citizens access to information, communications, and participation and away from traditional perceptions of bureaucracy and slow administrative processes (Bahari et al., 2015). E-government remains a term describing the transition of bringing governance closer to citizens and changing how government works (Bahari et al., 2015). By the late 1990s most Fortune 100 companies had adopted ERP systems, and surveys indicated trend adoption spanned large and medium-sized companies (Agrawal et al., 2015; Lu & Jinghua, 2012; Nazemi et al., 2012). Companies providing services, goods, or a combination of goods and services have implemented ERP systems. Findings from Nwankpa et al.'s (2013) empirical study demonstrated ERP systems at organizations can become advantageous antecedents to organizations adopting subsequent technologies facilitating key stakeholders' use and other benefits. Lu and Jinghua (2012) and Shkurti et al. (2014) reported IT and ERP investments as among the largest categories of capital expenditures without regard to firm impact. Grajek and Rotman (2014) stated that among suggestions to reduce costs, ERP systems and components reflect the largest potential IT costs. Alreemy, Chang, Walters, and Wills (2016) summarized the implementation and continued use of IT projects in claims that continuing requirements for financial support of IT projects is historically a concern. However, Johnson (2011) argued that costs for organizations like the U.S. DOD to achieve a favorable audit would be less than half a

percent of the U.S. federal department's total budget and amass confidence, integrity, and trust from stakeholders.

Study of the CSF phasing model by Norton et al. (2013), caused researchers to consider CSFs of ERP II implementations by phases, allocations of resources compared to benefits attained, and costs of upgrades to ERP II rather than direct shifts to ERP II. Dorobăț and Năstase (2012) declared training programs may require up to 20% of an organization's personnel and average 10 to 20% of an ERP system implementation budget. Nazemi et al. (2012) posited training occurs in all ERP system phases, but the largest investment takes place during the implementation phase. Among data points, Norton et al. (2013) determined upgrade costs can be one-fifth to one-third of initial ERP system implementation costs.

For an ROI to exist, organizations must first invest. Infrastructural and monetary capabilities of organizations' readiness appeared crucial concerning installation and support of an ERP system according to Ram et al. (2015). Initial investment costs and concerns of upgrades to sustain the system appeared in Saini et al.'s (2013) recommendation for firm management to select an ERP system closest to desired business processes rather than procurement of a customized ERP system. Procuring a customized ERP system resulted in higher investment costs. Ram et al. (2015) found communication and commitment for ERP systems an implementation CSF in addition to business process re-engineering, consultant quality, employee training, and system integration. The rarity of organizations possessing all necessary knowledge and skills without external help for successful ERP system implementation added to the importance

of consultant quality and cultural awareness during assessments of organizational

readiness and estimating initial investment costs for system implementation (Chiang,

2013; Ghobakhloo et al., 2012). Concern for resource consumption and criticality of user

training during ERP system implementation phases appeared in Dorobăţ and Năstase's

(2012) study and proposed framework including integration of computer based training

method (CBT) for lower cost training of users and alignment of training during

implementation. Customization of ERP systems routinely resulted in an increased initial

investment and subsequent sustainment costs of maintenance, upgrades, and vendor

support (Amini & Sadat, 2013; Ononiwu, 2013; Poba-Nzaouet et al., 2014; Safavi

Hatamizadeh & Aliyev, 2012). Munkelt and Volker (2013) described three common

technical customizations in ERP system implementations: codeless configuration,

application development, and key performance indicators and reports. Parthasarathy and

Daneva (2016) defined customization as any ERP package component code change.

Common and uncommon customizations add to the cost of an ERP system. Increased

investment costs and life cycle costs reduce ROI. Organizations must balance

investments and levels of customization with the immediate implementation and ongoing

sustainment for achieving reasonable ROIs from ERP systems.

In Lee and Lee's (2012) study of success factors of open-source enterprise

information systems (OSS EIS) development, community service quality, recognized as

on-line communities or partners providing support to organizations, resulted in the only

direct positive effect on OSS EIS use. Lu and Jinghua (2012) considered differences in

short term and long term ROI of firms with respect to diversification and industry growth

as moderating effects. Points of consideration for Lu and Jinghua (2012) included user experience with newly implemented ERP systems and benefits gleaned from ERP systems based on the firm's diversification level and growth of industry. In support of short-term considerations, Thomas et al. (2012) studied organizations with at least one year of ERP operation results, having decided 1 year as a minimum amount of time to determine achievement of ROI and success objectives. Other authors have indicated 2, 3, and 4 years postimplementation are sufficient to assess benefits with accuracy (Galy & Sauceda, 2014; Kuo, 2014). Zeng and Skibniewski (2013) argued an ERP project may be completed within schedule and budget, but lack of system usage prevents organization benefits like ROI. Hatamizadeh and Aliyev (2012) described capital return time as *long* and a *challenge* of ERP system implementations in Iran from data spanning a decade. Hwang and Grant (2014) may have best described the challenge of balancing investment decisions and sustainment costs of ERP system implementation for achieving reasonable ROIs: "illusive and elusive" (p. 1).

Cost Risks

Pecherskayaa et al. (2016) remarked ERP system implementations are known for riskiness. ERP system implementations are notorious for cost overruns. Cost drivers include licensing, hardware, software, training, human resources, data management, subscriptions, and other costs associated with the type of ERP system implementation (Mathias et al., 2014; Peng & Gala, 2014; Stanciu & Tinca, 2013; Tzeng & Chang, 2015). Cyrus, Aloini and Karimzadeh (2015) stated most ERP system implementations require more time than initially planned when concluding project time overruns cause

more cost overruns based on two decades of ERP system research. Rosa, Packard,

Krupanand, Bilbro, and Hodal (2013) posited all major U.S. DOD ERP systems exceeded

cost and schedule estimates by 30% or more. Nazemi et al.'s (2012) review of ERP

system literature identified ERP professionals' list of most likely areas for overruns

including (a) training, (b) integration and testing, (c) customization, (d) change

management, (e) transaction cost economics, (f) data conversion, (g) data analysis, (h)

consultants' ad infinitum, (i) personnel turnover, and (j) implementation teams. At best,

ERP systems are technology bases for shared services and an end to isolated functions

(Murrin & Reger, 2013). Giovani et al. (2013) declared ERP modules aid in avoidance of

isolated decision making in organizations, and thereby support reliability in supply

chains. Additionally, Fitz et al. (2015) claimed data warehouses support fulfillment of

requests from auditors and Congress. Dennis and Walcott (2014) described ERP systems

as expensive and challenging, but one of few options compared to inefficient legacy

systems for government agencies (p. 19). Shaul and Tauber (2013) provided additional

support of Dennis and Walcott's (2014) characterizations of legacy systems'

shortcomings of flexibility, communication, expensive sustainment, and data quality.

Erasmus and Daneva (2013) cited ERP system services as extensions of core business

processes. Organizations implement ERP systems or procure ERP system services for

flexibility and to reduce organization size and complexity. Zach and Munkvold (2012)

concluded flexibility necessary for growth and a reason for customization post ERP

system implementation. Woolman (2014) described legacy EPSS as one-dimensional in

financial information capacity, slow, and lacking focus on business competitive

advantages or robust data while Galy and Sauceda (2014) argued an abundance of operational benefits to ERP systems including improved data quality and lower redundancies. In case studies of Ahmad and Mehmood (2015) and Trabka and Soja (2012), company growth served as motivation for transition to an ERP system as employees and users reported inefficiencies in legacy systems which included instability of operations and records reliability problems.

Criticality and the complex nature of U.S. DOD ERP systems existed in Tzeng and Chang's (2015) work with regard to cost overruns, schedule delays, and undelivered value despite laws, assessments, technical reviews, and milestone reviews of DBS acquisition. Complexity of ERP systems repeatedly appeared in my review of the literature. However, Ghosh (2012) referred to users'reluctance to change processes and consequentially costly modifications to ERP systems to accommodate processes. In Arvidsson, Holmström, and Lyytinen's (2014) studied an ERP system implementation at a Swedish paper mill and attributed the organization's achievement of ERP success to strategy *blindness* resulting in technical success yet strategic failure. Thus, objective measures of ERP implementation success can be achieved while strategic goals are not met. Maximum ROI or ROA could not be achieved due to mistranslation of intent, alteration of IT artifacts, and cognitive entrenchment (Arvidsson et al., 2014). However, targeted ROIs are achievable with application of the TOC continuous improvement attributes and success rates (Balderstone & Mabin, 1998; Boyd & Gupta, 2004).

Other impediments to ERP system ROI include factors that Caya, Léger, Grebot, and Brunelle (2014) outlined in their discovery of knowledge sharing and knowledge

sourcing among teammates' lack of positive contributions to performance. While a

limited study, Caya et al. (2014) captured common user behaviors with ERP system

implementations that did not return value. Mitra and Mishra (2016) highlighted how ERP

system implementation, a form of business process re-engineering, can trigger team

conflict, decreases in group cohesion, and decreases in productivity. Ghosh (2012)

elaborated on contributions to ERP failure as user behaviors and acceptance of change.

Another factor of ROI failure included major costs for customization, integration, data

conversion and data migration, testing, and training (Akça & Özer, 2014; Ghosh, 2012).

Akça et al. (2013) argued that implementation costs increased in direct relation to the

number of modifications to a software system. Zeng and Skibniewski (2013) noted ERP

system implementations include significant capital outlays and lengthy implementation

schedules, while Kanellou and Spathis (2013) determined average ERP system

acquisition and implementation costs are 2.43% of annual sales for some organizations.

To combat lower rates of ROI, Saini et al. (2013) provided advice for firms to

systematically plan for ERP system implementation to reduce time and cost overruns for

higher resource utilization and profits in addition to avoiding *cost cutting* measures of

reducing employees' training. More specifically, Dey et al. (2013) advised applying

resources to risk mitigation as benefits would outweigh the increase in ERP system

implementation costs.

Robust training programs have value and long-term benefits, as recommended in

Shaul and Tauber's (2012) 94 field studied CSFs. Additionally, Narimani et al. (2014)

identified empirical support for aligning TQM and OCB as means to reduce ERP system

implementation costs, bolster employee qualification and competence, and optimize

organization resources. Support for perceived system quality (PSQ) as a contributing

factor for ERP system implementation success existed in Ram et al.'s (2013b) study of

217 Australian firms. More specifically, factors of people, organization, and technology

for system quality influenced user satisfaction and adoption of ERP systems thereby

providing benefits and value (Makokha & Ochieng, 2014; Ram et al., 2013b).

In ERP system implementation case studies with higher risks, more attention to

the implementation existed. Supramaniam et al. (2014) claimed ERP system

implementation costs exceed costs of ERP acquisitions in their cost analysis study of cost

drivers. Supramaniam et al. (2014) confirmed cost drivers of Kanellou and Spathis'

(2013) findings that average ERP system acquisition and implementation costs

organizations were 2.43% of annual sales. Based on Peng and Gala's (2014) analysis,

selection of in-cloud rather than in-house ERP system implementation may aid

organizations in initial implementation investment and postimplementation costs, but

Saini et al. (2013) offered a general rule to maintain a flexible budget policy for

contingencies beyond implementation. For SMEs, Venkatraman and Fahd (2016) argued

cloud ERP system options are the best solution compared to traditional ERP systems. Das

and Dayal (2016) argued cloud-based ERP enables flexibility, scalability, and cost-

savings while Orougi (2015) described the possibility for organizations to rent ERP

services from multiple vendors. Costs of ERP systems vary according to implementation

approach and follow-on system evolution processes. In India, some industries' sectors

refused to implement ERP systems due to high costs (Chockalingam & Ramayah, 2013).

Costs and time needed for ERP system implementations troubled Iranian organizations as well (Hatamizadeh & Aliyev, 2012). Other concerns of cost, complexity, and risk cause firms to hesitate to make investment in EISs (Lee & Lee, 2012). Organizational choices in India may be reflective of worst case, bankruptcy scenarios of SMEs shared by Ali and Cullinane (2014).

Madapusi and Ortiz (2014) also derived empirical results regarding ROI from ERP system implementation investments; the authors concluded firms benefit from deploying modules pertinent to intrafirm module sub-systems, due to fine-tuning of technical competencies over time and accrued benefits for future application. Suggested investment activities included developing team members rather than outsourcing skills, and addressing deficient data collection processes in support of an information quality culture for accuracy and integrity of data with firm partners (Madapusi & Ortiz, 2014). Shkurti et al. (2014) identified data quality as a critical success element of Accounting Information Systems (AIS) in the information age for qualitative data management demands of breadth and depth, which ERP systems facilitate in combining business management and IT. Other researchers argued favorable attributes of existing systems should be adopted in new ERP systems to avoid user rejection and to obtain benefit from underlying data thereby avoiding losses and maximizing returns (Asgar & King, 2016). Asgar and King (2016) encouraged using project data for producing gap estimates. Ram et al. (2013b) affirmed quality systems will have less maintenance and management costs in respect of ERP systems with PSQ and perceived system value (PSV) by adopting organizations. Other researchers determined IS model results indicated information

quality, system quality, and service quality influenced user satisfaction (Kanellou &

Spathis, 2013; Makokha & Ochieng, 2014). Having considered costs risks, Pecherskayaa

et al.'s (2016) categorization of risks into technical, business, and organizational types of

risks seems appropriate. Beyond investments and costs, culture appeared in the ERP

system implementation literature as contributory and challenging to ERP system

implementation efforts.

Culture Factors

The literature contained culture and technical elements of ERP system

implementation. Upadhyay et al. (2016) argued organizational climate and politics can

inhibit ERP system project management if not addressed adequately, and this factor did

inhibit ERP system implementations in developing economies. Thomas et al. (2012)

referred to Rolls-Royce's ERP system implementation where areas of concern included

culture and technical difficulty. Stanciu and Tinca's (2013) defined corporate culture as

an organization's learning ability, management style, quality and openness of

communication, and risk approaches with respect to success or failure factors of change

and ERP system implementation. Dezdar and Ainin (2012) examined organizational

culture as a moderating element among CSFs shared between Iran and Malaysia.

Concerning communication, Aubert, Hooper, and Schnepel's (2013) study of

communication quality influence on ERP system implementation success indicated

various dimensions of communication quality provided different influence on project

success elements because both quality and content of communication mattered. In the

literature of ERP system implementation, means of communication included meetings,

notes, newsletters, demonstrations, and roadshows to inform stakeholders (Dezdar & Ainin, 2012). Project managers attributed organizations' ERP system implementation challenges to poor communication and insufficient collaborative efforts with vendors, in-house governance, and specialized project managers (Williams et al., 2013). Schniederjans and Yadav (2013) contributed research concerning trust in ERP system implementations by studying trust with vendors, systems, and consultants as applied to implementation success. Schniederjans and Yadav (2013) concluded trust in the ERP system community contributed to success. Relatedly, Woolman (2014) listed recommendations for EPSS implementations including metadata management solution strategies to address system compatibility issues, strategic benefits among personnel, and efficiencies in system integration, development, and testing. Metadata harmonizing during migration from legacy systems to EPSS options was critical to long-term success according to Woolman (2014). In general, culture factors proved important to ERP system implementation success (Chiang, 2013; Dezdar & Ainin, 2012; Mathias et al., 2014).

In addition to escalated costs, ERP upgrades and implementation issues related to an organization's culture may create fluctuations in stock prices (Ahmad & Mehmood, 2015). Stock price fluctuations may occur because of an organization's culture including cultural factors listed in Bloch, Blumberg, and Laartz's (2012) recommendations of managing strategy and stakeholders, creating teams and proper incentives, and securing talent within and beyond the firm for large IT projects. Gomes (2013) observed a failure of ERP system implementations and successes due to top management commitment and

stakeholder's management in two different case studies where top management and stakeholders represented factors an organization's culture. Tarhini et al. (2015) analyzed CSFs of stakeholders' perspectives to derive 51 CSFs and clear vision and objectives, change management, and communication ranked among the top. Fitz et al. (2015) also focused on value in data analytics from communication with stakeholders, top management engagement, and strategy supported change management. Aubert et al. (2013) studied nine elements of communication quality in relation to ERP system implementation success with findings that quality and content of communication influenced success. Communication also appeared as a success factor of ERP system execution in Venkatesh, Aarthy, et al.'s (2013) research among factors of top management support, team competence, and training. Similarly, Dezdar and Ainin (2012) derived four CSFs from their study including top management support, teamwork and composition, enterprise-wide communication, and project management program. Soler et al.'s (2016) quantitative study results from more than 20 countries indicated effective communication as the most important CSF of ERP software. Culture held importance to ERP system implementation and upgrades with an emphasis on communication.

Strategic communication also received recognition in the literature. From a marketing perspective, Aladwani (2013) advised strategic communication to combat user resistance of ERP system implementation and aversion to system use while Boynton and Zmud (1984) found the CSF method attractive because of how CSFs improve user communication and build managerial support for information technologies as

demonstrated in two case studies. Furthermore, Shaul and Tauber (2012) referred to unrealistic expectations of management and noted short-term declines in effectiveness and productivity related to organizations' culture after ERP system implementations. Abdelmoniem (2016) mentioned ERP system benefits are often overestimated by vendors. Kuo (2014) provided that ERP system implementations range from 6 months to 3 years depending on organization size and customization of ERP system to accommodate the organization's culture. Amini and Sadat Safavi (2013) observed from literature review that an organization's environment consisted of two types of factors – cultural and structural. In Amini and Sadat Safavi's (2013) study, cultural CSFs included open and honest communication and expectations. Relatedly, Chockalingam and Ramayah (2013) highlighted unrealistic expectations and distorted ideas users can reflect as cultural impediments to ERP system implementation success. Lech (2013) described client satisfaction as a common, and subjective, IT project success criterion reflective of expectations, and contradictory to objectives project measures. Capturing specific expectations for ERP systems aids organizations and vendors from a contractual perspective, to avoid uncontrollable growth of projects (Amini & Sadat Safavi, 2013; Asgar & King, 2016; Williams et al., 2013). Huckabee (2015) utilized lessons learned from the U.S. Army's Global Combat Supply System (GCSS) to argue benefits from multiple areas of improvement including meeting users' needs, reducing requirements volatility, and uncertainty in estimation development. From these works, strategic communication served as a means to prevent problems and address problems within an organization's culture.

Enterprise resource planning system customization. Customization, or *bespoke software*, may develop from scratch and for one customer or for few customers (Mathias et al., 2014). Khan and Frazee (2014) considered ERP implementation customization an option for organizations, but warned customization was a costly alternative. Sundtoft Hald and Mouritsen (2013) claimed ERP system selection may result in high switching costs, but copying a competitor's system would reduce organizational uniqueness. Zach and Munkvold (2012) added to concerns with two choices, ERP system customization or organizational adaptation, as options to avoid misfit with implementation. Relatedly, Venkatraman and Fahd (2016) advised SMEs to closely examine organization requirements and selection of ERP system to mitigate misfits. Chou et al. (2013) studied over 100 ERP projects with regard to organizational fit and deemed extensive adaptation of ERP software as unsuitable and usually infeasible; less customization equated to higher likelihood of ERP system success. In respect of national and cultural needs, customization may be a requirement of ERP systems regardless of moderating effects to ERP system implementation successes (Chiang, 2013; Chockalingam & Ramayah, 2013). Chiang (2013) posited issues of fit may be worse in Asia due to American and European industry business model influences. ERP customization can be a resolution to, or cause of, issues in education and training approaches from culture based differences because most ERP systems originated in the West and Europe, and the systems reflect these cultures (Chayakonvikom et al., 2016). Customizations to address cultural differences included internal organizational personnel structure relationships and attitudes toward IT adoption (Ghobakhloo et al., 2012). Some researchers encouraged visits to user sites and

identification of potential misfit or misalignments of proposed ERP systems to meet

organization requirements, address risk, and provide estimates of necessary tailoring

(Ram et al., 2013a). Concern surrounding customization investments in ERP systems

existed in Frazee and Khan's (2012) work as Diamond Antenna and Microwave

Corporation's management considered all phases of implementation and added emphasis

to continuous monitoring and improvement of the system resulting in customizations.

Continuous improvement efforts, such as customizations, also exist as a core element to

Goldratt's TOC, the conceptual framework of this study (Rahman, 1998).

Organizations may customize their ERP system by adding, excluding, or

customizing a BI system component. BI system products include system-generated

reports, perhaps financial statements, and impromptu reporting and advanced data

visualization that might include customized data views based on variables of time,

location, and vendor (Fitz et al., 2015). A BI system or module may be a module of an

ERP system depending on organizational-specific goals and desires.

ERP system customization criteria for achieving value. While private sector

organizations strive for present and future profitability, public sector organizations are

not profit driven entities. Public sector organizations primarily operate from tax

revenues, resulting in an emphasis for efficient and effective operations. Both public and

private sector organizations strive to create value. Researchers pointed to value adding

attributes of ERP systems including improved coordination among functional silos,

increased efficiency, reduced operating costs, timeliness of access to information, and

strategic planning support (Aladwani, 2013; Maditinos et al., 2012). Akça and Özer

(2014) listed operational, managerial, and strategic benefits in addition to IT infrastructure, and organizational benefits among primary value-added benefits for ERP systems. However, Abbas' (2015) study results indicated IT infrastructure has less significant affect compared to other CSFs of ERP system implementation success. Iizuka et al. (2014) described gains in value from ERP systems in the form of new business processes and help with cost-effectiveness. In a case study of a manufacturing firm with an IT investment strategy including an ERP system, an overarching improvement included agility in forms of response to marketplace changes, generating new business, and reputation building (Khan & Frazee, 2014). ERP systems may serve as strategic methods to achieve profit or provide value (Sarker et al., 2012; Sundtoft Hald & Mouritsen, 2013).

Researchers' quantitative tests and framework of organization information processing (OIP) with Indian production firms indicated differences of influence in the majority of ERP system modules at both modular and systemic levels (Madapusi & Ortiz, 2014). Researchers repeatedly posited the importance of strategy during ERP system implementation as a critical factor of operational performance that transfers into an organization's return on implementation investment (Arvidsson, Holmström, & Lyytinen, 2014; Beheshti et al., 2014; Khanna & Arneja, 2012; Srivastava & Misra, 2014). Sarker et al. (2012) explored gains in value from ERP systems via cocreation and increasing ROI collaboration between ERP vendors and partners. Specific to ROI, bartering and amalgamation were value additions in the case study (Sarker et al., 2012). Though arguable, an arrangement to foster value cocreation would entail significant strategic

consideration, especially for custom ERP systems. Cocreation also appears in Jeng and

Dunk's (2013) research with the need for knowledge creation as a CSF from an

implementation and investment in IT adoption perspective. Among ERP system

challenges, sales, and other research, it takes managerial commitment, openness and

experimentation, OLC, and strategy to secure ROI in forms of user satisfaction and usage

with operational performance benefits (Akça & Özer, 2014; Ghosh, 2012; Makokha &

Ochieng, 2014; Nwankpa & Roumani, 2014). Bobek, Rohadia, and Sternad (2016)

studied different business environments to learn successful ERP system implementation

does not guarantee successful usage. Customization of ERP systems and ERP

components is a means for increasing user satisfaction (Zach & Munkvold, 2012). Akça

and Özer (2014) concluded user satisfaction held the most impact on ERP system

implementation success; however, Kanellou and Spathis (2013) found no statistical

significance between IT professionals and accountants perceptions of ERP accounting

benefits and user satisfaction. Even after satisfying these requirements, Maditinos et al.

