DISTRIBUTION CENTER ERP UTILIZATION

by

Andrew B. Davidson

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Dissertation

Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Liberty University, School of Business

August 2022
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APPROVED BY:

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Abstract

Globalization has forced the supply chain industry into becoming more reliant on technology. Organizations invest large amounts of resources in remaining competitive in today’s market. The primary tool distribution centers leverage in their general business practice is an enterprise resources planning (ERP) system. Unfortunately, this system is often underutilized after the initial implementation. This qualitative case study aimed to explore the benefits of advanced ERP training and knowledge management policies in order to provide recommendations to increase distribution centers ERP utilization. The recommendations, if implemented, will maximize corporate capabilities by influencing ERP efficiency. A manufacturing organization with distribution centers throughout North America provided 24 participants that contributed various perspectives. Data was collected using interviews and past research. Five themes emerged 1) reduced answer searching, 2) increased ERP understanding, 3) training increases utilization, 4) functional experts, and 5) knowledge of available training. Primary findings include the importance of advanced training and knowledge management when maximizing the utilization of ERP systems.

Keywords: SAP, ERP system, knowledge management, key user, utilization.
Dedication

I dedicate this paper to my closest family. The Lord has blessed me with incredible friends, family, and mentors. Without this support system to lean on, I would not have made it to completion. Thank you.

Diane, you have been my rock throughout the past few years. Without your support, I would not have endured this journey. Your patience and willingness to listen have been a great blessing. Thank you.

Mom, if it were not for your unswerving support, I would not be the scholar I am today. Your wisdom and guidance have been the greatest reason I could complete this paper. The many hours spent in conversation and discussion have been a valued treasure. Thank you.

Dad, words cannot express how thankful I am for your support. I could not have completed this journey without our many conversations about the challenges you faced when completing your Ph.D. You continue to be the greatest role model a son could ask for. Thank you.
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I want to acknowledge my dissertation chair, Dr. Arrington. Your guidance taught me more than I expected during this program. Your encouraging feedback and immense patience have enabled me to achieve this goal. You have been a true blessing. Thank you, Dr. Johnson-Blake, your attention to detail has given me the guidance needed to submit a dissertation paper I can be proud of. Your positive attitude has encouraged me to move forward despite challenging times. Thank you.
# Table of Contents

Abstract .................................................................................................................................................. iii

Dedication ................................................................................................................................................ iv

Acknowledgments .................................................................................................................................. v

List of Tables ........................................................................................................................................ xi

List of Figures ......................................................................................................................................... xii

Section 1: Foundation of the Study ..................................................................................................... 1

  Background of the Problem .................................................................................................................. 2

  Problem Statement ............................................................................................................................... 4

  Purpose Statement ................................................................................................................................ 4

  Research Questions ............................................................................................................................... 5

  Nature of the Study ............................................................................................................................... 5

    Discussion of Research Paradigms ..................................................................................................... 6

    Discussion of Design ........................................................................................................................... 6

    Discussion of Method .......................................................................................................................... 7

    Discussion of Triangulation ............................................................................................................... 8

    Summary of the Nature of the Study .................................................................................................. 9

Conceptual Framework ......................................................................................................................... 9

  Concepts ................................................................................................................................................ 10

  Theories ............................................................................................................................................... 11

  Constructs ............................................................................................................................................. 11