(2012) posited most enterprises do not fully justify investing in customizing ERP

software, and Rabaa'i and AlJamal (2015) advised organizations to avoid customization.

However, addressing user satisfaction, by customizing ERP systems to accommodate

existing business practices aligns with the TOC's user satisfaction component qualifying

the TOC as a relevant theory and viable framework for exploring ERP system

implementations (Akça & Özer, 2014; Boyd & Gupta, 2004).

Literature Review Summary

A review of the professional and academic literature on ERP system implementation CSFs and strategies indicated considerable overlap of research and results. Researchers completed quantitative, qualitative, and mixed methods studies to develop and define CSFs and CSF areas for benefit of organizations. Both individual and collections of success factors formed strategic elements for ERP system implementations. Case study is a suitable design of ERP system implementation researchers seeking to identify and explore CSF and success strategies. In addition to presenting ERP system implementation information, this literature review identified CSFs, issues closely relating to CSFs, and actual or potential success strategies for organizations wishing to implement ERP systems. Subjects of ERP system implementation research included different levels of government, private sector and public sector organizations, and all sizes of firms and organizations across the globe. Despite an abundance of professional and academic literature, I was only able to locate a relatively low amount of professional and academic literature regarding U.S. city government organization success CSFs and success strategies for ERP system implementations.

<center>**Transition**</center>

Section 1 of this qualitative single case study included the foundation of study, Goldratt's TOC as the conceptual framework, and ERP system implementations as the primary focus. Discussion included a background of global ERP system implementation challenges followed by problem and purposes statements regarding local U.S government CSFs and strategies of ERP system implementations. The nature of the study, central

research question, proposed interview questions, and the TOC as the conceptual

framework followed. I also provided assumptions, limitations, and delimitations.

Finally, the significance of study, with potential contributions to business practice and

implications for social change, preceded a review of professional and academic literature

about ERP system implementations. I used this study to explore CSFs and strategies of

ERP system implementations in U.S. city government organizations. Section 2 consists of

the project and associated elements of this study. Section 3 contains my findings and

conclusions from the completed case study.

Section 2: The Project

Section 2 includes the study's purpose, the researcher's role, and information regarding participants. Next, I offer the research method and design followed by population sampling and ethical research considerations. Section 2 continues with information regarding data collection instrumentation, data collection techniques, data organization techniques, and data analysis. Discussion of means for assuring the study's reliability and validity discussion concludes this section.

Purpose Statement

The purpose of this qualitative single case study was to explore ERP system CSFs and strategies U.S. city governments use to successfully implement ERP systems. Data came from end-users, managers, and leaders of a city in New Mexico because they have direct participation experience in developing successfully implementing an ERP system. Findings from this single case study may contribute to social change by providing managers of private sector and public sector organizations CSFs and success strategies for implementing ERP systems. Managers who apply these strategies and CSFs may improve organization environments and morale, increase value to constituents, and maximize goods and services for city residents and visitors.

Role of the Researcher

In support of the qualitative single case study, I conducted a scholarly review of existing professional and academic literature to summarize the state of ERP system implementation research and the status of the problem in preparation for interviews as encouraged by Onwuegbuzie and Weinbaum (2016). One of my roles was administering

interviews with volunteer participants. I obtained approval from the Walden University Institutional Review Board (IRB) and the U.S. city government organization serving as the source of data prior my investigation of CSFs and strategies in the ERP system implementation at the U.S. city government organization. After gaining Walden University's IRB approval, I provided the U.S. city government a Recruitment Letter for Study Participants (Appendix A) to send to the U.S. city government's employee and vendor email address lists to engage participants. Employees referred me to, and contacted, vendors who directly participated in the organization's ERP system implementation, but interviews did not occur with former or current vendors. After the interviews with the volunteer employees, I created transcripts for interview transcript review (ITR). Then, I analyzed participant reviewed transcripts using Microsoft Excel software to code and derive themes of CSFs and strategies in the ERP system implementation.

Neale, Miller, and West (2014) explained qualitative researchers code data to identify patterns from events and experiences. Addressing this role helped me determine commonalities and peculiarities of participant responses as described by Hyett et al. (2014) and Yin (2014). Attributes of my researcher role included adherence to a scholarly researcher perspective from the initiation to the completion of study. This process included collection and analyses of data, interpretation of findings, disclosure of any personal biases and limitations, and continuous security of the collected data content (Robinson, 2014; Roulston & Shelton, 2015; Yin, 2014). I was also responsible for presenting my findings in an objective form.

During study execution, my status as a U.S. DOD employee who has transitioned between three armed services spanning four distinct, geographic locations and as user of multiple ERP systems may have influenced my perceptions of participant responses. Interest and willingness of participants may have varied due to professional and personal relationships established prior to and during study. I disclosed any ethical concerns of my participation as the primary instrument for data collection, and I adhered to Public Law 93-348, the National Research Act and affiliated Belmont Report, including upholding basic ethical principles of respect for persons, beneficence, and justice (U.S. Department of Health & Human Services, 2015). Applications of the basic ethical principles included informed consent, assessment of risk and benefits, and selection of subjects who each influenced the participant recruitment process and interviewee participation (Robinson, 2014; U.S. Department of Health & Human Services, 2015; Yin, 2014). Demonstration of no bias from personal interest can be a challenge for qualitative researchers (Marshall & Rossman, 2014; Robinson, 2014). To mitigate my bias, I maintained complete disclosure of my experience and thoughts with participants. Additionally, I used member checking for participant validation of my interpretations of each participant's responses. Researchers Hudson et al. (2014) and Onwuegbuzie and Byers (2014) advised member checking to ensure accuracy and verification of information obtained during data collection with participants. As suggested by Yin (2014), I used a field journal to moderate bias and personal lens influences.

Finally, I utilized an interview protocol (Appendix C) for the semistructured interviews. Bokovec, Damij, and Rajkovič (2015) used semistructured interviews during

data collection for evaluation of ERP projects and multi-attribute decision support

systems at five global retail companies. Seethamraju and Sundar (2013) provided

semistructured interviews help researchers improve reliability while Esteves (2014) noted

researchers use semistructured interviews to explore responses, seek real-time

clarifications, and gain deeper understanding from participants. Researchers' agreed use

of an interview protocol facilitates study replicability and helps sustain focus of

researchers and interviewees through each interview question for achievement of deep

and rich data (Alsaawi, 2014; Elbanna, 2013; Yin, 2014). Using the interview protocol

helped me establish a relationship with the participants and mitigate the risk of bias

during the interviews.

Participants

Participant selection for this single case study was nonrandom and performed by

me, after the organization gatekeeper provided a list of potential participants to contact.

Some potential participants provided contact information of additional participants and

contacted other individuals. To address the overarching research question, my primary

focus was reaching potential participants involved in a successful ERP system

implementation. Participants consisted of current or former employees involved with the

successful ERP system implementation of the U.S. city government organization that

implemented an ERP system within the prior 7 years. Although contacted, participants

did not include vendors involved with the successful ERP system implementation.

Cleary, Horsfall, and Hayter (2014) described qualitative participants as

informants purposefully selected in sufficient numbers to obtain personal experiences and

knowledge of study topics. The U.S. city government organization office locations and

employees were in a centralized location of New Mexico and conducive for single case

feasibility and maximum participant access. Applying these geographic parameters

helped ensure a reasonable commuting distance so I could achieve in-person access to

participants and conduct higher quality data and evidence collection as suggested by

qualitative researchers Alsaawi (2014) and Yin (2014).

Because ERP system implementations may affect entire organizations,

participants were of any hierarchical position within the organization and included of

end-users, management, leadership, and other titles associated with organizational

hierarchies. Researchers such as Hwang and Grant (2014), Rabaa'i and AlJamal (2015),

and Wickramasinghe and Karunasekara (2012) included this range of participants in

studies concerning ERP systems and organization affects. Eligible individuals must have

had voluntary interest in participation, must have been employed by the organization

during the ERP system implementation, and were available to complete an interview

during the permitted time as agreed upon by the organization. To the extent practical and

necessary, alternative interview dates, locations, and times were permitted to acquire

what Yin (2014) described as *rich* and *thick* data. Additionally, participants did not

belong to any protected class outlined within The Belmont Report for research purposes

(U.S. Department of Health & Human Services, 2015).

Locating participants began with contacting ERP system vendors of U.S.

government organizations and asking their recommendation of organizations to contact,

including current or former customers. At the same time, I conducted Internet searches

using the terms *ERP system implementation* and *government* to initiate direct contact with

Chief Financial Officers and Chief Information Officers at state, county, and city

government organizations because of media concerning their ERP system

implementations. I contacted U.S. government federal, state, and local organizations to

inquire about their ERP system implementation dates because Alves and Matos (2012)

described the public sector as an emerging ERP market. Upon contact with an

organization's leadership, who claimed a successful ERP implementation took place

during the prior 7 years, I requested formal permission and coordination with a Letter of

Cooperation to access the organization's employees as interview participants during a

future period (Appendix B). The Letter of Cooperation also outlined responsibilities of

the organization and researcher relationship. This formal agreement represented the

organization's permission to contact and access the organization's employees. Then, the

organization's leadership and management introduced the study and myself in a

Recruitment Letter for Study Participants (Appendix A) emailed to the employee and

vendor personnel. I maximized my personal availability to potential participants after the

organization's introduction email.

Once introduced, I provided a follow-up email communication as a way to

establish a relationship with potential participants outlining my roles and responsibilities,

as well as the participant's contribution opportunity for this study as supported by

Robinson (2014). I shared my contact information with days and hours of availability that

employees, management, and leadership could utilize to reach me with any issues or

concerns. This working relationship proved helpful as I conducted interviews to obtain

personal attestations of events and experiences otherwise described as *rich data*

according to Alsaawi (2014) and Yin (2014).

To ensure thick and rich data, I leveraged the tactics suggested by Janghorban,

Roudsari, and Taghipour (2014) and Yin (2014) to engage end-users, managers, leaders,

and vendors of the U.S. city government organization; engagement tactics included

Internet networking tools, word of mouth, and membership with multiple professional

organizations. I requested the organization provide historical documentation of former

employees' names to initiate contact, while data collection of current employees revealed

additional individuals to contact. Former employees could have proved vital to achieve

both thick and rich data as the U.S. government workforce experiences human resource

challenges including significant numbers of retirees (Goodman, French, and Battaglio,

2013; Yin, 2014). Again, I used an accommodating approach to gain sufficient

participation in the single case study interviews to answer the overarching research

question: What CSFs and strategies do city governments in the U.S. use to successfully

implement ERP systems?

Research Method and Design

Research Method

I used a qualitative, single case study in order to explore CSFs and strategies in a

U.S. city government ERP system implementation. Qualitative research is a viable and

popular means to explore, explain, and extend knowledge about topics (Yilmaz, 2013;

Yin, 2014). Carlson (2010) added that qualitative research includes unique attributes of

people, groups, and phenomenon in unique settings. Abdinnour and Saeed (2015)

successfully used qualitative data for additional insight of participant thoughts of ERP

system implementation phases while Ali and Cullinane (2014) used a qualitative method

to answer *why* and *how* questions for in-depth understanding. Das and Dayal (2016)

preferred the qualitative methodology for direct communication with participants and

understanding of context while Tong, Winkelmayer, and Craig (2014) highlighted how

researchers can use qualitative methods to obtain depth and detailed insight of peoples'

beliefs, emotions, and experiences. Combined, researchers garnered subjective content

best suited to a qualitative study method approach (Ali & Cullinane, 2014; Abdinnour &

Saeed, 2015; Carlson, 2010).

Qualitative research contains subjective data derived from collection techniques

including observations, interviews, documents, and audio or visual materials (Alsaawi,

2014; Yin, 2014). Because of my intention to explore and elicit individualized responses

concerning a U.S. city government's CSFs and strategies during an ERP system

implementation, a qualitative method was better suited to my needs than a quantitative

method. Yin's (2014) description of open-ended questions as a means to reduce

constraints to participants' responses supported my choice of a qualitative method.

Participants had increased freedom to provide unique and description-rich responses to

open-ended questions regarding observations and experiences during the organization's

ERP system implementation, which spanned multiple years. In light of the geographic

proximity of the U.S. city government organization and goals of rich and thick data, the

advantages of rich, thick descriptions in a confidential context were dynamic

contributions to more objective data quantitative studies provide according to Yilmaz

(2013) and Yin (2014). Participants provide detailed stories and vignettes for an audience to vicariously experience because of the capabilities qualitative research methods provide (Hyett et al., 2014; Marshall & Rossman, 2014). Participants of the study site appeared to embrace the opportunity to confidentially reveal their experiences and provide confirmation of other participants' experiences that I learned about in the same one-on-one interview pattern. Through the interview process, I gained a more complete understanding of the times, projects, and people portrayed in each participants' experience. These detailed experiences participants shared included nuances of personal experiences and perspectives, which I used for coding and theme generation as described by Neale et al. (2014) and Yin (2014). The low number of responses from this single U.S. city government organization's current and former employees as well as subjective responses of their observations and experiences did not fulfill the needs of a quantitative research method as consistent measurement and statistical analysis examining relationships and differences among variables was not possible.

Research Design

I chose a single case study research design for exploring CSFs and strategies of ERP system implementations within U.S. city government organizations. To date, a shortage of studies concerning government ERP system implementation exists based on my review of the literature and other researchers' conclusions (Alves & Matos, 2012). A single case study design suited the exploratory and investigative intent to identify CSFs and strategies of a U.S. city government organization's ERP system implementation. Yin (2013) described case study methods as conducive to addressing complexity and

contextual conditions, which I anticipated from study of a single, U.S. city government organization belonging to what Alves and Matos declared an emerging ERP system market.

Other key qualitative designs include ethnography, however a research intent of cultural or society descriptions did not exist (Cruz, 2013; Ritchie, Lewis, Nicholls, & Ormston, 2013). In addition, a phenomenological design remained a key design of qualitative methods though this study was not intended to uncover meanings or concepts in individuals' worlds (Ritchie et al., 2013). With the design selection shared, and other designs considered, more details of the chosen design follow.

Different types, or multiple types, of interviews may support case study research (Irvine, Drew, & Sainsbury, 2013). Doody and Noonan (2013) argued interviews might be the most frequent approach for data collection in studies. Zohrabi (2013) indicated face-to-face interviews are a popular data collection technique for exploring and reflecting on participants' primary experience reflections while Jamshed (2014) asserted interviews are the most common data collection technique in qualitative research. Alsaawi (2014) noted the high frequency of interviews in qualitative research while Marshall, Cardon, Poddar, and Fontenot (2013) provided recommendation for single case studies to have 15 to 30 interviews for saturation purposes. Yin (2014) advised at least one participant per case study. Researchers must employ tactics for achieving data saturation (Fusch & Ness, 2015; Marshall et al. 2013; O'Reilly & Parker, 2013). Reaching data saturation requires adequate participation, sufficient research design, and holistic collection of data among diverse participants. As suggested by Fusch and Ness

(2015), I ensured data saturation through continuing interviewing until no new themes emerged, and I interviewed all available and willing organization personnel. I planned to conduct 20 interviews, with an allowance to conduct fewer or more interviews depending on when data saturation was achieved. As recommended by Fusch and Ness (2015), I conducted 13 interviews followed by ITR to enhance reliability and validity, then member checking to achieve data saturation.

Population and Sampling

Researchers Alsaawi (2014) and Yin (2014) supported participant self-selection as a way to provide the desired specific, personal experience data in case studies. For my study, selection criteria attributes of suitability included interest in voluntary participation, employment status during ERP system implementation at the organization, being 18 years or older in age, fluency in English, and availability constraints. Intentional selection of one public sector, a U.S. city government organization within the county of Bernalillo county, New Mexico provided the population of potential participants to effectively collect all relevant data and evidence Alsaawi (2014) and Yin (2014) encouraged in case studies. An elected mayor and city council members form the leadership of the city's districts and various city government departments. The participant population consisted of the city's current employees and former employees with experiences throughout the organization's ERP system implementation. Additionally, employees of the implementation vendor supplemented the participant population.

From the population, participant selection for qualitative study methodology in the design of this single case study was nonrandom and performed via self-selection. Sampling was a combination of purposeful and self-selection that Alanne et al. (2014), Tong et al. (2014), and Yin (2014) encouraged for use in qualitative case studies. Cleary et al. (2014) outlined participant selection tips used in this study including purposeful participant selection of individuals with experience or knowledge, small numbers of selectees for intense study, and sequential selection. Supplementary to self-selection sampling, Alanne et al.'s (2014), and as needed, snowball sampling occurred. Tong et al. (2014) described snowball sampling as the practice of participants identifying additional, potential participants who may provide pertinent data of a research topic. Then, the same organization's management and leadership served as a vehicle to inform potential participants of the opportunity to participate in the study. Referring to professional memberships, using social media, and explaining my relationship as a U.S. government employee for nearly 7 years influenced participation and facilitated using snowball sampling to supplement self-selection sampling efforts. Similar studies successfully used snowball sampling, or chain sampling, to achieve saturation and supplementary data (Allane et al., 2014; Ononiwu, 2013). Leveraging the permission of the organization's management and leadership allowed access to currently employed personnel who experienced the organization's ERP system implementation and who self-selected to participate. In conjunction with data collection and management provided historical documents, I used referrals of current city employees and vendors to contact former employees and vendors about voluntary participation in the study.

I began with an objective to have agreements from 20 interview participants, subject to a larger or smaller collection of participants' data if necessary for achieving data saturation or if saturation was achieved before the objective as described by Fusch and Ness (2015), O'Reilly and Parker (2013), and Yin (2014). Marshall et al. (2013) recommended 15 to 30 interviews for single studies concerning information systems with statistical support of data saturation achievement within this range. I used electronic communications, hand-delivered communications, and verbal communications to engage a target of 15 to 30 interviewees as recommended by Marshall et al. (2013) for single studies concerning information systems. As described by Carter et al. (2014) and Morse and McEvoy (2014), individual interviews helped me accomplish methodological triangulation. Using this combination of tools and tactics with suggestions of Janghorban et al. (2014), my objective of obtaining at least 20 suitable participants available for the case study was not achieved. However, I did achieve 13 suitable participants available for the case study resulting in a 33% response rate.

Once identified, I interviewed participants using an interview protocol with a semistructured interview format to collect personal claims and their ERP system implementation experiences. I served as the conduit to facilitate the interview and record participant responses remotely, and at the organization's location in a designated, climate-controlled private room with at least a table and two chairs for approximately 1 hour per employee interview. These environmental conditions fit the recommendations of participant convenience recommended by Doody and Noonan (2013). As data were collected and converted into malleable formats, I reviewed, analyzed, coded, and

generated themes of the data to achieve what Carter et al. (2014), Fusch and Ness (2015), and Yin (2014) deem data saturation. O'Reilly and Parker (2013) described data saturation as a point when researchers do not find any new ideas, themes, or concepts among the data. I monitored coding and theme generation of interview transcripts to determine when adequate quality data existed and redundancy and replication of ideas, themes, or concepts emerged (Marshall et al., 2013; O'Reilly & Parker, 2013). Data saturation involves a researcher's judgement and sufficiently demonstrated efforts to obtain thick and rich data as I did during data collection from the single U.S. city government organization. I planned to conduct interviews until achieving data saturation or all self-selected personnel of the U.S. city government organization completed interviews to demonstrate what Yin (2014) summarized as an *exhaustive effort* of the researcher in data and evidence collection. In this single case study, data saturation was achieved as redundancy and replication of ideas, themes, and concepts emerged (Marshall et al., 2013; O'Reilly & Parker, 2013). After 13 interviews data saturation was achieved, and I discontinued further interviews as Marshall et al. (2013) indicated continuation is pursuing efforts with diminished return. Additionally, no further self-selected personnel of the U.S. city government organization volunteered to participate in interviews demonstrating what Yin (2014) described as an *exhaustive effort* of the researcher in data collection.

Ethical Research

During conduct of an ethical study, certain processes and disclosure of information are necessary. Researchers must adhere to responsibilities of protecting

participants' rights, confidentiality, and compliance with the Belmont Report ethical protocols for assuring study validity (Carlson, 2010; Cseko & Tremaine, 2013). The Walden University Institutional Review Board for ethical standards in research reviewed the proposed research and provided approval number 09-23-16-0450947 to proceed with data collection and analysis. Participants reviewed a consent form prior to their provision of consent. I used Shaw's (2012) informed consent process and form with applicable updates of current versions. I modified Shaw's (2012) process to accommodate differences in the single case study including how my place of employment is not the location of data collection. I provided participants assurance of confidentiality, voluntary participation with the option to withdraw at any time, estimates of time commitments, and retention of securely maintained data with a requirement of consent in accordance with requirements of the Belmont Report ethical protocols and the U.S. Department of Health and Human Services (1979), Cesko and Tremaine (2013), and Doody and Noonan (2013) described. I informed participants in writing and verbally of their option to cease participation in the study at any time by providing notice to me via telephone call or in writing (e.g., postal mail or e-mail). Upon receipt of notice, I would provide written acknowledgement. An example Informed Consent document and Letter of Cooperation are located in appendices B and C, respectively.

Participants did not receive any incentives for their voluntary participation beyond subjective, individually based gratification. Robinson (2014) warned researcher use of financial incentives can reap fictitious data, and Underhill (2014) warned compensation must not be coercive or inconvenient. I composed a personalized letter and invite for

each participant to discuss study outcomes or obtain a copy of study findings as recommended by Robinson (2014).

As recommended by Shaw (2012) and Yin (2014), I identified participants using an alphanumeric sequence rather than legal or pseudonym names to maintain confidentiality. An example of this practice was "ERP1" indicating the first participant to provide data in an interview. Upon audio file upload to Rev.com a client non-disclosure agreement became effective. The Rev.com Client Non-Disclosure Agreement is located in Appendix E. All data will be maintained in a safe for 5 years to protect confidentiality of participants and support the study audit trail as encouraged by Carlson (2010) and Morse (2015).

Data Collection Instruments

As the researcher and key data collection instrument, I created an interview template consisting of eight questions for interviewees of the U.S. city government organization and participants not employed by the organization, such as vendors and former employees (see Appendix D). The semistructured interviews consisted of eight main questions asked of all participants and potential follow-on questions. Individual participants had an opportunity to schedule an interview time of their preference within a 3 week allowance for data collection once agreed upon by the U.S. city government organization and myself. I conducted interviews with all participants at, or within the vicinity, of the U.S. city government organization's location. As an alternative means for conducting the interviews not accomplished at the U.S. city government organization or at a local venue, I used an Internet-supported means in my role as the key data instrument

of data collection. These Internet-supported interviews modeled Alsaawi's (2014) face-

to-face semistructured interviews containing five phases. The five phases Alsaawi (2014)

noted were (1) introduction, (2) warm-up, (3) main body, (4) cool-off, and (5) closure.

The interview protocol is within Appendix C, followed by the interview questions

(Appendix D). Researchers may use an interview protocol to achieve comfort in

participant interactions according to Doody and Noonan (2013). The interview protocol

began with introduction formalities between the interviewee and me, the researcher.

Then, I asked basic questions establishing a focus for the interview questions asked of all

participants. As needed, I asked follow-on and clarifying questions prior to thanking the

interviewee and recording my reflections in a journal. As recommended by Doody and

Noonan (2013) and Venkatesh, Brown, et al. (2013), I conducted interviews with

consistency among participants for replicability of the data collection protocol to

cultivate dependable data and analysis of my study findings. I used digitally recorded

interview content, field notes, and journaling to capture audio and visual aspects, and

monitor my personal biases of collected content, as suggested by qualitative researchers

(Carlson, 2010; Doody & Noonan, 2013; Robinson, 2014; Yin, 2014).

     To support reliability, validity, and member checking, each participant completed

an interview transcript review (ITR) of their individual interview transcripts as described

by Peng and Gala (2014) and Harvey (2015). Researchers have claimed first reviews and

subsequent member checking processes serve as quality controls in qualitative research

because of opportunities to increase credibility and accuracy of recorded interview

content (Erlingsson & Brysiewicz, 2013; Houghton, Casey, Shaw, & Murphy, 2013). The

second process, member checking, consisted of individual participant review where each participant received an electronic summary of the transcribed interviews as described by Harvey (2015). Morse and McEvoy (2014) used member checking to decrease misinterpretations and increase reliability and validity of researcher observations and findings in studies. Use of ITR, synopsized interview transcripts in member checking, field notes, and a thorough review of existing literature concerning CSFs and strategies of ERP system implementations enhanced reliability and validity of the collected data (Ahmad & Cuenca, 2013; Amid et al., 2012; Alsulami et al., 2016; Harvey, 2015). As Onwuegbuzie and Frels (2016) advised, I maintained reviewed literature electronically. Data triangulation by comparing and contrasting my study data to existing ERP system implementation literature supported validation according to Hussein (2015). Given this description of data collection instruments, the data collection technique follows.

Data Collection Technique

Before any data collection began, I gained Walden University IRB approval and a bilaterally completed Letter of Cooperation with the U.S. city government organization's management and leadership. Then, the data collection technique for the single case study originated with follow-up contact and continued permission of the U.S. city government organization management and leadership. With permission to proceed and logistical details surrounding the data collection confirmed, I leveraged the organization ERP Program Manager's introduction of myself and the study to current employees. Then, I sent a follow-up email to the same personnel addressed in the ERP Program Manager's introductory email. I also obtained contact information of former employees and vendors

of the organization to engage these potential participants via email, social media, and telephone. Janghorban et al. (2014), Morse and McEvoy (2014), and Robinson (2014) used or advised use of advertising, participation disclosures, and exchanges with potential participants with facilitation from email, websites, and Internet-supported professional networking forums to accommodate participants, absolve concerns, and build relationships. Individual interviews occurred in advance of my onsite visit. When I arrived at the location, I sent a reminder email addressing a few new potential participants provided by the ERP Program Manager. Individual interviews occured during my onsite visit to the organization within the local vicinity of interviewee preference, as advised by Morse and McEvoy (2014).

Face-to-face, onsite interviews possess disadvantages like participant unavailability and potential participant nonfeasible preferences. Physically unavailable, but interested, participants during the data collection time period had the option of an Internet-supported semistructured interview recommended by Janghorban et al. (2014) and Robinson (2014). For participants who sought privacy or desired seclusion, advance coordination for alternative location interviews was required to capture what Yin (2014) described as *rich* and *thick* data. Carlson (2010) and Robinson (2014) described multiple means and tactics available to researchers to collect data and perform member checking while sustaining a working relationships with participants. Carlson's (2010) opportunities and suggestions stemmed from disadvantages in interview data collection such as an abundance of transcribed content poorly received by participants or an adverse emotional reaction from exposure to collected data. I used these data collection techniques with the

goal of 20 interviews with 20 different individuals to facilitate achieving data saturation. I

conducted 13 interviews with 13 different individuals an achieved data saturation

determined by data content and exhaustive efforts describe by Fusch and Ness (2015) and

Yin (2014). Collection and conversion of interview content resulted in transcribed

interviews. Findings reflected an extensive effort to collect all individual participant

experiences contained in interview transcripts, synopsized transcripts, and member

checking results as well as experiences found within the professional and academic

literature for the single case study data as recommended by Yin (2014).

I used member checking and data triangulation to support data dependability and

credibility in the data collection techniques, as described by Carter, Bryant-Lukosius,

DiCenso, Blythe, and Neville (2014). Bacchelli and Bird (2013) described triangulation

as using more than one source of data to provide a more comprehensive understanding of

responses to research questions. Preceding the member checking process described by

Harvey (2015), I provided transcribed interview responses to the participant for

verification of their responses. This reliability and validity ensuring of ITR step

augmented member checking conducted during interviews when I asked participants to

verify my understanding of their responses, a pattern of continuous member checking

Carlson (2010) explained and Påfs et al. (2015) used. Participants had 1 week to review

the interview transcription for edits or augmentation. Upon receipt of the participants'

confirmation of review, I consolidated responses into synopsized versions of the

transcribed interviews to create a digital presentation of findings for the participants to

review or member check. During development of the presentation of findings, I reviewed

the synopsized transcriptions for codes and themes as part of the data saturation process

described by Erlingsson and Brysiewicz (2013) and Fusch and Ness (2015). This review

and analysis of the synopsized versions of the transcripts resulted in codes and

cumulative themes as described by Harvey (2015). After this second review and analysis,

code and theme generation concluded. Then, participants had 1 week to share thoughts

concerning the digitally provided presentation of my findings. In this practice of member

checking described by Koelsch (2013), participants could provide confirmation of my

interpretation of the collectively synopsized interviews or disagreement by serving as

expert judges of my major findings of combined responses. I recorded participants'

thoughts of the findings for a complete audit trail, a step encouraged by Carlson (2010)

and Morse (2015).

Conducting interviews and in-person data collection enables researchers to collect

rich and *deep* data (Alsaawi, 2014; Yin, 2014). Additionally, Alsaawi (2014) provided

support for interviews in qualitative studies with reference to deep analysis of interviewee

responses, recorded responses for limitless reviews, a capability to share response data

with experts for aid in evaluation, and the potential reduction in researcher bias from

expert opinion and member checking. Zohrabi (2013) noted the use of face-to-face

interviews for exploring and reflecting on participants' primary experiences. I

administered interviews to one participant at a time. Alternatively, use of Internet-

supported means including Skype, FaceTime, GotoMeeting, and others to collect data has

advantages in the form of increased access to remote participants and reduction in delays

in delivery of content that other data collection means may entail. Potential

disadvantages of Internet-supported media include risks of technological issues, inadvertent duplication of responses, and a wide variety of individualized responses for manual processing. Therefore, I used in-person interviews as the primary data collection technique with an alternative of an Internet-supported means such as Skype, FaceTime, GotoMeeting or similar services for interviews. I did use Internet-supported means as an alternative way to accomplish member checking.

Data Organization Technique

As my research, I leveraged various systems to maintain data including research trackers, reflective journals, and labeling systems that Carlson (2010), Carter et al. (2014), Erlingsson and Brysiewicz (2013), and Yin (2014) described for qualitative research. By preference, I used Microsoft Office 2010 through 2013 for all content converted to electronic formats. For instance, and similar to Shaw (2012), to protect the identity of participants, I assigned each participant an alphanumeric code and maintained the confidential coding in an Excel Workbook format with multiple spreadsheets to track and capture iterations of analyzed data. Confidential coding of participant data in such manner helped fulfill research participant protections and uphold my researcher responsibilities described by Cseko and Tremaine (2013) and outlined within The Belmont Report. I used a reflective journal, in a paper format converted to a portable document format (PDF), to manage personal biases that may have otherwise influenced data collection according to Carter et al. (2014), Tong and Winkelmayer (2014), and Trabka and Soja (2014). All raw data will be maintained in a locked container for 5 years, and then securely destroyed.

Data Analysis

Based on Fusch and Ness' work (2015), an appropriate process for data analysis in this qualitative, single case study research design is methodological triangulation. Both Carter et al. (2014) and Morse and McEvoy (2014) indicated qualitative researchers use methodological triangulation from multiple data sources including interviews, observation, and field notes. Qualitative researchers can collect multiple types of data to facilitate in-depth understanding from participant experiences through interviews, observations, artifacts, visual texts, and questionnaires (Kaczynski, Salmona, & Smith, 2014). I used methodological triangulation with individual interviews as my primary data for analysis, and documentation from the organization as my secondary data. Organization documentation included the ERP *Moving Forward Report and Plan* for the city, *ERP Strategic Roadmap 2011-2015*, *ERP Roadmap Update* from August 2015, *ERP Roadmap Update* from April 2016, *ERP Kick-off Announcement* from June 2012, wall posters, and bulletins from the ERP system implementation experience. Hussein (2015) posited researchers using methodological triangulation can increase internal credibility of findings when comparing and contrasting findings from reviewing two or more data types related to methods of the phenomenon under study. As described by Onwuegbuzie et al. (2016), I verified themes from analysis of interviews from leaders, managers, and end-users. I compared synopsized individual perspectives and collective perspectives with documents from the organization to determine consistency and credibility as described by Hussein (2015).

Researchers (e.g., Carlson, 2010; Erlingsson & Brysiewicz, 2013; Yin, 2014) successfully leveraged interviews to collect participants' multiple perspectives for comparison and contrast to inform qualitative studies. Interviews of participants with different perspectives and experiences of the U.S. city government ERP system implementation provided the primary data I categorized by participants' roles during ERP system implementation. Segmentation of participants' and their interview data allowed for comparison of different types of people and groups to validate themes observed in the organization's ERP system implementation documentation. Carter et al. (2014) explained data from various categories of individuals or groups provide breadth of perspectives for data validation. I captured what Yin (2014) described as thick data from multiple participants, and conducted comparisons of themes among rich and deep data encouraged by Alsaawi (2014). Like Carter et al. (2014) outlined, my methodological triangulation and data triangulation processes included field notes and observations.

Data analysis for methodological source triangulation occurred after transcription of recorded interviews and field notes collected from each participant interview. After receiving the transcribed interviews, I manually reviewed participants' responses for completeness, and then archived the content in a Microsoft Excel Workbook and Microsoft Word document for further electronic management. Ahmad et al. (2014) used spreadsheets for category coding and data analysis of research papers and cases. Carter et al. (2014) suggested researchers using data triangulation consider analyzing data separately, and then synthesize and identify similarities and differences. I used Carter et al.'s (2014) suggestions when maintaining an original Microsoft Excel Workbook and

Microsoft Word documents of participant responses separate from a copy of synopsized interview transcripts for member checking that underwent multiple iterations of coding and theme identification. Morse and McEovy (2014) noted the importance of using electronic data transmissions, the Internet, documentation, and in-person techniques to obtain multiple sources of participant data. Norton (2015) used content analysis in a literature review of ERP II CSFs, and claimed high measurement for validity for the resultant themes. In coding and analyzing the interview transcript responses and member checked content from participants, I focused on key themes of existing professional and academic research, correlations to expected key themes within interviews, and Rahman's (1998) description of the TOC as a logical conceptual framework. I derived themes from the primary and secondary study data to form a collection of CSFs and strategies as determined by Microsoft Excel software coding and analyses of data to determine commonalities and peculiarities of participant responses (Hyett et al., 2014; Yin, 2014). I coded, then identified themes using features of Microsoft Excel including conditional formatting, various text-based functions, and text-based retrieval and filtering. I verified the themes through methodological triangulation from interview data and the organization's documentation.

Reliability and Validity

Shortcomings of qualitative research in areas of reliability and validity exist. Venkatesh, Brown, et al. (2013) described reliability in qualitative research as consistent and dependable data and analysis. Qualitative reliability exists in the combination of consistency and replicability of established data collection protocols while generally

accepted validity standards for qualitative research do not exist (Yin, 2014). Due to a lack

of measurability, researchers establish reliability and validity criteria using appropriate

qualitative methods (Alshenqeeti, 2014). For this qualitative study, concepts of

dependability, credibility, transferability, and confirmability substitute for reliability and

validity in quantitative studies.

Reliability

In qualitative research, dependability and credibility address the analogous

requirement for quantitative studies' reliability. Venkatesh, Brown, et al. (2013) stated

consistent and dependable data and analysis support reliability in qualitative research.

Fusch and Ness (2015) stated researcher use triangulation to increase confidence and

reliability of collected data. Houghton et al. (2013) and Morse (2015) described member

checking as a procedure to enhance credibility.

Dependability. I used interview transcripts and synopsis of interview responses

to capture interviewee edits, augmentation, and/or validation of my interpretations to

establish dependability. Morse and McEovy (2014) described individual, in-person

interviews as the most valid form of data collection in interview processes. Allowing

interviewees to review my interpretations of their responses provided benefit in terms of

what Alshenqeeti (2014) called interrelated *power elements* of trust and value.

Researchers Amid et al. (2012), Ahmad and Cuenca (2013), and Houghton et al. (2013)

used interviews and member checking to ensure interpretation accuracy of surveys and

interviews to gain critical review and assure reliable study conclusions. Using ITR

enables accuracy and contributes to dependability and reliability according to researchers

(Alsulami, Scheepers, & Rahim, 2016). Interviewees in the data collection process served as experts and sources of validation to my interpretations of their responses to questions.

      Credibility. As described by Alshenqeeti (2014) and Venkatesh, Brown, et al. (2013), I assured and demonstrated credibility and trustworthiness to ensure my findings, conclusions, and recommendations are defendable. Carlson (2010) stated credibility and trustworthiness, among other terms in qualitative research, remain interchangeable. Titze, Schenck, Logoz, ans Lehmkuhl (2014) posited trustworthiness, quality, and rigor are conceptualized by qualitative researchers as being analogous to the quantitative constructs of reliability and validity. Carlson (2010) and Loh (2013) described member checking as a procedure to increase trustworthiness in qualitative study. I used practices and recommendations of Seethamraju and Sundar (2013) and Harvey (2015) when participants reviewed transcripts of interviews before the member checking process. This transcript review preceded the member checking process Venkatesh, Brown, et al. (2013) deemed useful for assuring and demonstrating credibility in qualitative studies.

      Despite potential disadvantages, Kosalge and Ritz (2015) cited benefits in researcher review of transcripts due to time and effort constraints in widely used tactics of ITRs. Like Peng and Gala (2014) and Alsulami et al. (2016), I assured reliability with ITRs prior to requesting the interviewee's participation in member checking. Harvey (2015) and Houghton et al. (2013) referred to member checking as a means to gain credibility. ITR took place after transcription of each interview. For Internet interviews

– I requested participants review transcription of their responses and revisit any responses for correction or augmentation.

Yin (2014) described triangulation as the pooling of data from various sources to determine an agreeable finding. Four types of triangulation exist: theory/perspective triangulation, methods triangulation, data source triangulation, and analyst triangulation (Hussein, 2015; Yin, 2013). I accomplished methodological triangulation using analyzed data collected from interviews and analysis of organization documentation collected from the U.S. city government. As described by Hussein (2015) and Yin (2014), I compared and contrasted the data collected from the interviews to the collected organization documentation that included the ERP Moving Forward Report and Plan for the city, ERP Strategic Roadmap 2011-2015, ERP Roadmap Update from August 2015, ERP Roadmap Update from April 2016, ERP Kick-off Announcement from June 2012, wall posters, and bulletins from the ERP system implementation experience to accomplish methodological triangulation. Yin (2014) also described additional sources of data as any additional evidence available during the data collection process such as historical documents and observations during interviews. Scheckenbach et al. (2014) studied ERP system upgrades using semistructured interviews and documents to inform findings. Alshenqeeti (2014) and Yin (2014) noted the need for thoughtful reflection on data from interviews including the interview question answers, coupled with the other secondary data types of organization documentation for methodological triangulation.

Validity

In qualitative research, generally accepted validity standards do not exist (Yin, 2014). Researchers establish validity criteria using appropriate qualitative methods (Alshenqeeti, 2014). For this qualitative study, validity concepts included transferability and confirmability.

Transferability. As prescribed by Houghton et al. (2013), to enable others to determine the transferability of my study's findings, I determined the actual utility of the TOC conceptual framework described by Rahman (1998) as a potential research lens to facilitate finding applicability to future research contexts. Enabling other researchers to assess transferability also stems from my providing what Yin (2014) called *thick* descriptions of data, and incorporating Robinson (2014) direction in describing the purposive sampling of the U.S. city government organization personnel employed at the time of ERP system implementation. I expect my sharing of what Alsaawi (2014) and Alshenqeeti (2014) defined as *deep* and *rich* data from interviews, existing literature, a lens of the TOC, and, as according to Erlingsson and Brysiewicz (2013), new data contributions to enable researchers to decide transferability to other contexts.

Confirmability. With sufficient reflection on field notes and journals to manage personal biases, I demonstrated confirmability throughout the study. I also supported confirmability by using a semistructured interview, as recommended by Morse (2015), allowing participants to respond freely and influence the direction of interviews as I interject for clarifications. Houghton et al. (2013) indicated confirmability is demonstrated in neutral and accurate data while confirmation is a data comparison

processes to determine finding verification. Erlingsson and Brysiewicz (2013) described

confirmability as the degree respondents' contributions exist in findings rather than

researcher bias, motivations, or interests. Kosalge and Ritz (2016) indicated using

multiple sources of data enhanced analytical objectivity of research for confirmability

and validity. I relied on my doctoral study committee members and other Walden

reviewers to validate my semistructured interview questions to assure participants'

responses and my analysis and methodological triangulation assured the findings'

validity. To limit bias, I arranged interview appointments to allow for shorter and longer

times without impeding on the next interview appointment. After collecting each

recorded interview, I saved the digital voice recording files onto my personal computer.

Then, I electronically and securely transmitted the audio recordings to Rev.com for the

company's professional transcriptionists to assist me with interview transcription. Upon

receipt of transcribed audio recordings, I emailed requests for clarification of

conclusions, and as needed, engaged in two-way dialogue with participants to ensure

participants' questions or concerns received complete responses. As a reliability and a

validity tactic, I used transcribed interviews for each interviewee to perform ITR, then

member checking, also called member validation, of my interpretation of each

interviewee's response (Harvey, 2015; Morse & McEvoy, 2014). During the 1-week

period for member checking, respondents were asked to confirm, edit, and/or augment

my interpretations of their responses.

Case studies come with expectations to obtain rich, thick, detailed data of

participants (Marshall & Rossman, 2014; Yin, 2014). Coding and detailed descriptions

from transcripts facilitated analysis to identify themes and patterns among the interview responses. Then, member checking and data triangulation took place to enable validation of my interpretations from collected data as described by Harvey (2015) and Norton (2015).

Data Saturation

I ensured data saturation, as described by Fusch and Ness (2015) and Marshall et al. (2013), with 13 participant interviews despite an initial goal of 20 completed participant interviews. Cleary et al. (2014) described data saturation in qualitative studies as the point when a researcher finds redundancy of information in analyzed interviewee data. Redundancy and replication of data did occur, and no other participants volunteered to interview. Marshall et al. (2013) indicated as few as 15 interviews can provide enough data to reach saturation; however, I reached data saturation with 13 completed interviews as no new ideas, themes, or concepts emerged. O'Reilly and Parker (2013) described data saturation as a point when researchers do not find any newer ideas, themes, or concepts. This point demonstrated adequate and quality data existed for the study (O'Reilly & Parker, 2013).

<div align="center">

Transition and Summary

</div>

This section contained emphasis on my study's design beginning with identification of the purpose, researcher's role, and the participants. Descriptions of the research method and design, details with supplementary content about the population and sampling, ethical considerations, data collection, technique, organization, and analysis followed. Finally, I explained processes and tools for assuring the study's reliability and

validity. Section 3 contains concluding elements of the study including the presentation of findings, applications to professional practice, and implications for social change. Finally, I present recommendations for action and further research with my reflections and conclusions.

Section 3: Application to Professional Practice and Implications for Change

In Section 2, I shared a description and justification of the key study design elements. Section 3 begins with an overview of the study, then a presentation of the findings. Next is the discussion of potential applications to professional practice followed by implications for social change. Then, I offer recommendations for action and recommendations for further study. I conclude Section 3 with reflections, and a summary of conclusions.

Introduction

The purpose of this qualitative single case study was to explore ERP system CSFs and strategies U.S. city governments use to successfully implement ERP systems. I collected data using eight open-ended questions in semistructured interviews with end-users, managers, leaders, and ERP implementation professionals of the city in Bernalillo county, New Mexico. My secondary data were documentation from the organization including the ERP *Moving Forward Report and Plan* for the city, *ERP Strategic Roadmap* 2011-2015, *ERP Roadmap Update* from August 2015, *ERP Roadmap Update* from April 2016, *ERP Kick-off Announcement* from June 2012, wall posters, and bulletins from the ERP system implementation experience. I analyzed all the primary data and secondary data to identify 24 emergent themes. I grouped the 24 emergent themes into five main themes. Table 1 displays the most frequently identified themes I observed in the primary and secondary data ranked as most frequent to least frequent among the five main primary themes confirmed by the city. The five main themes were: (a) resourcing and staffing of the organization, (b) top management support, (c)

continuous communication to support concurrence, (d) change management, and (e)

motivations for ERP system implementation.