  Relationships Between Concepts, Theories, Constructs ................................................................. 13
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of the Research Framework</td>
<td>14</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>14</td>
</tr>
<tr>
<td>Assumptions, Limitations, Delimitations</td>
<td>15</td>
</tr>
<tr>
<td>Assumptions</td>
<td>16</td>
</tr>
<tr>
<td>Limitations</td>
<td>16</td>
</tr>
<tr>
<td>Delimitations</td>
<td>17</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>17</td>
</tr>
<tr>
<td>Reduction of Gaps in the Literature</td>
<td>18</td>
</tr>
<tr>
<td>Implications for Biblical Integration</td>
<td>18</td>
</tr>
<tr>
<td>The Benefit of Business Practice and Relationships to Cognate</td>
<td>20</td>
</tr>
<tr>
<td>Summary of the Significance of the Study</td>
<td>21</td>
</tr>
<tr>
<td>A Review of the Professional and Academic Literature</td>
<td>21</td>
</tr>
<tr>
<td>Business Practices</td>
<td>22</td>
</tr>
<tr>
<td>The Problem</td>
<td>27</td>
</tr>
<tr>
<td>Concepts</td>
<td>31</td>
</tr>
<tr>
<td>Theories</td>
<td>41</td>
</tr>
<tr>
<td>Constructs</td>
<td>46</td>
</tr>
<tr>
<td>Related Studies</td>
<td>51</td>
</tr>
<tr>
<td>Anticipated and Discovered Themes</td>
<td>55</td>
</tr>
<tr>
<td>Summary of the Literature Review</td>
<td>59</td>
</tr>
<tr>
<td>Summary of Section 1 and Transition</td>
<td>62</td>
</tr>
<tr>
<td>Section 2: The Project</td>
<td>64</td>
</tr>
<tr>
<td>Purpose Statement</td>
<td>64</td>
</tr>
</tbody>
</table>
Role of the Researcher ........................................................................................................ 65
Research Methodology ........................................................................................................ 66
  Discussion of Flexible Design ............................................................................................. 66
  Discussion of the Qualitative Method ................................................................................. 67
  Discussion of Method for Triangulation ............................................................................ 67
  Summary of Research Methodology ................................................................................ 67
Participants .......................................................................................................................... 68
Population and Sampling .................................................................................................... 69
  Discussion of Population ................................................................................................. 69
  Discussion of Sampling .................................................................................................... 70
  Summary of Population and Sampling ............................................................................ 72
Data Collection & Organization ......................................................................................... 72
  Data Collection Plan ....................................................................................................... 73
  Instruments ..................................................................................................................... 73
  Data Organization Plan ................................................................................................... 75
  Summary of Data Collection & Organization ................................................................ 75
Data Analysis ...................................................................................................................... 75
  Emergent Ideas ............................................................................................................... 76
  Coding Themes ............................................................................................................... 76
  Interpretations ................................................................................................................ 77
  Data Representation ....................................................................................................... 77
  Analysis for Triangulation ............................................................................................... 77
  Summary of Data Analysis ............................................................................................. 78
Summary of Section 3 ........................................................................................................................................... 122
Summary and Study Conclusions ..................................................................................................................... 123
References ....................................................................................................................................................... 125
Appendix A: Standardized Questionnaire ....................................................................................................... 154
Appendix B: Interview Guide ............................................................................................................................ 155
Appendix C: Consent Form .............................................................................................................................. 157
Appendix D: Recruitment Email ....................................................................................................................... 161
Appendix E: Recruitment Follow-up Email ........................................................................................................ 162
Appendix F: License to use Knowledge Management Implementation Guide ............................................ 163
Appendix G: Permission to use Factors affecting employee performance ...................................................... 169
Appendix H: Permission to use Employee / Management Perception ............................................................. 170
Appendix I: Permission to use ERP Life Cycle ............................................................................................... 171
List of Tables

Table 1. Recommendations for Managers ..............................................................................................57
Table 2. Research Questions, Alignment, Themes ................................................................................85
Table 3. Word Count and Corresponding Weighted Percentage ..........................................................95
Table 4. Reference Code per Theme .....................................................................................................96
List of Figures

Figure 1. The Elements of the Framework and Flow of Action and Information .....................10
Figure 2. Super-user Selection / Training .............................................................................35
Figure 3. Knowledge Management Competency ERP Impact .............................................36
Figure 4. Knowledge Management Implementation Guide .................................................39
Figure 5. Factors affecting employee performance ............................................................44
Figure 6. Employee / Management Perception ....................................................................44
Figure 7. ERP Life Cycle ....................................................................................................54
Figure 8. Population Filter ..................................................................................................70
Figure 9. Data Analysis Spiral ............................................................................................94
Figure 10. Research Question Theme, Query Results by Group ........................................102
Figure 11. Hierarchical Tree Diagram ................................................................................103
Figure 12. Past Research ....................................................................................................109
Section 1: Foundation of the Study

Organizations invest large amounts of monetary resources in information systems that increase their competitive advantage over others in the supply chain (S.C.) industry. The globalization of the business market has made it easier for the consumer to obtain products internationally. Consumers expect innovative products delivered at the correct time and place at a reasonable cost, increasing the complexity of S.C. (Milovanović et al., 2017). Organizations recognize that increased sales, in turn, capture market share. A need existed to develop company resources to support increasing profits (Schlichter et al., 2020).