Table 1

Frequency of Themes for Critical Success Factors and Strategies of Successful U.S. City

Government ERP System Implementations

Theme	n	% frequency of occurrence
Resourcing and staffing of the organization	45	25%
Top management support	45	25%
Continuous communication to support concurrence	32	17%
Change management	32	17%
Motivations for ERP system implementation	30	16%

Note. *n* = primary and secondary data theme frequency ranked as most to least frequent

Presentation of the Findings

To address the specific business problem of some managers of city governments

in the United States lacking ERP system implementation CSFs and strategies to

successfully implement ERP systems, I sought to answer the overarching research

question: What ERP system implementation CSFs and strategies do U.S. city

governments use to successfully implement ERP systems? The purpose of this study was

to explore ERP system CSFs and strategies U.S. city governments use to successfully

implement ERP systems. I considered the specific business problem through the lens of

Goldratt's TOC, as described by Balderstone and Mabin (1998) and Johnson, Creasy, and

Fan (2016), with a five-step process that applies to all systems indicating potential

transferability to studies of other organization environments with systems and constraints.

To acquire the individuals' live experiences, on *how* and *what* contributed to the ERP

system implementation success, I conducted interviews with participants who

experienced the U.S. city government's successful ERP system implementation. The

findings revealed *what* the U.S. city government did and *how* the U.S. city government

achieved a successful ERP system implementation, which included components of the

TOC as a conceptual framework and the theory's five-step process of addressing

constraints (Rahman, 1998).

I mitigated researcher bias by linking the study's findings to existing professional

and academic literature. I also used constraint theory as my personal lens for exploring

and conducting comprehensive analyses among the multiple data sources. Case study

researcher Yin (2014) stated researchers use frameworks for relating literature, theories,

and study results to moderate researcher bias. Findings of this study were consistent with

existing professional and academic literature concerning ERP system implementations.

Using reflective journaling techniques recommended by Roulston and Shelton (2015)

helped me mitigate bias during data collection and data analysis for better understanding

interviewees' perspectives and viewpoints.

In general, ERP systems are perceived as complex and innovative technological

solutions for organizations, yet subject to fail or cause challenges if not implemented

properly (Das & Dayal, 2016; Denic et al., 2016; Rahnavard & Bozorgkhou, 2014; Totla

et al., 2016). Researchers described multiple instances of organizations experiencing ERP

system implementation failures (Amid et al., 2012; Bintoro et al., 2015; Elbanna, 2013). As a researcher, I recognized personal views and self-reflections connected to the research topic of ERP system implementations to explore successful ERP system implementations objectively. My findings are based on data collected including available professional and academic literature, neutral personal observations, interview participants' responses, and organization documentation similar to Ziemba, Obłąk, and Informatyczna's (2013) study of critical success factors for ERP systems implementation in public administration.

The purposeful sample for this single case study in Bernalillo County, New Mexico comprised 13 individuals. Organizational documentation obtained during data collection included the *ERP Moving Forward Report and Plan* for the city, *ERP Strategic Roadmap 2011-2015*, *ERP Roadmap Update* from August 2015, *ERP Roadmap Update* from April 2016, *ERP Kick-off Announcement* from June 2012, wall posters, and bulletins from the ERP system implementation experience. The *ERP Moving Forward Report and Plan* for the city contained a contracted consultant's independent assessment from conducting individual interviews, focus groups, review organization documentation, and developing courses of action for remediation and continued implementation of remaining modules for the organization. The organization ERP roadmaps contained goals, assessments and figures of implementation progress, enhancements to organization operations, timelines of past and future events, and cost comparisons of the implementation. The ERP kick-off announcement, wall posters, and bulletins provided insights into past events and current activities of the organization's projects supporting

the remediation and continuous implementation phase. I used a qualitative method and single case study design to address the overarching research question because of the limited research about successful city government ERP system implementations. My intent was to explore a successful instance using open-ended questions and in-depth interviews to obtain *rich* and *thick* data as described by Yin (2014).

Interviewees and I scheduled 1 hour long Internet-supported or face-to-face interviews at the city government's office locations in a private meeting room. Participants provided signed consent forms prior to our scheduled interviews, which I presented at the interview to remind participants' of the audio recording of the interview, and to reiterate their informed consent and options to withdraw from participation at any time. Participants who did not provide a signed consent form prior to the scheduled interview completed the form upon arrival at the scheduled interview appointment. All participants provided a response to each open-ended interview question (Appendix D). All but one interview concluded within 1 hour, and I conducted all 13 interviews within a 2-week period. Organization documentation, my secondary data, came from the city government's employees and facility common areas. I compared and contrasted the primary data from the Internet-supported and face-to-face interviews to the secondary data from the organization to observe consistencies and differences until no new themes emerged from the data. Interviewing individuals who occupied different roles during the ERP system implementation and examining organization documentation allowed for methodological triangulation of data.

This study's resultant primary themes and subthemes contributed to my intent to answer the research question: What ERP system implementation CSFs and strategies do U.S. city governments use to successfully implement ERP systems? Related to the intent of my overarching research question, I intended to explore connections between a successful U.S. city government ERP system implementation and Goldratt's TOC. I generated two categories of themes: primary and subthemes. Definitive themes were primary themes as patterns of code indicated the majority of respondents provided similar responses to the study's eight interview questions from Appendix D. Cleary et al. (2014) posited qualitative researchers should ensure representation of the majority of participants; however, the collection of primary and subthemes represents data from all 13 participants. Subthemes reflected coding from participants' responses that were relative to each of the related primary themes.

After collection and analysis of data from interviews and organization documentation, 24 themes emerged. These 24 themes were divided into five primary themes. The five primary themes are: (a) resourcing and staffing of the organization, (b) top management support, (c) continuous communication to support concurrence, (d) change management, and (e) motivations for ERP system implementation.

The first primary theme related to resourcing and staffing of the organization in preparation for and during an ERP system implementation. Subthemes of this primary theme included skillset matching and project management. The second primary theme related to top management support and included subthemes of consultant and vendor selection and support, strategy, and the steering committee. The third primary theme

related to communication and included the subthemes of transparency and feedback. The fourth primary theme related to change management including subthemes of knowledge transfer, user resistance, and organization culture. The fifth and final theme related to motivations for ERP system implementation. This fifth theme had the most subthemes, including governance and structure, accountability, integrating systems and moving systems, sustainability, investment cost and savings, remediation and continuous implementation, efficiencies, ROI, customization, and ERP system trends.

Relevance and Linkages to Conceptual Framework

The conceptual framework in this study was Goldratt's theory of constraints (TOC), also recognized as constraint theory according to Goldratt (1988) and Rahman (1998). After verifying the TOC's relevance, I employed the theory to explore and execute a comprehensive analysis using multiple data sources to discover what ERP system implementation CSFs and strategies city governments use to successfully implement ERP systems. A qualitative single case study functioned as an effective means to ask *how* and *what* multiple end-users, managers, and leaders witnessed and experienced during a city government's successful ERP system implementation.

Theory of Constraints. The TOC provided theoretical support of this study because researchers such as Balderstone and Mabin (1998), and Şimşit, Günay, and Vayvay (2015) viewed the TOC as a systems management philosophy applicable to every system, presumably including ERP systems. Researchers Coman and Ronen (1994) posited the TOC as a global managerial methodology for managers to focus on most critical factors, making the TOC appropriate for my efforts to explore the research

question: What ERP system implementation CSFs and strategies do U.S. city governments use to successfully implement ERP systems? In TOC, a system must have one or more constraints, also recognized as *improvement opportunities* (Rahman, 1998). Review of the professional and academic literature verified ERP system implementations include numerous constraints, and the government organization in this study experienced constraints and improvement opportunities during implementation.

Emergent Theme 1: Resourcing and Staffing

Concerning the first primary theme of resourcing and staffing of the organization in preparation for and during an ERP system implementation, the city government organization experienced constraints in resources—primarily funding and skilled personnel—and project management. A majority of interview participants reported insufficient funding and staff for the initial implementation of the ERP system, all personnel lacking any experience with the PeopleSoft system, and an absence of adequate project management practices or stable project management position occupancy.

In comparing this theme and its subthemes to the peer-reviewed studies, the themes are confirmed existing CSFs and strategies of ERP system implementations. Multiple researchers noted the significant contribution of effective project management (Almajed & Mayhew, 2013; Seth et al., 2015; Ram et al., 2013c). In Garg and Garg's (2013) empirical study, a shortage of project management skills was an issue related to implementation failure, while Ghosh and Biswas' (2017) study's findings on key issues of successful ERP systems indicated the skills of project managers and efficient project management had crucial effects on ERP system success.

Regarding resources, city participants confirmed Saini et al.'s (2013) general rule to maintain a flexible budget policy for contingencies beyond ERP system implementation. The city participants remarked of both the ERP system implementation remediation and continuous implementation the city government organization started after the initial implementation of two modules, which were examples requiring flexible budget policy. Hasibuan and Dantes (2012) argued that a project budget can have up to a 31.5% contribution toward ERP system implementation success. Concerning the organization's staff experience, Dorobăţ and Năstase (2012) indicated training programs can require up to 20% of an organization's personnel and 20% of an ERP system implementation budget. Sykes, Venkatesh, and Johnson (2014) noted insufficient knowledge bases in organizations implementing an enterprise system are a challenge both during and after implementation. Kumar (2015) studied ERP system planning and concluded the most critical components of success included establishing and supporting a group of business and functional specialists for the ERP – a CSF the study's organization incorporated. Adding to Kumar's (2015) argument, Denic et al. (2016) referred to the importance of having a sufficient number of knowledgeable people for implementing an ERP project. Otherwise employee work days can exceed 12 hours, which was similar to those daily work hours reported by participants of the city. The SMEs studied by Venkatraman and Fahd (2016) experienced constraints of their recruiting and their ability to retain skilled resources, as well as extending employee workloads 50% or more. Pecherskayaa et al.'s (2016) study results of CSFs indicated experienced and skilled personnel with available expertise applied to the project to be the among the highest of

CSFs. The city study results mirrored each of these three factors in Pecherskayaa et al.'s

quantitative study's results.

As viewed from the perspective of the TOC, the theme of resourcing and staffing

and subthemes were constraints of the organization's initial ERP system implementation.

With those constraints identified, the organization proceeded to steps two through four of

the TOC process by deciding how to address the system's constraints by subordinating all

other constraints to the decision and elevating the system's constraints (Rahman, 1998;

Şimşit et al., 2015). Similar to the public sector organization of Scheckenbach et al's

(2014) case study, the city government's implementation did not begin with all project

members dedicated full-time resulting in constraints and barriers to success. Ravasan and

Mansouri (2014) described an imbalanced team and lack of appropriate full time team

members as a failure factor to ERP system implementations. However, the city

government altered team member composition and solidified full-time staffing to achieve

success. The majority of interview participants indicated the ERP system remediation and

continuous implementation phase resulted in greater resourcing and staffing including

certified project management professionals and project managers applying their resource

practices to current ERP projects. The city organization learned the value of

understanding resource availability among departments so managers and key users could

make informed assessments and the best decisions, a noted recommendation in Yeh and

Xu's (2013) study of critical success strategies for enterprise resource planning projects.

Perhaps best summarized, Ahmadi et al. (2015) asserted ERP projects with available

resources progress without problems and any problems that do arise reach relatively rapid

resolution through management support.

Emergent Theme 2: Top Management Support

The second primary theme, and improvement opportunity if viewed through a lens of the TOC, related to top management support and included subthemes of consultant and vendor selection and support, strategy, and the steering committee. According to most participants, top management support included chief executives, directors, the ERP system project sponsors, the steering committee, and the city's mayor. Participants described top management support similar to researchers of recent studies including Altamony et al.'s (2016) identification of top management support as among the five main categories of ERP system CSFs and Abu-Shanab et al.'s (2015) study of top KSFs among CSFs. The participants' discussions of the significance of top management support serving as both a failure factor and success factor dependent on the existence or absence of top management support confirmed the existing literature's discussions on ERP system CSFs and strategies. This participant observation aligned with Young and Poon's (2013) information systems project research indicating top management support as nearly always necessary for project success and Li et al.'s (2017) study where top management support appeared the most popular CSF in each ERP system implementation phase.

Concerning the subthemes of consultant and vendor selection and support, strategy, and the steering committee, participants remarked of the spectrum of vendor and consultant support during the implementation and remediation phases as well as the existence of technical strategy, but doubt on the existence of an overarching top

management level strategy – both likely the TOC related constraints and improvement opportunities of the ERP system implementation. Hasibuan and Dantes (2012) categorized vendor relationships as nontechnical KSFs of ERP system implementation, while Rockart (1978) viewed vendor relationships as a CSF involving attention from leadership and management to achieve organization success. Noteworthy for this combination of primary theme and subthemes, Almahamid and Awsi (2015) indicated top management did not influence perceived ERP benefits, but vendor support did have a significant positive impact. Schniederjans and Yadav (2013) concluded trust in the ERP system community members contributed to success, an attribute confirmed in participants' recollection of initial implementation. Kumar (2015) studied ERP system planning and argued the most critical components of success included a strategy for success. Srivastava and Misra (2014) confirmed strategy clarity as a CSF to ERP system implementation. The steering committee consisted of stakeholders with various expectations and fluctuating interest levels contributing to challenges of the ERP system implementation according to participants. This participant observation confirmed the CSF status of expectations from steering committee members. Amini and Sadat Safavi's (2013) study of CSFs included attention to expectations during ERP system implementations while Chockalingam and Ramayah (2013) noted unrealistic expectations can be impediments to ERP system implementation success.

As viewed through the lens of the TOC, the theme of top management support and subthemes of consultant and vendor selection and support, strategy, and steering committee, were also constraints of the organization's initial ERP system

implementation. Using the TOC as a lens, the constraints were also improvement

opportunities. During the ERP system implementation multiple top management support

related position occupants changed. According to participants, most changes resulted in

improvements for the progress of the ERP system implementation. Changes in and

support from consultants and vendors also resulted in improvements in some areas as

discussed by participants, and documented by contracted consultants who produced

assessments of the organization's success and recommended future courses of action.

Those future courses of action translated into strategy for the organization's continued

remediation and implementation success. Participants remarked on the growth in the

organization's consultant and vendor network, positive recognition from the community,

and decreasing reliance on full time external support. Tying this theme and subthemes to

Goldratt's theory indicates the organization successfully progressed through all five

process steps as the organization is now in a phase of continuous implementation and

remediation with participant reports of adequate top management support and strategy,

significantly less reliance on consultants and vendors, and dissolution of the steering

committee.

Emergent Theme 3: Communication and Concurring

The third primary theme related to communication contained subthemes of

transparency and feedback. Again, these themes were improvement opportunities during

the city government's ERP system implementation. Participants repeatedly shared

memories of unsatisfactory and satisfactory communication and efforts to reach

consensus. Likewise, the criticality of transparency and feedback appeared in interviews

as increasingly positive and advantageous attributes to the ERP system implementation. Concerning communication, researchers Soltan et al. (2015) studied technological factors and included ERP communication as one of four CSFs explaining the frequency of participant reference when interviewed about CSFs and strategies of their ERP system implementation success. Norton et al. (2013) contributed to knowledge of ERP CSFs through arguing for communication plans to achieve ERP system implementation success. Venkatraman and Fahd (2016) posited communication problems in SMEs can plague an entire ERP system implementation making poor communication a cause of unsuccessful implementations.

Participants shared two views of the subtheme of transparency found in the literature. One view was found in AlQashami and Mohammad's (2015) study concerning the transparency found in ERP systems providing integrated business operations, improving business processes and internal efficiency, reducing overhead costs, and enhancing decision-making processes. A second interpretation of transparency reflects in Alghalith's (2012) conclusions supporting the need for employees to develop clear understanding of ERP system processes and horizontal integration as a remedy to resistance to change. A participant noted the lack of transparency by another organization when that organization implemented a module without notification to users. The city practices of transparency and beneficial communications include bulletins, newsletters, and other literature supporting customers' positive feedback and success. Relative to the transparency and feedback subthemes, Lech (2013) noted client satisfaction as a common IT project success criterion reflecting subjective expectations that are not always

transparent in project measures or expectations. Also, transparency facilitates capturing expectations for ERP systems and aids organizations and vendors in contractual ways to avoid uncontrollable growth of projects while satisfying feedback (Amini & Sadat Safavi, 2013; Asgar & King, 2016; Williams et al., 2013).

The primary theme related to communication and concurring with subthemes of transparency and feedback were improvement opportunities during the U.S. city government's ERP system implementation. Participants reported years of challenges with staffing a change management group to support adequate communications and opportunities to achieve concurrence and transparency with stakeholders. While transparency efforts remained consistent from the initial implementation, positive feedback is a newer occurrence in the history of the ERP system implementation.

Viewing the themes of communication, transparency, and feedback through a lens of the TOC, the organization has experienced multiple iterations of all five steps of the continuous cycle as communication is a continuous effort during the organization's remediation and continuous implementation period. Furthermore, transparency of remediation efforts to stakeholders within and outside the organization and addressing feedback must be continuous. While participants reported that steering committee meetings no longer take place, there are now stand up meetings, burn down lists, production support meetings, and improved ways to address user submitted production support tickets. One participant shared the comfort level in communicating and exchanging feedback with a technical person now compared to prior years conveying the successful path of the city's implementation communication, transparency, and feedback.

Emergent Theme 4: Change Management

The fourth primary theme related to change management including subthemes of knowledge transfer, user resistance, and organization culture. Participants referenced multiple constraints in the city's effort to maintain a change management staff at adequate or minimal levels. References extended to the subthemes of knowledge transfer, user resistance, and organization culture. At some points in the city's ERP system implementation history, personnel for change management did not exist, were fired and rehired, or the change management organization was represented by a single person supporting more than 6,500 city employees. A lack of consistent and sufficient change management personnel has been an enduring constraint for the city and a constraint among efforts to achieve maximum knowledge transfer, combat user resistance, and facilitate organization culture adaptation. The city's experience with change management confirms the literature findings. Altamony et al. (2016) identified change management as one of the five main categories of ERP system CSFs while Totla et al.'s (2016) insights of CSFs for ERP models included change management as one of the most difficult challenges to successful ERP system implementation. Researchers Seth et al. (2015) claimed change management was a CSF of ERP systems. Yeh and Xu (2013) described an effective change management plan, reviewed throughout an ERP system implementations, as a critical success strategy.

The city's subthemes of knowledge transfer, user resistance, and organization culture confirmed CSFs and strategies of ERP system implementation among the reviewed literature. For instance, Maditinos et al. (2012) found knowledge transfer an

attribute of ERP system implementation success organizations should seek to model in ERP system implementations. Multiple researchers argued knowledge management is a CSF and KSF for ERP system implementations (Azhdari et al., 2012; Hasibuan & Dantes, 2012). Norton (2015) and Abbasi et al. (2015) also agreed knowledge management was a CSF to ERP system implementations. The city participants reported using a train the trainer approach found in the work of Ansen (2014), Banerjee and Parmar (2013), and Stanciu and Tinca (2013). Azhdari et al. (2012) posited nontechnical aspects of knowledge management included culture, behavior, and strategy while Totla et al. (2016) referenced normal tendencies for humans to resist change in activities. In general, culture factors proved important to ERP system implementation success according to Chiang (2013) and Mathias et al. (2014).

If viewed through a lens of the TOC, the theme of change management and subthemes of knowledge transfer, user resistance, and organization culture, appear to be constraints of the organization's initial ERP system implementation. A complete absence of change management, a confirmed CSF, and strategy for successful ERP system implementations, would present a constraint or improvement opportunity according to Goldratt's (1988) TOC. The city demonstrated at least one iteration of the five steps to the TOC by identifying the system's constraint in lacking change management, then deciding to address the system's constraint before subordinating everything else to the previous decision. Then, the city elevated the system's constraint and may be in step five to determine if the constraint is sufficiently resolved to return to step one. Rahman (1998) and Şimşit et al. (2014) described elevation of the constraint as step four in the TOC.

Other perspectives can support an argument of the city's having gone through all five steps multiple times due to the existence of a change management staff and elimination of the same support. Through experiences with consultants and vendors, participants reported greater attention to sufficient knowledge transfer as the implementation progressed and the organization identified areas for improvement. As noted from the interviews, knowledge extends to techniques to train users including accommodating those with unique schedules and department budget constraints. A train the trainer approach was confirmed, as found in Ansen's (2014) study. Reported by participants in this single case and the literature, user resistance persists during ERP system implementations for various reasons and the current existence of an organization readiness manager is an effort to address the constraint. The culture of an organization is a human system according to Stacey (2013) while Scheckenbach et al. (2014) referred to organizational culture as wide, deep ingrained patterns of behavior. In the city's case, the organization's culture was addressed by the TOC steps through the change management personnel and techniques to facilitate organization culture change like communication, collaboration with vendors, in-house governance, and training, newsletters, all of which are reportedly ongoing and beneficial efforts.

Emergent Theme 5: Motivations for ERP System Implementation

The fifth and final theme related to motivations for ERP system implementation and consisted of the most subthemes: governance and structure, accountability, integrating systems and moving systems, sustainability, investment cost and savings, remediation and continuous implementation, efficiencies, ROI, customization, and ERP

system trends. As reported by participants, the city's ERP system implementation experience confirmed multiple motivations for ERP system implementation within the existing literature. For instance, participants reported political change and directives as pressures causing the organization's implementation alongside reasons of sustainable functionality, both pressures listed within Pishdad and Haiden's (2013) antecedent pressures that caused organizations to change technologically. Participants also described the ERP system's implementation as addressing a strategy for addressing a goal of moving from isolated groups of systems and mainframe supported systems, to make the ERP system a holistic organization solution, a scenario noted by multiple researchers of U.S. government organizations (e.g., DioGuardi, 2014; Frontz, 2012; Hwang & Grant, 2014; Kelemen, 2014; Murrin & Reger, 2013). Multiple participants confirmed the organization's intent to achieve efficiencies, useful and accurate data, and improve response time and availability through replacement of legacy systems with an ERP system, as found in Ahmad and Mehmood's (2016) quantitative study. This overarching theme and confirmations of the literature extend to the subthemes.

Regarding subthemes, participants identified several motivations for implementing the ERP system. Motivations included governance and structure, accountability, integrating systems and moving systems, sustainability, investment cost and savings, remediation and continuous implementation, efficiencies, ROI, customization, and ERP system trends. Participants elaborated on governance and structure of business processes desired and achieved from the ERP system. Rather than procuring an item independent from the organization and locating a source of payment

later, offices abide by workflows and segregation of duties for procurement approval and

a permissions structure. The value desired, and reportedly added, in governance and

structure from ERP system implementation mirrors what Iizuka et al. (2014) described as

gains in value from ERP systems through new business processes. Simatupang, et al.

(2016) posited successful ERP projects require change in the technical, process, and

organization structures. Linking governance and structure to another subtheme of

accountability, participants reported individual office benefits like internal controls to

prevent employees from purchasing unauthorized equipment. The city's ERP system's

implementation reportedly helped provide internal control features of risk control and

fraud detection as noted by Weng and Liu (2013). Participants mentioned accountability

as a source of motivation for the ERP system implementation because of the desired

result to use an integrated system for what Zach et al. (2014) argued as a shortcoming of

legacy systems - accurate data in a real-time manner for performance assessment and

subsequent decision-making. From other participants' perspectives, accountability to

constituents and stakeholders motivated the ERP system implementation and remediation

as provided in Badewi and Shehab's (2016) ideas about project managers and project

accountability. When asked about main reasons and motivations for the ERP system

implementation, participants referred to the goal of integrating systems and moving

systems for purposes of sustainability. Both the human resource and financial legacy

systems were 20 to 30 years old, and dwindling support sources and resources to continue

support created risk to the organization. One system experienced failures, and some

participants believed the next failure could have been the final. Participants also

expressed the desire for integrated information benefits, which confirmed attractive

attributes Zach et al. (2014) shared of ERP systems and AlQashami and Mohammad's

(2015) study of HEI motivations for ERP system implementations.

Concerning sustainability, participants confirmed concerns existed regarding the

costs to sustain the city's legacy systems, if sustainment were an option, and costs of

sustainment would exceed sustainment costs of an ERP system. This view of

unsustainable legacy systems reflected Agrawal et al.'s (2015) estimate of Legacy

systems costing some organization 70% of IT budgets. The concern shown for

sustainment also confirmed Frazee and Khan's (2014) research on increasing attention on

corporate growth and sustainability causing organizations to implement ERP systems.

Likewise as to sustainability, participants noted the appearance of high investment costs

and savings from the ERP system implementation. As civil servants, the participants

conveyed the savings achieved from the investment as motivations for implementing the

ERP system. Das and Dayal (2016) posited the ability to achieve cost savings based on

type of ERP system while Chockalingam and Ramayah (2013) noted high costs of ERP

system implementation caused some sectors of Indian industry to avoid ERP systems.

Like Akça et al.'s (2013) study, the city's experienced gains from ERP systems included

lower costs of operations and improved resource management leading to better financial

performance. In support of Stanciu and Tinca's (2013) findings the city also experienced

resource optimization contributing to financial benefits and increases in reputation and

trust among stakeholders. Finally, participants confirmed gains in value from their ERP

system in the form of new more efficient business processes as described by Iizuka et al.

(2014).

The city's initial success was motivation for remediation and continuous implementation of new modules according to participants. Participants described the remediation efforts as a review of the initial implementation and assessment to determine required changes and enhancements. While the literature did not contain explicit use of the word *remediation,* it could be argued some researchers' (e.g., Bloch, Blumberg, & Laartz, 2012; Kanellou & Spathis, 2013; Mathias et al., 2014) findings of delays, resource overruns, and insufficient value in IT projects captured instances of remediation to complete or enhance projects. Similar to participants' descriptions of remediation and continuous implementations, Ha and Ahn's (2014) work spanned ERP system implementation, and postimplementation, including continuous process improvement and continuous system integration – both attributes participants described as part of remediation and continuous implementation efforts. The idea and practice of continuous improvement also aligns with the TOC (Rahman, 1998; Şimşit et al., 2014). Participants mentioned the need for continuous system upgrades for success with ERP system implementation and development of best practices found in Pishdad and Haiden's (2013) work. Thus, the city's experience with remediation and continuous implementation confirms and extends the authors' findings.

Finally, subthemes of efficiencies, ROI, customization, and ERP system trends reported by the participants appeared as motivators for implementing the city's ERP system. City management and leadership sought efficiencies according to participants. One repeated example was the production of a timely, rather than late, comprehensive

annual financial report (CAFR). After the initial implementation, the CAFR ended

multiple years of consistent lateness. This experience confirmed Weng and Liu's (2013)

posited benefits of efficiencies from ERP systems and Nazemi et al.'s (2012) findings of

ERP system operational efficiency gains and value creation. Beyond this single city

report, participants remarked of users reporting daily task efficiencies, which combine to

form what Ahmad and Mehmood (2016) quantitatively determined as organization level

efficiencies, and improved response time and availability of information. Finally, internal

efficiencies from integrated workflows reported by participants confirmed AlQashami

and Mohammad's (2015) HEI motivations of improving business processes and internal

efficiency from ERP systems.

As a government organization, the city's participants reported multiple forms of

intangible ROI from the initial and remediation budget investment in the ERP system.

For instance, participants confirmed achieving improved productivity, an intangible ERP

system benefit observed in works by Bazhair and Sandhu (2015) and Kuo (2014). Akça

et al. (2013) concluded software systems enabled automatization throughout

organizations by integration of data, processes, and distribution points – another ROI of

the city's ERP implementation as reported by participants. Participants noted ERP system

operations increased enterprise receipts, similar to profits, while nonfinancial returns

included customer satisfaction, quality, and user satisfaction as found by previous authors

(e.g., Amini & Sadat Safavi, 2013; Galy & Sauceda, 2014; Kanellou & Spathis, 2013).

Participants' reflections of attitude towards customization in the initial

implementation confirmed concerns about customization investments in ERP systems

captured by Frazee and Khan (2012). Participants reported a strong aversion to customizations based on advice from other organizations, which confirmed Rabaa'i and AlJamal (2015) advice for organizations to avoid customization and Maditinos et al.'s (2012) argument that most enterprises do not fully justify investing in customized ERP software. Participants seemed to confirm what researchers Khan and Frazee (2014) concluded about ERP implementation customization as an option for organizations, but a costly alternative. However, participants reported attitudes toward customization after the initial implementation changed. Participants indicated customizations as an acceptable solution depending on the situation, thereby confirming Zach and Munkvold's (2012) conclusions that customization of ERP systems and ERP components is a means for increasing user satisfaction. Appreciation and consideration for customizations appeared in a participant's response about incorporating minor customizations, but knowing the best system was not selected if customizations modified the system beyond recognition. Participants seemed to agree with Chou et al.'s (2013) findings that extensive adaptation of ERP software was unsuitable and infeasible relating less customization to higher likelihood of ERP system success.

ERP system trends seemed to be a motivation for implementing the city's ERP system. Participants cited the few ERP system vendors in the market and Oracle's acquisition of PeopleSoft shortly after the city purchased the PeopleSoft system for implementation. These attestations confirmed Tobie et al.'s (2016) observation that SAP, Oracle, and Microsoft appeared to dominate the SME market. Participants also referred to efforts to modernize and bring the city into the future with an ERP system, a confirmed

trend noted among multiple researchers concerning U.S. government organizations and

strategic organization solutions (e.g., DioGuardi, 2014; Frontz, 2012; Hwang & Grant,

2014; Kelemen, 2014; Murrin & Reger, 2013). Similar to findings of Khan and Frazee

(2014), ERP system implementation was part of the larger IT strategy of the city

regarding legacy system replacement and integration of operations. Participants shared

how the city considered multiple ERP system options, including market research of

neighboring organizations' experiences with ERP systems. The city's ERP system

implementation decision supported the ERP trend subtheme and confirmed AlQashami

and Mohammad's (2015) argument that global and government trends have affected rates

of HEI sector and government sector adoptions of ERP systems.

The theme of motivations for ERP system implementation and subthemes of

governance and structure, accountability, integrating systems and moving systems,

sustainability, investment cost and savings, remediation and continuous implementation,

efficiencies, ROI, customization, and ERP system trends tie to the TOC as constraints or

improvement opportunities in the Goldratt's (1988) theory. Within the context of the

TOC, each subtheme is a constraint to the city implementing the ERP system. The city's

mainframe supported systems with questionable sources of support were an obvious

constraint while lesser constraints included governance and structure, accountability, and

determining the best ERP system for the organization. Additional participant reported

improvement opportunities and motivations for implementation on ERP system included

achieving efficiencies, ROI, savings from investment costs, and appropriate

customizations. According to manager participants, the entire TOC five-step process is

experienced in remediation and continuous implementation as the city is identifying

system constraints through testing and feedback with each project remediation and

implementation (Rahman, 1998; Şimşit et al., 2015). Participants reported decisions of

how to address the system's constraints with existing resources, and subordinating

everything else to the above decision through in-house staff or consultant support. Next,

the city ERP team elevates the system constraints before determining if a constraint is

resolved or requires further resolution efforts. The five step process indicates a

continuous improvement cycle, and participants remarked of how something is always

causing a production support ticket so a constraint with the ERP system or a module will

always exist resulting in management and leadership's three decisions: 1) decide what to

change, 2) decide what to change to, and 3) decide how to cause the change (Rahman,

1998; Şimşit et al., 2015). In alignment with the TOC, managers and leaders exercised

these decisions when joining the ERP trend, influencing governance and structure

throughout the city, incorporating accountability, integrating systems and moving

systems, determining a sustainable solution for the city's IT, and achieving savings from

investment costs for the ERP system. Managers and leaders have used two measurements

of global (financial) and operational means to guide further actions, like remediation and

continuous implementation (Rahman, 1998). Participants reported the mayor's success

criteria were met and customers became increasingly satisfied with the ERP system

resulting in efficiencies, ROI, and savings.

Applications to Professional Practice

Organizations implement ERP systems for multiple reasons including internal and external reasons and tangible and intangible reasons (Abdinnour & Saeed, 2015; Bazhair & Sandhu, 2015; Somers & Nelson, 2004; Upadhyay, 2013). ERP systems can serve as strategic methods to achieve profit or provide value (Sarker et al., 2012; Sundtoft Hald & Mouritsen, 2013). ERP system implementation can provide capabilities and solutions for organizations (Abdinnour & Saeed, 2015). Despite the reasons for ERP system implementation and benefits of ERP systems, Dey et al. (2013) reported most organizations continue to fail at achieving successful ERP system implementations. The findings of this study contain multiple CSFs and strategies of ERP system implementation at a U.S. city government organization. Business leaders and managers seeking successful ERP system implementations can use these CSFs and strategies to address potential sources of failure and achieve successful ERP system implementations.

I expect the study contributed to filling gaps in the scant public sector ERP system implementation research for professional practitioner observation and application. I anticipate this study will specifically benefit U.S. government organizations as I explored CSFs and strategies a U.S. city government used to successfully implement an ERP system. The results of this study add to the available knowledge concerning ERP system implementation CSFs and strategies and could provide information to help reduce resource waste and allow organizations to allocate additional resources to corporate social responsibility objectives. Organizational leaders and managers can glean multiple CSFs and strategies from the five main themes and related subthemes of the single case

study, which served to confirm expected and existing themes in the professional and academic literature reviewed.

The single case study analysis includes individuals' experiences with successfully implementing an ERP system that could contribute to leaders and managers identifying efficacious business practices and public sector practices. For instance, resourcing and staffing of the organization in preparation for and during an ERP system implementation is an area leaders and managers can directly influence. Participants also confirmed providing adequate and consistent top management support and communications were CSFs and strategies in the city's ERP system implementation. Top management support includes leaders and managers developing and deploying efficacious communication strategies for achieving a commonality of understanding and for catalyzing employees' support. Finally, change management and providing motivations for ERP system implementation are CSFs and strategic areas of attention leaders and managers can actively engage for beneficial ERP system implementation results regardless of public sector or private sector organization status.

Implications for Social Change

With a continuous government mantra to *do more with less*, government managers are stewards of taxpayer funds desiring ERP system implementations with minimal issues (Cook, 2013; Dennis & Walcott, 2014). Complex, constraint-filled ERP system implementations include end-users, multiple levels of management and leaders, project team members, vendors, consultants, employees, and even entire countries (Ansen, 2014; Bintoro et al., 2015). Constituents, stakeholders, and shareholders of

government organizations and private sector organizations seek evidence of successful

changes in their services and goods providers with minimal issues. The ways

organizations serve and interact with constituents and stakeholders could affect beneficial

social change among individuals, businesses, and other organizations through greater

transparency, trust, and enhanced timely data availability and accuracy supported by

successful ERP system implementations. Given the potential reach of an ERP system

implementation impact, Ahmad and Mehmood's (2015) focus on sustainability and the

triple bottom line included advice to organizations to carefully consider ERP system

implementations and upgrades. The CSFs and strategies from this study could benefit

society and public sector organizations as this successful ERP system implementation

exhibited fiscal stewardship of resources, efficiency gains, and fiscally sustainable

operations supporting constituents and gaining public confidence. This demonstration

aligns with increasing attention on combining corporate growth and sustainability studied

in Frazee and Khan's (2012, 2014) case studies.

This study's finding could catalyze beneficial social change among end-users,

managers, leaders, and vendors of organizations to identify, maximize, and utilize CSFs

and strategy lessons learned from this study for smoother implementations. These groups

can review and implement CSFs and strategies for improved technology adoption,

organizational morale during and after implementation, and greater knowledge

management to improve public opinions and address executives' concerns about ERP

system value and risks. Executives' fears are not isolated instances or unfounded as Ali

and Cullinane (2014) posited SMEs have higher potential for bankruptcy from failed ERP

system implementations, Kharuddin et al. (2015) suggested low rates of ERP system

adoption because of fear of failure, and Yaghubi and Modiri (2014) argued organization

leaders think ERP system implementations could harm their organizations. Other

organizations could consider the findings useful for implementing an ERP system to

efficiently collaborate and provide quality goods and services to their respective

communities, and maximize services to community members. Given the complexity of an

ERP system implementation, managers can effect beneficial social change by addressing

multiple constraints during system implementation management and continuous

improvement endeavors that benefit the public by increasing services to constituents, ROI

for investors, and through increasing the efficiency and effectiveness of organizational

personnel.

<div align="center">**Recommendations for Action**</div>

Through application of ERP system implementation CSFs and strategies, public

and private organization managers, leaders, and vendors can effectively address the

challenges of ERP system implementations and achieve success to provide quality

services and goods for constituents and consumers. It is recommended organization

managers, leaders, and vendors study and apply the CSFs and strategies within this

study's findings to increase chances of ERP system implementation success and

achievement of benefits described by AlQashami and Mohammad (2015) including

increased integration of business operations, improved market competitiveness, improved

business processes and internal efficiencies, reduced overhead costs, and enhanced

decision-making processes. Additionally, managers, leaders, and vendors should revisit

reasons for resistance to implementing an ERP system including researchers (e.g., Ali & Cullinane, 2014; Kharuddin et al., 2015) noted high risks, fear of failures, and investment costs as this study's findings provide CSFs and strategies to address these constraints and barriers as viewed through a lens of the TOC.

Since the public sector is an emerging ERP system market, this study's results indicate CSFs and strategies managers, leaders, and vendors should understand as being potentially valuable to incorporate in a current or future ERP system implementation. Because of researchers' findings that international ERP project failures and projects are failing to meet expectations postimplementation (e.g., Abdelmoniem, 2016; Umar et al., 2016), it is further recommended international city managers, leaders, and vendors review and address the reported CSFs and strategies in the U.S. city government's ERP system implementation.

Understanding the results of this study can benefit managers, leaders, and vendors by revealing some of the CSFs and strategies U.S. city governments use to successfully implement an ERP system. However, potential beenefits of the study extend beyond governments. The study's findings could also benefit the private sector organizations and public organizations currently implementing an ERP system, or those who have recently implemented an ERP system, to explore ways to remediate, enhance, or continue ERP systems' successful implementation.

Disseminating findings from this study to federal, state, and local government publications via academic journals, trade journals, professional conferences, and magazines could extend potential benefits from this study. Through conference

presentations and publishing in journals, I will share the study findings with (a) ERP

system professionals, (b) ERP system vendors and consultants, (c) program managers and

project managers, and (d) ERP users of public sector ERP systems.

Recommendations for Further Research

Given the scant research of federal government ERP system implementations and

continuous cost and schedule overruns noted by Rosa et al. (2013), I recommend further

study using qualitative, quantitative, and mixed methodologies. Alves and Matos (2012)

shared observations of the public sector, including governments, as an emerging ERP

system market while Denic et al. (2016) identified small and medium sized organizations

as sources of largest ERP market growth. Studies of local, state, and federal government

ERP system implementations would provide additional information for improved

business practices similar to the outcomes of this study's results. For instance, Rosa et al.

(2013) studied 20 programs of the federal government, but more programs are available

for study, and beyond the data collection period of 2006-2010. Jamil and Qayyum's

(2015) study of Pakistan's enterprises with data from 80% private and 20% public

organizations conveys the low rate of information about ERP system implementation in

public organizations. Furthermore, Ifinedo and Olsen (2015) explicitly recommended

future research of public sector organizations' ERP system success.

To address limitations identified in Section 1, additional studies could include

different conceptual frameworks and designs than this study's TOC framework and

single case study design. Alternatively, using the same TOC framework Johnson et al.

(2016) claimed has not been used much in the last 15 years, and a multiple case study on

federal government organizations could increase what limited generalizability exists in single case studies (Shatat & Dana, 2016).

Other recommendations for further study supportive of improved business practices include Alturkistani et al.'s (2015) study findings, which support developing a new ERP system implementation methodology to address high failure rates. In Alturkistani et al.'s (2015) study, a Lean-based framework for ERP implementation emerged as a possible solution for increased success rates and mitigation of failure points. Misita, Lapcevic, Tadic, Milanovic, and Borota-Tisma (2016) also introduced a new model of ERP implementation planning process for manufacturing enterprises after assessing sources of risk. Real examples of these ERP system methodologies and other methods should be studied to confirm existing, and discover new, solutions for success and mitigation of failure in ERP system implementations. Similarly, Abdelmoniem (2016) remarked of the growing area of interest in ERP project recovery for troubled ERP system implementations. Abdelmoniem (2016) indicated the project recovery skillset could rival the project management skillset due to accelerated ERP system failures. However, more research is required to determine root causes of ERP system failure before recovering these multi-million dollar projects that Yaghubi and Modiri (2014) argued organization leaders think could harm their businesses. Jamil and Qayyum (2015) stated no one has been successful defining one perfect set of rules for ERP system implementation and Misita et al. (2016) remarked of the much higher frequency of research on CSFs by successful ERP system implementation than research on risk

sources, which seems supportive of my recommendation to address new implementation methods and for research on ERP system failure points.

Reflections

Through the research endeavor, I reached end-users, managers, and leaders of the ERP system implementation at a U.S. city government organization. During this research, I did not have influence over any of the volunteer participants. Using multiple forms of data collection described by Ponterotto (2014) enabled me to gather information U.S. city governments use for successful ERP system implementation. Leveraging the qualitative research method in this study enabled participants to exchange *rich* and *thick* data during in-person interviews where I could control my preconceptions and bias of the complex and challenging process of ERP system implementations from the research process.

Before collecting study data, my experiences with ERP system implementations, and employment with multiple government organizations provided me with predetermined concepts concerning the complexities and challenges of multiple ERP system implementations. I believed the type and vendor of ERP system had significant influence on an organization's success. As my study progressed, the data revealed findings dissimilar to my experiences as a federal government employee.

Through completing this study, I identified differences and similarities with participants' personal experiences concerning the U.S. city government organization's ERP system implementation. Ideas revealed during the study influenced me to alter my views and positions about ERP system implementations in government organizations. Findings from this study afforded me more information about the experiences of end-

users, managers, leaders, and vendors during U.S. city government ERP system implementations. Finally, completing this study enabled me to contribute to the emerging public sector ERP system market and understanding of constraint theory by applying a lens of the TOC to understand the data and U.S. city government employees' varied experiences.

Conclusions

Identification and understanding ERP system implementation CSFs and strategies is valuable for organizations' success and sustainability. This single case study purpose was to explore the research question: What ERP system implementation CSFs and strategies do U.S. city governments use to successfully implement ERP systems? City government employees provided primary data and organization documentation served as secondary data.

Following data collection and data analysis, five primary themes emerged from the data. While the primary themes were common among the literature, the findings supported the conclusions that organizations pursing an ERP system implementation must consider (a) sufficiently resourcing and staffing the project, (b) providing appropriate and consistent top management support, (c) continuous communication supportive of concurrence, (d) adequate and continual change management support, and (e) consideration of motivations for ERP system implementation to achieve a successful ERP system implementation.

Reviewing the findings of this study indicates users, managers, leaders, and vendors must grasp the complex and challenging ERP system implementation process

including both technical and people components. Success in ERP system implementation

results from a combination of CSFs and strategies requiring the integration of strategy,

processes and tools for the design, development, deployment, and continuing

improvement and control of efficacious ERP systems.

References

Abbas, S. (2015). Factors affecting ERP implementation success in banking sector of

Pakistan. *International Review of Basic and Applied Sciences, 3*, 79-90. Retrieved

from http://irbas.academyirmbr.com/journalmain.php

Abbasi, M. S., Tarhini, A., Hassouna, M., & Shah, F. (2015). Social, organizational,

demography and individuals' technology acceptance behavior: A conceptual

model. *European Scientific Journal, 11*(9), 48-76. Retrieved from

http://eujournal.org/

Abdelmoniem, E. M. (2016). The critical success factors and the effect of ERP system

implementation on business performance (Case study in Egyptian environment).

International Journal of Computer Science and Information Security, 14(5), 104-

115. Retrieved from https://sites.google.com/site/ijcsis/

Abdinnour, S. & Saeed, K. (2015). User perceptions towards an ERP system: Comparing

the post-implementation phase to the pre-implementation phase. *Journal of

Enterprise Information Management, 28*, 243-259. doi:10.1108/JEIM-10-2013-

0075

Abu-Shanab, E., Abu-Shehab, R., & Khairallah, M. (2015). Critical success factors for

ERP implementation: The case of Jordan. *The International Arab Journal of e-

Technology, 4*, 1-7. Retrieved from http://www.iajet.org/

Abu-Shanab, E., Haddad, M., & Knight, M. B. (2014). Knowledge sharing practices and

the learning organization: A study. *IUP Journal of Knowledge Management,*

12(2), 38-50. Retrieved from

http://www.iupindia.in/Knowledge_Management.asp

Agrawal, A., Reddy, L. S., & Agrawal, A. (2015). Enterprise applications modernization, issues and opportunities. *International Journal of Advance Research, Ideas and Innovations in Technology, 1*(3). Retrieved from http://www.ijariit.com/

Ahmad, M. M., & Cuenca, R. P. (2013). Critical success factors for ERP implementation in SMEs. *Robotics and Computer-integrated Manufacturing, 29*(3), 104-111. doi:10.1016/j.rcim.2012.04.019

Ahmad, N., Haleem, A., & Ali Syed, A. (2014). Study of reasons for enterprise systems adoption among Indian organizations. *Journal of Enterprise Information Management, 27*, 696-718. doi:10.1108/JEIM-02-2013-0006

Ahmad, N., & Mehmood, R. (2015). Enterprise systems: Are we ready for future sustainable cities. *Supply Chain Management: An International Journal, 20*, 264-283. doi:10.1108/SCM-11-2014-0370

Ahmad, N., & Mehmood, R. (2016). Enterprise systems and performance of future city logistics. *Production Planning & Control, 27*, 500-513. doi:10.1080/09537287.2016.1147098

Ahmadi, S., Yeh, C. H., Martin, R., & Papageorgiou, E. (2015). Optimizing ERP readiness improvements under budgetary constraints. *International Journal of Production Economics, 161*, 105-115. doi:10.1016/j.ijpe.2014.11.020

Ahmadi, S., Yeh, C. H., Papageorgiou, E. I., & Martin, R. (2015). An FCM–FAHP approach for managing readiness-relevant activities for ERP implementation. *Computers & Industrial Engineering, 88*, 501-517. doi:10.1016/j.cie.2015.07.006

Akça, Y., & Özer, G. (2014). Diffusion of innovation theory and an implementation on enterprise resource planning systems. *International Journal of Business and Management, 9*, 92-114. doi:10.5539/ijbm.v9n4p92

Akça, Y., Esen, S., & Özer, G. (2013). The effects of education on enterprise resource planning implementation success and perceived organizational performance. *International Business Research, 6*(5), 168-179. doi:10.5539/ibr.v6n5p168

Aladwani, A. M. (2013). Change management strategies for successful ERP implementation. *Business Process Management Journal, 7*, 266-275. doi:10.1108/14637150110392764

Alanne, A., Kähkönen, T., & Niemi, E. (2014). Networks of pain in ERP development. In *16th International Conference on Enterprise Information Systems,* 257-266. Retrieved from http://enact.lut.fi/

Alcivar, I., & Abad, A. G. (2016). Design and evaluation of a gamified system for ERP training. *Computers in Human Behavior, 58*, 109-118. doi:10.1016/j.chb.2015.12.018

Alghalith, N. (2012). Reengineering with ERP: The Aramco case. *Journal of Strategic Innovation and Sustainability, 8*(1), 26-35. Retrieved from http://www.na-businesspress.com/jsisopen.html

Ali, M. & Cullinane, J. (2014). A study to evaluate the effectiveness of simulation based decision support system in ERP implementation in SMEs. *Procedia Technology, 16*, 542-552. doi:10.1016/j.protcy.2014.2014.10.002

Almahamid, S., & Awsi, O. (2015). Perceived organizational ERP benefits for SMEs: Middle Eastern perspective. *Interdisciplinary Journal of Information, Knowledge, and Management, 10*, 145-172. Retrieved from http://www.ijikm.org/

Almajali, D. A., Masa'deh, R. E., & Tarhini, A. (2016). Antecedents of ERP systems implementation success: A study on Jordanian healthcare sector. *Journal of Enterprise Information Management, 29*, 549-565. doi:10.1108/JEIM-03-2015-0024

Almajed, A. I., & Mayhew, P. (2013). An investigation of the critical success factors of IT projects in Saudi Arabian public organizations. *IBIMA Business Review*, *2013*, 1-10. doi:10.5171/2013.260919

Aloini, D., Dulmin, R., & Mininno, V. (2012a). Modelling and assessing ERP project risks: A Petri Net approach. *European Journal of Operational Research, 220*, 484-495. doi:10.1016/j.ejor.2012.01.062

Aloini, D., Dulmin, R., & Mininno, V. (2012b). Risk assessment in ERP projects. *Information Systems, 37*(3), 183-199. doi:10.1016/j.is.2011.10.001

AlQashami, A., & Mohammad, H. (2015). Critical success factors for implementing an enterprise resource planning system within university context: Concepts and literature review. *International Journal of Managing Information Technology, 7*, 1-19. doi:10.5121/ijmit.2015.7401

Alreemy, Z., Chang, V., Walters, R., & Wills, G. (2016). Critical success factors (CSFs) for information technology governance (ITG). *International Journal of Information Management, 36*, 907-916. doi:10.1016/j.ijinfomgt.2016.05.017

Alsaawi, A. (2014). A critical review of qualitative interviews. *European Journal of Business and Social Sciences, 3*(4), 149-156. doi:10.2139/ssrn.2819536

Al-Sabaawi, M. (2015). Critical success factors for enterprise resource planning implementation success. *International Journal of Advances in Engineering & Technology, 8*, 496-506. Retrieved from http://www.ijaet.org/

Alshenqeeti, H. (2014). Interviewing as a data collection method: A critical review. *English Linguistics Research, 3*(1), 39-45. doi:10.5430/elr.v3n1p39

Alsulami, M., Scheepers, H., & Rahim, M. M. (2016). A comparison between organizational stakeholders' and external consultants' perceptions on CSFs affecting ERP life cycle phases. In *49th Hawaii International Conference on System Sciences (HICSS),* 4676-4685. doi:10.1109/HICSS.2016.580

Altamony, H., Tarhini, A., Al-Salti, Z., Gharaibeh, A. A. H., & Elyas, T. (2016). The relationship between change management strategy and successful enterprise resource planning (ERP) implementations: A theoretical perspective. *International Journal of Business Management and Economic Research, 7*, 690-703. Retrieved from http://www.ijbmer.com/

Alter, S. (2013). Work system theory: Overview of core concepts, extensions, and challenges for the future. *Journal of the Association for Information Systems, 14*, 72-121. Retrieved from http://repository.usfca.edu/at

Alturkistani, A., Shehab, E., Cranfield, C., & Al-Ashaab, A. (2015). Awareness of applying lean principles in ERP implementation. *Proceedings of the 13th International Conference on Manufacturing Research (ICMR2015)*. Retrieved from https://www.researchgate.net/

Alves, M. C., & Matos, S. I. A. (2012). ERP adoption by private and public organizations–A comparative analysis of successful implementations. *Journal of Business Economics and Management, 14*, 500-519. doi:10.3846/16111699.2011.652979

Amaya, J. L. C., Monroy, C. R., & Peláez, J. C. (2014). Two risky and costly end-user relations taboos when developing information systems: Qualifications and accountability. *Interciencia, 39*, 101-110. Retrieved from http://www.interciencia.org

Amid, A., Moalagh, M., & Ravasan, A. Z. (2012). Identification and classification of ERP critical failure factors in Iranian industries. *Information Systems, 37*, 227-237. doi:10.1016/j.is.2011.10.010

Amini, M., & Sadat Safavi, N. (2013). Review paper: Critical success factors for ERP implementation. *International Journal of Information Technology & Information Systems, 5*(15), 1-23. doi:10.2139/ssrn.225638

Ansen, J. B. (2014). Sustainably developing e-skills in Africa- A case with enterprise resource planning (ERP) system. *Journal of Emerging Trends in Educational Research and Policy Studies, 5*, 148-152. Retrieved from http://jeteraps.scholarlinkresearch.org

Antoniadis, I., Tsiakiris, T., & Tsopogloy, S. (2015). Business intelligence during times

of crisis: Adoption and usage of ERP systems by SMEs. *Procedia-Social and*

Behavioral Sciences, 175, 299-307. doi:10.1016/j.sbspro.2015.01.120

Arvidsson, V., Holmström, J., & Lyytinen, K. (2014). Information systems use as

strategy practice: A multi-dimensional view of strategic information system

implementation and use. *The Journal of Strategic Information Systems, 23*, 45-61.

doi:10.1016/j.jsis.2014.01.004

Aryani, Y. A. & Krismiaji (2014). Enterprise resource planning implementation and

accounting information quality. *Journal on Business Review, 2*(4), 25-31.

doi:10.5176/2251-1997_AF13.25

Asgar, T. S., & King, T. M. (2016). Formalizing requirements in ERP software

implementations. *Lecture Notes on Software Engineering, 4,* 34-40. Retrieved

from http://www.lnse.org/

Aubert, B., Hooper, V., & Schnepel, A. (2013). Revisiting the role of communication

quality in ERP project success. *American Journal of Business, 28*, 64-85.

doi:10.1108/19355181311314770

Azhdari, G., MousaviMadani, F., & ZareBahramabadi, M. (2012). Measuring knowledge

management readiness in ERP adopted organizations: A case of Iranian company.

International Journal of Information Processing and Management, *3*(1), 37-44.

Retrieved from http://www.aicit.org/ijipm/home/index.html

Bacchelli, A., & Bird, C. (2013). Expectations, outcomes, and challenges of modern code

review. In *Proceedings of the 2013 International Conference on Software*

Engineering, 712-721. Retrieved from

http://ieeexplore.ieee.org.ezp.waldenulibrary.org/Xplore/home.jsp

Badewi, A., & Shehab, E. (2016). The impact of organizational project benefits

management governance on ERP project success: Neo-institutional theory

perspective. *International Journal of Project Management, 34*, 412-428.

doi:10.1016/j.ijproman.2015.12.002

Bahari, A., Yonnedi, E., & Djunid, A. (2015). ERP system implementation readiness:

The case of government organizations in Indonesia. *Australian Journal of*

Sustainable Business and Society, 1(01), 54-65. Retrieved from

https://www.aabss.org.au/journal/ajsbs

Bala, H., and Venkatesh, V. (2013). Changes in employees' job characteristics during an

enterprise system implementation: A latent growth modeling perspective. *MIS*

Quarterly, 37, 1113-1140. Retrieved from http://www.misq.org/

Balderstone, S. J., & Mabin, V. J. (1998). A review of Goldratt's theory of constraints

(TOC)–Lessons from the international literature. In *Annual Conference of the*

Operational Research Society of New Zealand. Retrieved from

http://orsnz.org.nz/

Bali, V., & Madan, S. (2015). Identifying and classify factors for evaluating the success

of software developed by COTS components. *International Journal of Current*

Engineering and Technology, 5, 2531-2541. Retrieved from

http://inpressco.com/category/ijcet

Banerjee, T., & Parmar, R. (2013). Post implementation analysis of E-Urja project (ERP) at GSECL: The senior management perspectives. *Drishtikon: A Management Journal, 4*(2), 13-25. Retrieved from http://www.publishingindia.com/drishtikon/

Bazhair, A., & Sandhu, K. (2015). Factors for the acceptance of enterprise resource planning (ERP) systems and financial performance. *Journal of Economics, Business and Management, 3*, 1-10. doi:10.7763/JOEBM.2015.V3.146

Beheshti, H., Blaylock, B., Henderson, D., & Lollar, J. (2014). Selection and critical success factors in successful ERP implementation. *Competitiveness Review, 24*, 357-375. doi:10.1108/CR-10-2013-0082

Bernard, H. R. (2013). *Social research methods: Qualitative and quantitative approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Bernroider, E. W. (2013). Effective ERP adoption processes: The role of project activators and resource investments. *European Journal of Information Systems, 22*, 235-250. doi:10.1057/ejis.2012.51

Bharathi, S., & Parikh, S. (2012). A comparative study on the conceptual and contextual perception about CSF for ERP adoption in the SMEs. *Journal of Arts, Science and Commerce*, *3*(1), 38-46. Retrieved from http://www.researchersworld.com/

Bintoro, B. P., Simatupang, T. M., Putro, U. S., & Hermawan, P. (2015). Actors' interaction in the ERP implementation literature. *Business Process Management Journal, 21*, 222 - 249. doi:10.1108/BPMJ-11-2013-0142

Bitsini, N. (2015). Investigating ERP misalignment between ERP systems and

    implementing organizations in developing countries. *Journal of Enterprise*

    Resource Planning, 2015, 1-2. doi:10.5171/2015.570821

Bloch, M., Blumberg, S., & Laartz, J. (2012). Delivering large-scale IT projects on time,

    on budget, and on value. *McKinsey Quarterly, 2012*, 1-6. Retrieved from

    http://www.qitrmanagement.com/

Bobek, S., Rohadia, S., & Sternad, S. (2016). ERP solutions acceptance in different

    business environments. *International Journal of Innovative Research and*

    Development, 5, 103-108. Retrieved from www.ijird.com

Bokovec, K., Damij, T., & Rajkovič, T. (2015). Evaluating ERP projects with multi-

    attribute decision support systems. *Computers in Industry, 73*, 93-104.

    doi:10.1016/j.compind.2015.07.004

Boyd, L., & Gupta, M. (2004). Constraints management: What is the theory?

    International Journal of Operations & Production Management, 24, 350-371.

    doi:10.1108/01443570410524631

Boynton, A. C., & Zmud, R. W. (1984). An assessment of critical success factors. *Sloan*

    Management Review, 25(4), 17-27. Retrieved from http://sloanreview.mit.edu

Brook, D. A. (2013). Audited financial statements in the US federal government: The

    question of policy and management utility. *Journal of Public Budgeting,*

    Accounting, and Financial Management, 25, 135-157. Retrieved from

    http://pracademics.com/

Carlson, J. A. (2010). Avoiding traps in member checking. *The Qualitative Report, 15*, 1102-1113. Retrieved from http://nsuworks.nova.edu/tqr/

Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014, September). The use of triangulation in qualitative research. In *Oncology Nursing Forum, 41*, 545-547. doi:10.1188/14.ONF.545-547

Caya, O., Léger, P. M., Grebot, T., & Brunelle, E. (2014). Integrating, sharing, and sourcing knowledge in an ERP usage context. *Knowledge Management Research & Practice, 12*, 193-202. doi:10.1057/kmrp.2012.54

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

Chiang, M. (2013). Organizational change in ERP implementation: A dialectical perspective. *Journal of Global Business Management, 9*(1), 175-185. Retrieved from http://www.jgbm.org/

Chockalingam, A., & Ramayah, T. (2013). Does the organizational culture act as a moderator in Indian enterprise resource planning (ERP) projects? *Journal of Manufacturing Technology Management, 24*, 555-587. doi:10.1108/17410381311327404

Chou, S., Hung, I., & Chang, Y. (2013). Understanding the antecedents of ERP implementation success--The perspective of knowledge transfer. *Asia Pacific Management Review, 18,* 301-322. doi:10.6126/APMR.2013.18.3.04

Chou, H. W., Lin, Y. H., Lu, H. S., Chang, H. H., & Chou, S. B. (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

Cleary, M., Horsfall, J., & Hayter, M. (2014). Data collection and sampling in qualitative

    research: Does size matter? *Journal of Advanced Nursing, 70*, 473-475.

    doi:10.1111/jan.12163

Coeurderoy, R. Guilmot, N., & Vas, A. (2014). Explaining the factors affecting

    technological change adoption. *Management Decision, 52*, 1082-1110.

    doi:10.1108/MD-10-2013-0540

Coman, A., & Ronen, B. (1994). IS management by constraints: Coupling IS effort to

    changes in business bottlenecks. *Human Systems Management, 13*, 65-70.

    Retrieved from http://www.iospress.nl/journal/human-systems-management/

Cook, T. S. (2013). Exploring the world's largest ERP implementation: The role of ERP

    in strategic alignment. *Issues in Information Systems, 14*(1), 347-357. Retrieved

    from http://core.ac.uk/

Cruz, E. V. (2013). The use of focused ethnography in nursing research. *Nurse*

    Researcher, 20(4), 36-43. doi:10.7748/nr2013.03.20.4.36.e305

Cseko, G. C., & Tremaine, W. J. (2013). The role of the institutional review board in the

    oversight of the ethical aspects of human studies research. *Nutrition in Clinical*

    Practice, 28, 177–181. doi:10.1177/0884533612474042

Cyrus, K. M., Aloini, D., & Karimzadeh, S. (2015). How to disable mortal loops of ERP

    implementation: A system dynamics analysis. *Proceedings of the 33rd*

International Conference of the System Dynamics Society, 1-21. Retrieved from

http://www.systemdynamics.org/

Daniel, D. R. (1961). Management information crisis. *Harvard Business Review, 39*(5),

111-121. Retrieved from https://hbr.org/

Das, S., & Dayal, M. (2016). Exploring determinants of cloud-based enterprise resource

planning (ERP) selection and adoption: A qualitative study in the Indian

education sector. *Journal of Information Technology Case and Application*

Research, 18, 11-36. doi:10.1080/15228053.2016.1160733

Denic, N. M., Vujovic, V., Stevanovic, V., & Spasic, B. (2016). Key factors for

successful implementation of ERP systems. *Technical Gazette, 23*, 1335-1341.

doi:10.17559/TV-20150618213311

De Toni, A. F., 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

Dennis, V. & Walcott, J. (2014). Federal financial management shared services: The

move is on. *Journal of Government Financial Management, 63*(3), 18-24.

Retrieved from http://www.agacgfm.org/Research-Publications/Journal.aspx

Department of Defense. (2015). *Financial improvement and audit readiness (FIAR)*

guidance. Retrieved from http://comptroller.defense.gov/fiar/fiarguidance.aspx

Dey, P. K., Clegg, B., & Cheffi, W. (2013). Risk management in enterprise resource

planning implementation: A new risk assessment framework. *Production*

Planning & Control, 24, 1-14. doi:10.1080/09537287.2011.597038

Dezdar, S. & Ainin, S. (2012). Examining successful ERP projects in Middle-East and South-East Asia. *American Journal of Scientific Research, 56*(March), 13-25. Retrieved from http://www.americanjournalofscientificresearch.com/

DioGuardi, J. (2014). Why we need accrual accounting in Washington. *Journal of Government Financial Management, 63*(2), 44-48. Retrieved from http://www.agacgfm.org/Research---Publications/Journal.aspx

Doody, O., & Noonan, M. (2013). Preparing and conducting interviews to collect data. *Nurse Researcher, 20*(5), 28-32. doi:10.7748/nr2013.05.20.5.28.e327

Dorobăţ, I. & Năstase, F. (2012). Training issues in ERP implementations. *Accounting and Management Information Systems, 11*, 621-636. Retrieved from http://econpapers.repec.org/article/amijournl/

Dwivedi, Y. K., Wastell, D., Laumer, S., Henriksen, H. Z., Myers, M. D., Bunker, D., Elbanna, A., Ravishankar, M.N., & Srivastava, S. C. (2015). Research on information systems failures and successes: Status update and future directions. *Information Systems Frontiers, 17*, 143-157. doi:10.1007/s10796-014-9500-y

Elbanna, A. (2013). Top management support in multiple-project environments: An in-practice view. *European Journal of Information Systems, 22*, 278-294. doi:10.1057/ejis.2012.16

Erasmus, I. P., & Daneva, M. (2013). ERP effort estimation based on expert judgments. In *Software measurement and the 2013 Eighth International Conference on Software Process and Product Measurement (IWSM-MENSURA), 2013 Joint*

Conference of the 23rd International Workshop (pp. 104-109). IEEE. Retrieved from http://eprints.eemcs.utwente.nl/

Erlingsson, C., & Brysiewicz, P. (2013). Orientation among multiple truths: An introduction to qualitative research. *African Journal of Emergency Medicine, 3*, 92-99. doi:10.1016/j.afjem.2012.04.005

Esteves, J. M. (2014). An empirical identification and categorisation of training best practices for ERP implementation projects. *Enterprise Information Systems, 8*, 665-683. doi:10.1080/17517575.2013.771411

Fitz, D., Hauer, J., & Steinhoff, J. (2015). Calling all government financial managers to a more analytic role as highly-valued business advisors! *Journal of Government Financial Management, 64*(2), 40-47. Retrieved from http://www.agacgfm.org/Research-Publications/Journal.aspx

Francis, R. D. (2014). Assumptions and deeming. *Journal of Financial Crime, 21*, 204-214. doi:10.1108/JFC-07-2013-0049

Frazee, K., & Khan, M. R. (2012). ERP implementation for corporate growth and sustainability. *International Journal of Business and Social Science, 3*(3), 74-82. Retrieved from http://www.ijbssnet.com/

Frontz, A. J. (2012). *Enterprise resource planning systems schedule delays and reengineering weaknesses increase risks to DoD's auditability goals* (No. DODIG-2012-111). Department of Defense Alexandria VA Office of the Inspector General. Retrieved from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA562355

Fusch, P. & Ness, L. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report, 20*, 1408-1416. Retrieved from http://nsuworks.nova.edu/tqr/

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

Galy, E., Sauceda, M. J. (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

Garg, P., & Garg, A. (2013). An empirical study on critical failure factors for enterprise resource planning implementation in Indian retail sector. *Business Process Management Journal, 19*, 496-514. doi:10.1108/14637151311319923

Ghobakhloo, M., Hong, T. S., Sabouri, M. S., & Zulkifli, N. (2012). Strategies for successful information technology adoption in small and medium-sized enterprises. *Information, 3*, 36-67. doi:10.3390/info3010036

Ghosh, I., & Biswas, S. (2017). A novel framework of ERP implementation in Indian SMEs: Kernel principal component analysis and intuitionistic Fuzzy TOPSIS driven approach. *Accounting, 3*, 107-118. doi:10.5267/j.ac.2016.7.004

Ghosh, R. (2012). A comprehensive study on ERP failures stressing on reluctance to change as a cause of failure. *Journal of Marketing and Management, 3*(1), 123-134. Retrieved from http://www.gsmi-ijgb.com/Pages/Journals.aspx

Giovani JC, d. S., Snider, B., & Balakrishnan, J. (2013). Compensation-based incentives,

    ERP and delivery performance. *International Journal of Operations &*

    Production Management, 33, 415-441. doi:10.1108/01443571311307307

Goldratt, E.M. (1988). Computerized shop floor scheduling. *International Journal of*

    Production Research, 26, 443-455. doi:10.1080/00207548808947875

Gomes, R. M. de S. (2013). Contributions of the PMBOK to the project management of

    an ERP system implementation. *Revista De Gestão e Projetos, 4*(2), 153-162.

    doi:10.5585/gep.v4i2.37

Goodman, D., French, P. E., & Battaglio, R. P. (2013). Determinants of local government

    workforce planning. *The American Review of Public Administration, 45*, 135-152.

    doi:10.1177/0275074013486179

Grajek, S., & Rotman, D. (2014). Top-ten IT issues: Be the change you see. *Educause*

    Review, 49(2), 10-54. Retrieved from http://er.educause.edu/about

Guðmundsdóttir, K. & Möller, E. (2016). Business Intelligence. *International Journal of*

    Liberal Arts and Social Science, 4(1), 21-28. Retrieved from www.ijlass.org

Gupta, S., & Misra, S. C. (2016). Compliance, network, security and the people related

    factors in cloud ERP implementation. *International Journal of Communication*

    Systems, 29, 1395-1419. doi:10.1002/dac.3107

Ha, Y. M., & Ahn, H. J. (2014). Factors affecting the performance of enterprise resource

    planning (ERP) systems in the post-implementation stage. *Behaviour &*

    Information Technology, 33, 1065-1081. doi:10.1080/0144929X.2013.799229

Haddara, M., & Elragal, A. (2013). ERP adoption cost factors identification and

classification: A study in SMEs. *International Journal of Information Systems*

and Project Management, 1(2), 5-21. doi:10.12821/ijispm010201

Hamilton, L., & Corbett-Whittier, C. (2013). *Defining case study in education research.*

In Research Methods in Education: Using case study in education research. (pp.

3-22). London: Sage Publications Ltd. doi:10.4135/9781473913851.n1

Hanks, C. (2014). Should the federal government continue its pursuit of proprietary

financial statements? *Journal of Government Financial Management, 63*(1), 12-

18. Retrieved from http://www.agacgfm.org/Research-Publications/Journal.aspx

Harvey, L. (2015). Beyond member checking: A dialogic approach to the research

interview. *International Journal of Research & Method in Education, 38*, 23-38.

doi:10.1080/1743727X.2014.914487

Hasibuan, Z. A., & Dantes, G. R. (2012). Priority of key success factors (KSFs) on

enterprise resource planning (ERP) system implementation life cycle. *Journal of*

Enterprise Resource Planning Studies, 2012, 1-15. doi:10.5171/2012.122627

Hatamizadeh, A., & Aliyev, A. (2012). Survey of ERP systems implementation. In

Problems of Cybernetics and Informatics (PCI), 2012 IV International

Conference, 1-3. IEEE. Retrieved from www.pci2012.science.az/en/

Hoch, J. E., & Dulebohn, J. H. (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). Rigor in qualitative case-
    study research. *Nurse Researcher, 20*(4), 12-17.
    doi:10.7748/nr2013.03.20.4.12.e326

Huckabee, A. (2015). Requirements engineering in an agile software development
    environment. *Defense Acquisition Research Journal, 22*(4), 394-415. Retrieved
    from http://www.dau.mil/publications/DefenseARJ/

Hudson, S. M., Newman, S. D., Hester, W. H., Magwood, G. S., Mueller, M., & Laken,
    M. A. (2014). Factors influencing hospital admissions and emergency department
    visits among children with complex chronic conditions: A qualitative study of
    parents' and providers' perspectives. *Issues in Comprehensive Pediatric Nursing,
    37*(1), 61–80. doi:10.3109/01460862.2013.855844

Hussein, A. (2015). The use of triangulation in social sciences research: Can qualitative
    and quantitative methods be combined? *Journal of Comparative Social Work,
    4*(1), 1-12. Retrieved from http://journal.uia.no/index.php/JCSW/

Hwang, Y., & Grant, D. (2014). An empirical study of enterprise resource planning
    integration: Global and local perspectives. *Information Development, 30*, 1-11.
    doi:10.1177/0266666914539525

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*. doi:10.3402/qhw.v9.23606

Iffat, N., Chaudhry, S., Bilal, W. A., & Rabail, A. (2015). An empirical study on critical
    failure factors and business intelligent system failure at pre-implementation phase

in small and medium enterprises in Pakistan. *Business and Economics Journal*, *7*(1), 1-7. doi:10.4172/2151-6219.1000193

Ifinedo, P., & Olsen, D. H. (2015). An empirical research on the impacts of organisational decisions' locus, tasks structure rules, knowledge, and IT function's value on ERP system success. *International Journal of Production Research, 53*, 2554-2568. doi:10.1080/00207543.2014.991047

Iizuka, K., Takei, Y., Nagase, R., & Suematsu, C. (2014). Satisfaction structure of the implementation effect of enterprise resource planning (ERP): An analysis from the management style perspective of Japanese firms. *International Journal of Business and Information, 9*, 273-310. Retrieved from http://ijbi.org

Ijaz, A., Malik, R. K., Lodhi, R. N., Habiba, U., & Irfan, S. M. (2014). A qualitative study of the critical success factors of ERP system-A case study approach. *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management*, 2556-2566. Retrieved from http://iieom.org/

Irvine, A., Drew, P., & Sainsbury, R. (2013). 'Am I not answering your questions properly?' Clarification, adequacy and responsiveness in semi-structured telephone and face-to-face interviews. *Qualitative Research, 13*, 87-106. doi:10.1177/1468794112439086

Jamil, M. Y., & Qayyum, M. R. (2015). Enterprise resource planning (ERP) implementation in Pakistan enterprises: Critical success factors and challenges. *Journal of Management and Research, 11*(2), 1-17. Retrieved from http://www.macrothink.org/journal/index.php/jmr

Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy, 5*, 87-88. doi:10.4103/0976-0105.141942

Janghorban, R., Roudsari, R. L., & Taghipour, A. (2014). Skype interviewing: The new generation of online synchronous interview in qualitative research. *International Journal of Qualitative Studies on Health and Well-being, 9*. doi:10.3402/qhw.v9.24152

Jansson, N. (2013). Organizational change as practice: A critical analysis. *Journal of Organizational Change Management, 26*, 1003-1019. doi:10.1108/JOCM-09-2012-0152

Jeng, D. J. F., & Dunk, N. (2013). Knowledge management enablers and knowledge creation in ERP system success. *International Journal of Electronic Business Management, 11*, 49-59. Retrieved from http://ijebm.ie.nthu.edu.tw

Johnson, N., Creasy, T., & Fan, Y. (2016). Recent trends in theory use and application within the project management discipline. *Journal of Engineering, Project, and Production Management, 6*, 25-52. Retrieved from http://www.ppml.url.tw/EPPM_Journal/index.htm

Johnson, P. (2011). Financial improvement and audit readiness at the Department of Defense. *Army Sustainment, 43*(5), 54-55. Retrieved from http://www.army.mil/armysustainment

Kaczynski, D., Salmona, M., & Smith, T. (2014). Qualitative research in finance. *Australian Journal of Management, 39*, 127-135. doi:10.1177/0312896212469611

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

Kelemen, R. (2014). ERP systems in public sector. In *Information and Communication Technology, Electronics and Microelectronics (MIPRO), 2014 37th International Convention,* 1537-1543. doi:10.1109/MIPRO.2014.6859810

Khan, M. R., & Frazee, K. (2014). The relevance of IT component to corporate performance. *International Journal of Business and Social Science, 5*(1), 38-54. Retrieved from http://www.ijbssnet.com

Khanna, K., & Arneja, G. P. (2012). Choosing an appropriate ERP implementation strategy. *Journal of Engineering, 2*(3), 478-483. doi:10.9790/3021-0203478483

Kharuddin, S., Foong, S. Y., & 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

Koelsch, L. E. (2013). Reconceptualizing the member check interview. *International Journal of Qualitative Methods, 12*(1), 168-179. Retrieved from https://ejournals.library.ualberta.ca/

Kosalge, P. U., & Ritz, E. (2015). Finding the tipping point for a CEO to say yes to an ERP: A case study. *Journal of Enterprise Information Management, 28*, 718-738. doi:10.1108/JEIM-07-2014-0073

Kumar, C. (2015). Key issues in enterprise resource planning and its effective adoption. *IRA-International Journal of Management & Social Sciences, 1*, 17-21. Retrieved from http://ijssm.org/

Kuo, C. (2014). Effect of enterprise resource planning information system on business performance: An empirical case of Taiwan. *Journal of Applied Finance and Banking, 4*(2), 1-19. Retrieved from http://www.scienpress.com/

Kwak, Y. H., Park, J., Chung, B. Y., & Ghosh, S. (2012). Understanding end-users' acceptance of enterprise resource planning (ERP) system in project-based sectors. *Engineering Management*, *IEEE Transactions, 59*, 266-277. doi:10.1109/TEM.2011.2111456

Lanzolla, G. & Suarez, F. (2012). Closing the technology adoption-use divide: The role of contiguous user bandwagon. *Journal of Management, 38*, 836-859. doi:10.1177/0149206310369938

Lech, P. (2013). Time, budget, and functionality?—IT project success criteria revised. *Information Systems Management, 30*, 263-275. doi:10.1080/10580530.2013.794658

Lee, S. M., & Lee, S. H. (2012). Success factors of open-source enterprise information systems development. *Industrial Management & Data Systems, 112*, 1065-1084. doi:10.1108/02635571211255023

Leonard, J., & Higson, H. (2014). A strategic activity model of enterprise system implementation and use: Scaffolding fluidity. *The Journal of Strategic Information Systems, 23*, 62-86. doi:10.1016/j.jsis.2013.11.003

Li, H. J., Chang, S. I., & Yen, D. C. (2017). Investigating CSFs for the life cycle of ERP system from the perspective of IT governance. *Computer Standards & Interfaces*, 50(2017), 269-279. doi:10.1016/j.csi.2016.10.013

Loh, J. (2013). Inquiry into issues of trustworthiness and quality in narrative studies: A perspective. *The Qualitative Report, 18*, 1-15. Retrieved from http://nsuworks.nova.edu/tqr/

Lu, Z., & Jinghua, H. (2012). The moderating factors in the relationship between ERP investments and firm performance. *The Journal of Computer Information Systems, 53*(2), 75-84. Retrieved from http://www.svpublishers.co.uk

Maas, J.-B., van Fenema, P. C., & Soeters, J. (2014). ERP system usage: The role of control and empowerment. *New Technology, Work and Employment, 29*, 88-103. doi:10.1111/ntwe.12021

Madapusi, A., & Ortiz, D. A. C. (2014). The influence of technical competence factors in ERP system implementations. *The Journal of Applied Business and Economics, 16*(2), 27-39. Retrieved from http://www.na-businesspress.com/jabeopen.html

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

Makokha, M. W., & Ochieng, D. O. (2014). Assessing the success of ICT's from a user perspective: Case study of Coffee Research Foundation, Kenya. *Journal of Management and Strategy, 5*(4), 46-53. doi:10.5430/jms.v5n4p46

Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in IS research. *Journal of Computer Information Systems, 54*(1), 11-22. doi:10.1080/08874417.2013.11645667

Marshall, C., & Rossman, G. B. (2014). *Designing qualitative research* (3rd ed.). Thousand Oaks, CA: Sage.

Matende, S., & Ogao, P. (2013). Enterprise resource planning (ERP) system implementation: A case for user participation. *Procedia Technology, 9*, 518-526. doi:10.1016/j.protcy.2013.12.058

Mathias, B., Oludayo, O., & Ray, M. (2014). Identifying critical success factors: The case of ERP systems in higher education. *The African Journal of Information Systems, 6*(3), 65-84. Retrieved from http://www.ajisonline.com/

May, J., Dhillon, G., & Caldeira, M. (2013). Defining value-based objectives for ERP systems planning. *Decision Support Systems, 55*, 98-109. doi:10.1016/j.dss.2012.12.036

Meissonier, R., Houzé, E., & Bessière, V. (2013). Cross-cultural frictions in information system management: Research perspectives on ERP implementation misfits in Thailand. *International Business Research, 6*(2), 150-159. doi:10.5539/ibr.v6n2p150

Misita, M., Lapcevic, N., Tadic, D., Milanovic, D. D., & Borota-Tisma, A. (2016). New model of enterprises resource planning implementation planning process in

manufacturing enterprises. *Advances in Mechanical Engineering, 8*(5), 1-15. doi:1687814016646263

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/

Morse, A. L., & McEvoy, C. D. (2014). Qualitative research in sport management: Case study as a methodological approach. *The Qualitative Report, 19*, 1-13. Retrieved from http://nsuworks.nova.edu/tqr/

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

Mu, E., Kirsch, L. J., & Butler, B. S. (2015). The assimilation of enterprise information system: An interpretation systems perspective. *Information & Management, 52*, 359-370. doi:10.1016/j.im.2015.01.004

Mundy, J., & Owen, C. A. (2013). The use of an ERP system to facilitate regulatory compliance. *Information Systems Management, 30*, 182-197. doi:10.1080/10580530.2013.794601

Munkelt, T., & Volker, S. (2013). ERP systems: Aspects of selection, implementation and sustainable operations. *International Journal of Information Systems and Project Management, 1*(2), 25-39. doi:10.12821/ijispm010202

Murrin, D. & Reger, M. (2013). Shared service and the workforce: Suggestions for managers considering a move to shared services in financial management.

Journal of Government Financial Management, 62(4), 22-25. Retrieved from

http://www.agacgfm.org/Research---Publications/Journal.aspx

Myreteg, G. (2015). Organizational learning and ERP systems in the post-implementation

phase: Where do we stand? A literature review. *Electronic Journal Information*

Systems Evaluation Volume, *18*, 199-128. Retrieved from http://www.ejise.com/

Narimani, M., Tabaeian, E., Khanjani, M., & Soltani, F. (2014). The impact of

organizational citizenship behavior on enterprise resource planning success. *The*

International Journal of Quality & Reliability Management, 31, 53-65.

doi:10.1108/IJQRM-03-2012-0038

Nazemi, E., Tarokh, M. J., & Djavanshir, G. R. (2012). ERP: A literature survey. *The*

International Journal of Advanced Manufacturing Technology, 61, 999-1018.

doi:10.1007/s00170-011-3756-x

Neale, J., Miller, P., & West, R. (2014). Reporting quantitative information in qualitative

research: Guidance for authors and reviewers. *Addiction, 109*, 175-176.

doi:10.1111/add.12408

Nejib, B. M. (2013). Determinants of post implementation success of ERP in Tunisian

companies: An empirical study of the moderating role of the technical fit.

International Review of Management and Business Research, 2, 1101-1112.

Retrieved from http://irmbrjournal.com/index.php

Nizamani, S., Khoumbati, K., Ismaili, I., Nizamani, S., Nizamani, S., & Basir, N. (2015).

Influence of top management support as an important factor for the ERP

implementation in higher education institutes of Pakistan. *Sindh University*

Research Journal-SURJ (Science Series), 47, 295-302. Retrieved from

http://sujo.usindh.edu.pk/index.php/SURJ/index

Nofal, I. M., & Yusof, Z. M. (2013). Integration of business intelligence and enterprise

resource planning within organizations. *Procedia Technology, 11*, 658-665.

doi:10.1016/j.protcy.2013.12.242

Norton, A. L. (2015). Enterprise resource planning II–A review of critical success

factors. *International Journal of Computer Science and Information Security,

13*(11), 5-14. Retrieved from https://sites.google.com/site/ijcsis/

Norton, A., May Coulson-Thomas, Y., Coulson-Thomas, C. J., & Ashurst, C. (2013).

Ensuring benefits realisation from ERP II: The CSF phasing model. *Journal of

Enterprise Information Management, 26*, 218-234.

doi:10.1108/17410391311325207

Nwankpa, J. K. (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. K., Roumani, Y., Brandyberry, A., Guiffrida, A., Hu, M., & Shanker, M.

(2013). Understanding the link between initial ERP systems and ERP-enabled

adoption. *Information Resources Management Journal, 26*, 18-39.

doi:10.4018/irmj.2013100102

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. (2013). 'Unsatisfactory saturation': A critical exploration of

the notion of saturated sample sizes in qualitative research. *Qualitative Research,*

13, 190–197. doi:10.1177/1468794112446106

Olson, D. L., Johansson, B., & De Carvalho, R. A. (in press). Open source ERP business

model framework. *Robotics and Computer-Integrated Manufacturing*.

doi:10.1016/j.rcim.2015.09.007

Ononiwu, C. G. (2013). A Delphi examination of inhibitors of the effective use of

process industry enterprise resource planning (ERP) systems: A case study of

New Zealand's process industry. *The Electronic Journal Information Systems*

Evaluation, 16, 114-131. Retrieved from http://www.ejise.com/index.htm

Onwuegbuzie, A. J., & Byers, V. T. (2014). An exemplar for combining the collection,

analysis, and interpretations of verbal and nonverbal data in qualitative research.

International Journal of Education, 6, 183-246. doi:10.5296/ije.v6i1.4399

Onwuegbuzie, A. J., & Frels, R. K. (2014). A framework for using discourse analysis for

the review of the literature in counseling research. *Counseling Outcome Research*

and Evaluation, 5, 52-63. doi:10.1177/2150137813515905

Onwuegbuzie, A. J., Frels, R. K., & Hwang, E. (2016). Mapping Saldaňa's coding

methods onto the literature review process. *Journal of Educational Issues, 2*(1),

130-150. Retrieved from http://www.macrothink.org/journal/index.php/jei/index

Onwuegbuzie, A. J., & Weinbaum, R. K. (2016). Mapping Miles and Huberman's

within-case and cross-case analysis methods onto the literature review process.

Journal of Educational Issues, 2(1), 265-288. Retrieved from

http://www.macrothink.org/journal/index.php/jei/index

Orougi, S. (2015). Recent advances in enterprise resource planning. *Accounting, 1*, 37-42.

doi:10.5267/j.ac.2015.11.004

Påfs, J., Musafili, A., Binder-Finnema, P., Klingberg-Allvin, M., Rulisa, S., & Essén, B.

(2015). They would never receive you without a husband: Paradoxical barriers to

antenatal care scale-up in Rwanda. *Midwifery, 31*, 1149-1156.

doi:10.1016/j.midw.2015.09.010

Parthasarathy, S., & Daneva, M. (2016). An approach to estimation of degree of

customization for ERP projects using prioritized requirements. *Journal of Systems

and Software, 117*, 471-487. doi:10.1016/j.jss.2016.04.006

Pecherskayaa, E. P., Averinaa, L. V., Kamaletdinovb, Y. A., Tretyakovac, N. V., &

Magomadovad, T. L. (2016). Assessment of critical success factors

transformation in ERP projects. *IEJME, 11*, 2608-2625. Retrieved from

http://iejme.com/

Peng, G. C. A., & Gala, C. (2014). Cloud ERP: A new dilemma to modern organisations?

The Journal of Computer Information Systems, 54(4), 22-30.

doi:10.1080/08874417.2014.11645719

Pishdad, A., & Haider, A. (2013). ERP institutionalization: Exploring the influential

factors. *Journal of Enterprise Information Management, 26*, 642-660.

doi:10.1108/JEIM-07-2013-0046

Poba-Nzaou, P., Raymond, L., & Fabi, B. (2014). Risk of adopting mission-critical OSS applications: An interpretive case study. *International Journal of Operations & Production Management, 34*, 477-512. doi:10.1108/IJOPM-03-2012-0117

Ponterotto, J. G. (2014). Best practices in psychobiographical research. *Qualitative Psychology, 1*, 77-90. doi:10.1037/qup0000005

Rabaa'i, A. A., & AlJamal, E. (2015). Cultural perspectives on ERP implementation in Jordan: A comparison between public and private sectors. *International Journal of Intercultural Information Management, 5*, 83-102. Retrieved from http://www.inderscience.com/jhome.php?jcode=ijiim

Rahman, S. U. (1998). Theory of constraints: A review of the philosophy and its applications. *International Journal of Operations & Production Management, 18*, 336-355. doi:10.1108/01443579810199720

Rahnavard, F., & Bozorgkhou, N. (2014). Key factors in the successful implementation of enterprise resource planning system. *Management Science Letters, 4*, 747-752. doi:10.5267/j.msl.2014.2.013

Rajan, C. A., & 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), 105-117. doi:10.1016/j.iimb.2015.04.008

Rajnoha, R., Kádárová, J., Sujová, A., & Kádár, G. (2014). Business information systems: Research study and methodological proposals for ERP implementation process improvement. *Procedia-Social and Behavioral Sciences, 109*, 165-170. doi:10.1016/j.sbspro.2013.12.438

Ram, J., & Corkindale, D. (2014). How "critical" are the critical success factors (CSFs)? *Business Process Management Journal, 20*, 151-174. doi:10.1108/BPMJ-11-2012-0127

Ram, J., Corkindale, D., & Wu, M. L. (2013a). Enterprise resource planning adoption: Structural equation modeling analysis of antecedents. *Journal of Computer Information Systems, 54*(1), 53-65. doi:10.1080/08874417.2013.11645671

Ram, J., Corkindale, D., & Wu, M.L. (2013b). Examining the role of system quality in ERP projects. *Industrial Management & Data Systems, 113*, 350-366. doi:10.1108/02635571311312659

Ram, J., Corkindale, D., & Wu, M. L. (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.L. (2015). Examining the role of organizational readiness in ERP project delivery. *The Journal of Computer Information Systems, 55*(2), 29-39. doi:10.1080/08874417.2015.11645754

Ram, J., Wu, M. L., & 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

Ravasan, A. Z., & Mansouri, T. (2014). A FCM-based dynamic modeling of ERP implementation critical failure factors. *International Journal of Enterprise Information Systems, 10*, 32–52. doi:10.4018/ijeis.2014010103

Ritchie, J., Lewis, J., Nicholls, C. M., & Ormston, R. (Eds.). (2013). *Qualitative research practice: A guide for social science students and researchers*. Thousand Oaks, CA: Sage.

Robinson, O. C. (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

Rockart, J. F. (1978). Chief executives define their own data needs. *Harvard Business Review, 57*(2), 81-93. Retrieved from www.hrb.org

Rockart, J.F., & Bullen, V.C. (1981). A primer on critical success factors. Retrieved from http://dspace.mit.edu/bitstream/handle/1721.1/1988/SWP-1220-08368993-CISR-069.pdf?sequence¼1

Rosa, W., Packard, T., Krupanand, A., Bilbro, J. W., & Hodal, M. M. (2013). COTS integration and estimation for ERP. *Journal of Systems and Software, 86*, 538-550. doi:10.1016/j.jss.2012.09.030

Roulston, K., & Shelton, S. A. (2015). Reconceptualizing bias in teaching qualitative research methods. *Qualitative Inquiry, 21*, 332–342. doi:10.1177/1077800414563803

Rout, S. S., Das, S., & Hota, J. R. (2013). ERP implementation success: The people (P) factor. *ACADEMICIA: An International Multidisciplinary Research Journal, 3*(7), 194-205. Retrieved from http://www.saarj.com/

Saade, R. G., & Nijher, H. (2016). Critical success factors in enterprise resource planning implementation: A review of case studies. *Journal of Enterprise Information Management, 29*, 72-96. doi:10.1108/JEIM-03-2014-0028

Saini, S., Nigam, S., & Misra, S. C. (2013). Identifying success factors for implementation of ERP at Indian SMEs and large organizations and multinational organizations: A comparative study. *Journal of Modelling in Management, 8*, 103-122. doi:10.1108/17465661311312003

Sangar, A. B., & Iahad, N. B. A. (2013). Critical factors that affect the success of business intelligence systems (BIS) implementation in an organization. *International Journal of Scientific & Technology Research, 2*(2), 14-16. Retrieved from http://www.ijstr.org/

Saraf, N., Liang, H., Xue, Y., & Hu, Q. (2013). How does organisational 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

Sarker, S., Sarker, S., Sahaym, A., & Bjørn-Andersen, N. (2012). Exploring value cocreation in relationships between an ERP vendor and its partners: A revelatory case study. *MIS Quarterly, 36*, 317-338. Retrieved from http://www.misq.org/

Scheckenbach, T., Zhao, F., Allard, E., Burke, J., Chiwaki, K., & Marlow, S. (2014). Issues of ERP upgrade in public sectors: A case study. In *International Conference on Human-Computer Interaction*, 754-763. Retrieved from http://2016.hci.international/

Schniederjans, D., & Yadav, S. (2013). Successful ERP implementation: An integrative model. *Business Process Management Journal, 19*, 364-398. doi:10.1108/14637151311308358

Seethamraju, R., & Sundar, D. K. (2013). Influence of ERP systems on business process agility. *IIMB Management Review, 25*(3), 137-149. doi:10.1016/j.iimb.2013.05.001

Seth, M., Kiran, R. & Goyal, D.P. (2015). Identification of critical success factors for the implementation of supply chain management information system through SEM approach. *Global Journal of Management and Business Research, 15*(6), 8-24. Retrieved from http://journalofbusiness.org/index.php/GJMBR

Shatat, A. S., & Dana, N. (2016). Critical success factors across the stages of ERP system implementation in Sohar University: A case study. *International Journal of Management and Applied Research, 3*, 31-47. doi:10.18646/2056.31.16-003

Shaul, L., & Tauber, D. (2012). CSFs along ERP life-cycle in SMEs: A field study. *Industrial Management & Data Systems, 112*, 360-384. doi:10.1108/02635571211210031

Shaul, L., & Tauber, D. (2013). Critical success factors in enterprise resource planning systems: Review of the last decade. *ACM Computing Surveys, 45*, 55:1-55:39. doi:10.1145/2501654.2501669

Shaw, B. T. (2012). *Exploring the factors of an enterprise resource planning system in a local government organization* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Full Text Database. (Order No. 3510463)

Shkurti (Perri), R., Mbreshtani, A., & Maloku, E. (2014). Impact of ERP in performance of Albanian companies: A factorial analysis. *Journal of Information Systems & Operations Management, 8,* 1-14. Retrieved from http://jisom.rau.ro/forward.html

Silverman, D. (2013). *Doing qualitative research: A practical handbook* (4th ed.). Thousand Oaks, CA: Sage.

Simatupang, T., Govindaraju, R., & Amaranti, R. (2016). Change management perspectives in an ERP module implementation: A case study in a telecommunication company. *Jurnal Teknik Industri, 18*, 51-62. doi:10.9744/jti.18.1.51-62

Şimşit, Z. T., Günay, N. S., & Vayvay, Ö. (2014). Theory of constraints: A literature review. *Procedia-Social and Behavioral Sciences, 150*, 930-936. doi:10.1016/j.sbspro.2014.09.104

Soja, P. (2015). Reexamining critical success factors for enterprise system adoption in transition economies: Learning from Polish adopters. *Information Technology for Development, 22*, 1-27. doi:10.1080/02681102.2015.1075189

Soler, İ. S., Feliks, J., & Ömürgönülşen, M. (2016). The measurement of the perception of the relationship between selection criteria and critical success factors of enterprise resource planning. *International Journal of Business and Social Science, 7*(5), 36-47. Retrieved from http://www.ijbssnet.com/

Soltan, E. K. H., Jusoh, A., & Bagheri, M. M. (2015). An integrative environmental framework for a better enterprise resource planning post-implementation success.

Mediterranean Journal of Social Sciences, 6(6), 153-162. Retrieved from

http://www.mcser.org/journal/index.php/mjss/index

Soltan, E. K. H., Jusoh, A., Mardani, A., & Bagheri, M. M. (2015). Successful enterprise

resource planning post-implementation: Contributions of technological factors.

Journal of Soft Computing and Decision Support Systems, 2(4), 17-25. Retrieved

from http://jscdss.com/index.php/files/index

Somers, T. M., & Nelson, K. G. (2004). A taxonomy of players and activities across the

ERP project life cycle. *Information & Management, 41*, 257-278.

doi:10.1016/S0378-7206(03)00023-5

Srivastava, S. & Misra, M. (2014). Developing evaluation matrix for critical success

factors in technology forecasting. *Global Business Review, 15*, 363–380.

doi:10.1177/0972150914523598

Stacey, R. (2013). *Strategic management and organisational dynamics: The challenge of

complexity* (Laureate Education, Inc., custom ed.). Essex, England: Pearson

Education Limited.

Staehr, L., Shanks, G., & Seddon, P. B. (2012). An explanatory framework for achieving

business benefits from ERP systems. *Journal of the Association for Information

Systems, 13*, 424-465. Retrieved from http://aisel.aisnet.org/jais/

Stanciu, V., & Tinca, A. (2013). ERP solutions between success and failure. *Accounting

and Management Information Systems, 12*, 626-649. Retrieved from

http://econpapers.repec.org/article/amijournl/

Subiyakto, A., Ahlan, A. R., & Sukmana, H. T. (2014). An alternative method for

    determining critical success factors of information system project. *TELKOMNIKA*

    (Telecommunication Computing Electronics and Control), 12, 665-674.

    doi:10.12928/TELKOMNIKA.v12i3.105

Sun, H., Ni, W., & Lam, R. (2015). A step-by-step performance assessment and

    improvement method for ERP implementation: Action case studies in Chinese

    companies. *Computers in Industry, 68*, 40-52. doi:10.1016/j.compind.2014.12.005

Sun, H., Ni, W., Lam, R., & Ng, C. Y. (2016). A stage-by-stage assessment of enterprise

    resource planning implementation: An empirical study from Hong Kong. *Journal*

    of Global Information Technology Management, 19, 104-127.

    doi:10.1080/1097198X.2016.1173387

Sundtoft Hald, K., & Mouritsen, J. (2013). Enterprise resource planning, operations and

    management: Enabling and constraining ERP and the role of the production and

    operations manager. *International Journal of Operations & Production*

    Management, 33, 1075-1104. doi:10.1108/IJOPM-11-2011-0430

Supramaniam, M., Abdullah, A., & Ponnan, R. (2014). Cost analysis on ERP system

    implementation amongst Malaysian SMEs. *International Journal of Trade,*

    Economics and Finance, 5, 72-76. doi:10.7763/IJTEF.2014.V5.343

Sykes, T. A., Venkatesh, V., & Johnson, J. L. (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/

Taherdoost, H., & Keshavarzsaleh, A. (2015). A theoretical review on IT project
success/failure factors and evaluating the associate risks. Paper presented at the
meeting of the *World Scientific and Engineering Academy and Society
International Conference*, Sliema, Malta. doi:10.13140/RG.2.1.3214.9206

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

Tasevska, F., Damij, T., & Damij, N. (2014). Project planning practices based on
enterprise resource planning systems in small and medium enterprises—A case
study from the Republic of Macedonia. *International Journal of Project
Management, 32*, 529-539. doi:10.1016/j.ijproman.2013.08.001

Thomas, W. S., Babb, D., & Spillan, J. E. (2012). The impact of a focus on change in
technology in successful implementation of SAP enterprise resource planning
systems in North and South America. *Journal of Management Policy and
Practice, 13*(5), 19-34. Retrieved from http://www.na-businesspress.com

Titze, K., Schenck, S., Logoz, M. Z., & Lehmkuhl, U. (2014). Assessing the quality of
the parent–child relationship: Validity and reliability of the Child–Parent
Relationship Test (Chip-C). *Journal of Child and Family Studies, 23*, 917-933.
doi:10.1007/s10826-013-9749-7

Tobie, A. M., Etoundi, R. A., & Zoa, J. (2016). A literature review of ERP implementation within African countries. *The Electronic Journal of Information Systems in Developing Countries, 76*, 1-20. Retrieved from http://www.ejisdc.org

Tong, A., Winkelmayer, W. C., & Craig, J. C. (2014). Qualitative research in CKD: An overview of methods and applications. *American Journal of Kidney Diseases, 64*, 338-346. doi:10.1093/ndt/gfu354

Totla, K., Mandot, M., & Gaur, S. (2016). An insight of critical success factors for ERP model. *International Journal of Emerging Research in Management & Technology, 5*, 90-92. Retrieved from http://www.ermt.net/

Trabka, J., & Soja, P. (2014). Agile versus design-based approach to ERP system implementation: A cross-case study. *Journal of Management and Finance, 12*(3), 305-323. Retrieved from http://www.zif.wzr.pl/pim/

Tzeng, S. & Chang, K.C. (2015). Manage toward success- Utilization of analytics in acquisition decision making. *Defense Acquisition Research Journal, 22*(73), 192-214. Retrieved from http://www.dau.mil/Publications/default.aspx

U.S. Department of Health & Human Services. (2015). The Belmont Report. Retrieved from http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html

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

Underhill, K. (2014). Legal and ethical values in the resolution of research-related

   disputes: How can IRBs respond to participant complaints? *Journal of Empirical*

   Research on Human Research Ethics, 9, 71–82. doi:10.1525/jer.2014.9.1.71

Upadhyay, P. (2013). Proposing a model to assist Indian micro, small and medium scale

   enterprises in their ERP implementation. *Asia-Pacific Journal of Management*

   Research and Innovation, 9, 91-98. doi:10.1177/2319510X13483516

Upadhyay, P., Kundu, A., & Nair, S. (2016). On managing business, organisation climate

   and enterprise system implementation: Insights from Indian MSMEs. *Journal of*

   Workplace Learning, 28, 472-483. doi:10.1108/JWL-05-2016-0040

Vasiliev, R., & Levochkina, G. (2015). Influence of critical success factors on business

   development in IT consulting. *Eurasian Journal of Business and Management,*

   3(3), 43-53. doi:10.15604/ejbm.2015.03.03.006

Venkatesh, J., Aarthy, C., Thenmozhi, S., & Balasubramanie, P. (2013). Operation of

   enterprise resource planning system implementation compatibility towards

   technical advancement. *Journal of Computer Science, 9*, 169-175.

   doi:10.3844/jcssp.2013.169.175

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative

   divide: Guidelines for conducting mixed methods research in information

   systems. *MIS Quarterly, 37*, 21-54.Retrived from http://www.misq.org/

Venkatraman, S., & Fahd, K. (2016). Challenges and success factors of ERP systems in

   Australian SMEs. *Systems, 4*, 1-18. doi:10.3390/systems4020020

Von Bertalanffy, L. (1972). The history and status of general systems theory. *Academy of*

Management Journal, 15, 407-426. doi:10.2307/255139

Wainwright, D. W., & Shaw, C. S. (2013). Modernising pathology services: Modelling

effective IT project collaboration. *The International Journal of Public Sector*

Management, 26, 268-282. doi:10.1108/IJPSM-11-2011-0129

Weng, T., & Liu, C. (2013). An empirical study on the benefit analysis of enterprises

across the strait using ERP systems. *International Journal of Business and*

Management, 8, 35-49. doi:10.5539/ijbm.v8n17p35

Wickramasinghe, V., & Karunasekara, M. (2012). Impact of ERP systems on work and

work-life. *Industrial Management & Data Systems, 112*, 982-1004.

doi:10.1108/02635571211238554

Williams, J., Williams, M. D., & Morgan, A. (2013). A teleological process theory for

managing ERP implementations. *Journal of Enterprise Information Management,*

26, 235-249. doi:10.1108/17410391311325216

Woolman, T. A. (2014). Guiding principles for successful enterprise performance

solution system implementations. *International Journal of Business and*

Management, 9, 143-148. doi:10.5539/ijbm.v9n10p143

Yaghoubi, N. M., & Hojatizade, M. (2014). Knowledge management: Implementing

change to implementation ERP systems. *International Journal of Review in Life*

Sciences, 4(10), 75-84. Retrieved from http://pharmascope.org/ijrls/index.php

Yaghubi, S., & Modiri, N. (2014). The control model of security in the deployment of

ERP systems. *International Journal of Computer Science and Information*

Security, 12(6), 29-35. Retrieved from https://sites.google.com/site/ijcsis/

Yeh, C. H., & Xu, Y. (2013). Managing critical success strategies for an enterprise resource planning project. *European Journal of Operational Research, 230*, 604-614. doi:10.1016/j.ejor.2013.04.032

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. K. (2013). Validity and generalization in future case study evaluations. *Evaluation, 19*, 321-332. doi:10.1177/1356389013497081

Yin, R. K. (2014). *Case study research: Design and methods*. (5th ed.). Thousand Oaks, CA: Sage.

Young, R., & Poon, S. (2013). Top management support—Almost always necessary and sometimes sufficient for success: Findings from a fuzzy set analysis. *International Journal of Project Management, 31*, 943-957. doi:10.1016/j.ijproman.2012.11.013

Zach, O., & Munkvold, B. E. (2012). Identifying reasons for ERP system customization in SMEs: A multiple case study. *Journal of Enterprise Information Management, 25*, 462-478. doi:10.1108/17410391211265142

Zach, O., Munkvold, B. E., & Olsen, D. H. (2014). ERP system implementation in SMEs: Exploring the influences of the SME context. *Enterprise Information Systems, 8*, 309-335. doi:10.1080/17517575.2012.702358

Zeng, Y., & Skibniewski, M. J. (2013). Risk assessment for enterprise resource planning

(ERP) system implementations: A fault tree analysis approach. *Enterprise*

Information Systems, 7, 332-353. doi:10.1080/332 353 17517575.2012.690049

Ziemba, E., Obłąk, I., & Informatyczna, B. S. (2013). Critical success factors for ERP

systems implementation in public administration. *Interdisciplinary Journal of*

Information, Knowledge, and Management, 8, 1-19. Retrieved from

https://www.learntechlib.org/

Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and

reporting findings. *Theory and Practice in Language Studies, 3*, 254-262.

doi:10.4304/tpls.3.2.254-262

Zouine, A., & Fenies, P. (2014). The critical success factors of the ERP system project: A

meta-analysis methodology. *Journal of Applied Business Research, 30*, 1407-

1448. doi:10.19030/jabr.v30i5.8796

Appendix A: Recruitment Letter for Study Participants

Re: Doctoral Candidate - Research Study
Dear City of XXXXXXXXX Employees and Vendors: [Date]

My name is Jennifer Miller, and I am a student at Walden University seeking a Doctorate of Business Administration with a specialization in Finance. I am conducting a research study entitled: "Strategies for U.S. City Government Enterprise Resource Planning System Implementation Success." I am interested in conducting this study to explore what enterprise resource planning (ERP) system implementation critical success factors and strategies U.S. city governments use to successfully implement ERP systems.

I am seeking face-to-face interviews or Internet-supported interviews with the City of XXXXXXXXX employees and ERP system implementation vendors who meet the following criteria:

- Employees must have been directly or indirectly employed by the City of XXXXXXXXX during the ERP system implementation.
- Employees and vendor personnel must be available for face-to-face interviews during one or more of the following weeks: the 2 weeks immediately prior to the onsite visit (by Internet-supported means), the 1 week on-site visit, or the 1 week immediately after the on-site visit (by Internet-supported means).
- Employees and vendor personnel must be fluent in English.
- Employees and vendor employees are 18 years of age and older.

This study selection criteria exists to assure participants are likely to possess knowledge and information relevant to the study's purpose. Your participation is completely voluntary, and you may withdraw at any time, even after data collection. I will protect your identity, and your individual responses to interview questions will not be published or disclosed.

All individual answers to questions will be recorded for analysis and reported in the study with no information identifying you. However, I will ask for an organizational representative to share organization documents regarding the organization's ERP system implementation. I will share the findings from the study with each participant individually, other scholars, and the City of XXXXXXXXXX'S leadership.

I am requesting your participate in my study. You can contract me by telephone at XXX-XXX-XXXX or XXXXX@WaldenU.edu if you are interested or have any questions concerning participation. Thank you for your time and consideration.

Sincerely,

_____
Jennifer A. Miller, CDFM-A, CGFM, DFMCP2
DBA Candidate of Walden University

Appendix B: Letter of Cooperation

City of XXXXXXXXX
Name
(XXX) XXX-XXXX / XXXX@XXX.gov
Address

Dear Jennifer A. Miller,   September 26, 2016

Based on my review of your research proposal, I give permission for you to conduct the study entitled Strategies for U.S. City Government Enterprise Resource Planning System Implementation Success within the City of XXXXXXXXX. As part of this study, I authorize you to recruit employees to serve as interview participants as part of the data collection process. I also authorize you to contact interviewees after the single interview to perform member checking of the synopsized transcripts of audio recorded interview data. Results and subsequent dissemination activities may be completed via electronic or paper formats as requested by organization employees. Individuals' participation will be voluntary and at their own discretion.

Additionally, the City of XXXXXXXXX will provide organization documentation including training plans and schedules, project plans, contracts, and other literature from the ERP system implementation experience.

We understand that our organization's responsibilities include: access to personnel known to have direct experience with the organization's enterprise resource planning (ERP) system implementation; one climate-controlled private room with at least a table and two chairs for approximately 1 hour per employee interview; and adequate facility access during the designated interview appointments. If an Internet-supported interview is arranged, we will provide participants access to a computer with program(s) to facilitate virtual meetings in addition to the previously outlined responsibilities. We reserve the right to withdraw from the study at any time if our circumstances change.

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

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

Sincerely,

Appendix C: Interview Protocol

1. Preface: I will initiate introduction of myself to the scheduled participant, provide administrative information of the location and interviewee rights, and share the central focus of the interview.

2. Warm-up: I will ask less thought provoking, yet specific questions to establish focus of the time, place, role, and experience under study.

3. Main body: I will ask each participant the interview questions, in the same order, using the same interview questions.

4. Main body addition: I will annotate and incorporate clarification of non-verbal communications as applicable.

5. Cool-off: I will offer the participant an opportunity to hear the questions a final time so the interviewee may elaborate further on any responses or provide further content of contributory nature.

6. Closure: I will thank the interviewee(s) for his/her (their) valuable contribution and promptly record my reflections of each interview process.

Appendix D: Interview Questions

Interview Questions

1. What were the main reasons/motivation for the ERP system implementation?

2. What was your role during the ERP system implementation process?

3. Why was/is the ERP system implementation important to your organization?

4. How do you define the success for this ERP system implementation?

5. What critical factors helped the organization overcome and facilitate ERP system implementation challenges?

6. What strategies helped the organization overcome and facilitate ERP system implementation challenges?

7. What were key barriers to applying the implementation strategies?

8. What other additional information would you like to add about critical success factors and strategies for implementing this ERP system?

Appendix E: Client Non-Disclosure Agreement

CLIENT NON-DISCLOSURE AGREEMENT

This CLIENT NON-DISCLOSURE AGREEMENT, effective as of the date last set forth below (this "Agreement"), between the undersigned actual or potential client ("Client") and **Rev.com, Inc.** ("Rev.com") is made to confirm the understanding and agreement of the parties hereto with respect to certain proprietary information being provided to Rev.com for the purpose of performing translation, transcription, video captions and other document related services (the "Rev.com Services"). In consideration for the mutual agreements contained herein and the other provisions of this Agreement, the parties hereto agree as follows:

1. Scope of Confidential Information

1.1. "Confidential Information" means, subject to the exceptions set forth in Section 1.2 hereof, any documents or other text supplied by Client to Rev.com for the purpose of performing the Rev.com Services.

1.2. Confidential Information does not include information that: (i) was available to Rev.com prior to disclosure of such information by Client and free of any confidentiality obligation in favor of Client known to Rev.com at the time of disclosure; (ii) is made available to Rev.com from a third party not known by Rev.com at the time of such availability to be subject to a confidentiality obligation in favor of Client; (iii) is made available to third parties by Client without restriction on the disclosure of such information; (iv) is or becomes available to the public other than as a result of disclosure by Rev.com prohibited by this Agreement; or (v) is developed independently by Rev.com or Rev.com's directors, officers, members, partners, employees, consultants, contractors, agents, representatives or affiliated entities (collectively, "Associated Persons").

2. Use and Disclosure of Confidential Information

2.1. Rev.com will keep secret and will not disclose to anyone any of the Confidential Information, other than furnishing the Confidential Information to Associated Persons; provided that such Associated Persons are bound by agreements respecting confidential information. Rev.com will not use any of the Confidential Information for any purpose other than performing the Rev.com Services on Client's behalf. Rev.com will use reasonable care and adequate measures to protect the security of the Confidential Information and to attempt to prevent any Confidential Information from being disclosed or otherwise made available to unauthorized persons or used in violation of the foregoing.

2.2. Notwithstanding anything to the contrary herein, Rev.com is free to make, and this Agreement does not restrict, disclosure of any Confidential Information in a judicial, legislative or administrative investigation or proceeding or to a government or other regulatory agency; provided that, if permitted by law, Rev.com provides to Client prior notice of the intended disclosure and permits Client to intervene therein to protect its interests in the Confidential Information, and cooperate and assist Client in seeking to obtain such protection.

3. Certain Rights and Limitations

3.1. All Confidential Information will remain the property of Client.

3.2. This Agreement imposes no obligations on either party to purchase, sell, license, transfer or otherwise transact in any products, services or technology.

4. Termination

4.1. Upon Client's written request, Rev.com agrees to use good faith efforts to return promptly to Client any Confidential Information that is in writing and in the possession of Rev.com and to certify the return or destruction of all Confidential Information; provided that Rev.com may retain a summary description of Confidential Information for archival purposes.

4.2. The rights and obligations of the parties hereto contained in Sections 2 (Use and Disclosure of Confidential Information) (subject to Section 2.1), 3 (Certain Rights and Limitations), 4 (Termination), and 5 (Miscellaneous) will survive the return of any tangible embodiments of Confidential Information and any termination of this Agreement.

5. Miscellaneous

5.1. Client and Rev.com are independent contractors and will so represent themselves in all regards. Nothing in this Agreement will be construed to make either party the agent or legal representative of the other or to make the parties partners or joint venturers, and neither party may bind the other in any way. This Agreement will be governed by and construed in accordance with the laws of the State of California governing such agreements, without regard to conflicts-of-law principles. The sole and exclusive jurisdiction and venue for any litigation arising out of this Agreement shall be an appropriate federal or state court located in the State of California, and the parties agree not to raise, and waive, any objections or defenses based upon venue or forum non conveniens. This Agreement (together with any

agreement for the Rev.com Services) contains the complete and exclusive agreement of the parties with respect to the subject matter hereof and supersedes all prior agreements and understandings with respect thereto, whether written or oral, express or implied. If any provision of this Agreement is held invalid, illegal or unenforceable by a court of competent jurisdiction, such will not affect any other provision of this Agreement, which will remain in full force and effect. No amendment or alteration of the terms of this Agreement will be effective unless made in writing and executed by both parties hereto. A failure or delay in exercising any right in respect to this Agreement will not be presumed to operate as a waiver, and a single or partial exercise of any right will not be presumed to preclude any subsequent or further exercise of that right or the exercise of any other right. Any modification or waiver of any provision of this Agreement will not be effective unless made in writing. Any such waiver will be effective only in the specific instance and for the purpose given.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed below by their duly authorized signatories.

CLIENT

Print Name:_____

By: _____
   Name:
   Title:
   Date:

Address for notices to Client:

_____
_____
_____
_____

REV.COM, INC.

_____

By: *Cheryl Brown*
Name: Cheryl Brown
Title: Account Manager
Date: March 15, 2016

Address for notices to Rev.com, Inc.:

251 Kearny St. Suite 800
San Francisco, CA 94108