The S.C. industry found that enterprise resourcing planning (ERP) systems are a practical solution that provides integration between S.C. partners and efficiently increases products' flow to the consumer (Oghazi et al., 2018). An ERP system is a software platform used to manage business processes. ERP systems are cloud- or local-based platforms that process and interpret data. ERP systems also manage organizational resources: cash, manufacturing capacity, and raw materials. Purchase orders and payroll are also able to be tracked using this system. Due to the costly price tag of ERP systems, fully utilizing the software is expected. However, many organizational leaders who manage ERP have failed to endorse the continual advanced training that accompanies the software. Also, they have been unable to support knowledge management policies that would increase ERP basic knowledge. Post-implementation failures have resulted from management and users' lack of ERP understanding (Chadhar & Daneshgar, 2018).

Section I included the following: background of the study, the problem statement, research questions, nature of the study, the research design, conceptual framework, definitions, assumptions, the significance of the study, gaps in past research, biblical integration, and literature review. The background of the study provides a macro view that outlines the
foundation of the study. Section 2 discussed the role of the researcher and the research methodology. An overview of the sampling method and participants were also shared in this section. Since validity and reliability were paramount during this research, this section discussed data collection and analysis. The researcher covered an in-depth presentation of the findings and application to professional practice in Section 3. The researcher identified five common themes by applying the participants' perspectives and peer-reviewed literature. These themes provided recommendations to increase ERP utilization. This section also included a brief discussion covering the researcher's personal growth and biblical perspective surrounding the topic.

**Background of the Problem**

Organizations operating within the S.C. industry have found ERP tools a viable option for managing information flow, customer orders, inventory management, and financial resources. As organizations pursue a competitive advantage, reliance on technology has become the primary investment. Multifaceted business roles involving various departments require rapid up-to-date information flow from internal and external requirements (Ali & Miller, 2017). ERP systems are continually advancing as market requirements demand increase, delivering an increase in performance that matches updated processes throughout the past decade. As software updates are developed and pushed out to the market, those organizations that can leverage the latest technology have an increased chance of obtaining a competitive advantage. Ensuring that ERP users have received initial training and continue to receive advanced training is imperative to maximize the various software platforms' benefits.

As a part of the hiring process, it is common practice that organizations provide a detailed list of skills required for hiring recruits. Some organizations will subject candidates to a series of tests during the interview process to assess various competency levels. In contrast, others will
take resumes at face value and trust that the applicant has been honest. Once hired with senior leadership support, ERP users who lack the required competency can obtain training online, in-person via a certification class, or on the job. Arasanmi (2019) noted the positive relationship between supervisory support and knowledge transfer when training ERP users. Although time-consuming, on-the-job training is the least expensive; however, this methodology relies on tribal knowledge independent of the quality.

Knowledge management is transferring proven processes from one person to another. As employees reach retirement age or leave for other positions outside the department, organizations neglect to retain the wealth of knowledge that individual has developed over the years. Razzaq et al. (2019) found a direct link between organizational commitment to knowledge management and knowledge-work performance. Many organizations have documented their processes and retain this information in their standard operating procedures (SOP). The challenge with SOPs is revising when process change or software updates change within their processes. Understanding that ERP systems frequently receive updates is an example of when a department's SOP would require updating.

In a competitive marketplace, distribution centers rely on the knowledge of senior employees combined with advancing technology. However, increasing technological advancements and process retention are problems that challenge small to midsize distribution centers. Organizations experience underutilized ERP systems without advanced ERP training and knowledge management policies. As a result, a gap in research has been identified that addresses ERP utilization between the implementation and ERP end of life.
Problem Statement

The general problem addressed was the failure of organizations to maximize the capabilities of enterprise resource planning (ERP) platforms, resulting in ineffective processes and excessive waste of organizational resources. Huang (2016) concluded that organizations fail to take full advantage of ERP system abilities, leading to wasting excessive monetary resources. Organizations that miss the opportunity to maximize the ERP software can often lose revenues and fail strategic objectives (Ranjan et al., 2017). Mahmood et al. (2019) highlighted a series of challenges preventing ERP platforms from fully integrating. Badewi et al. (2018) expressed that organizations that fail to leverage an ERP platform experience negative financial and non-financial performance. The specific problem to be addressed in this study was the possible absence of advanced ERP training and knowledge management policies, potentially resulting in underutilized ERP systems.

Purpose Statement

The purpose of this qualitative case study was to explore the benefits of advanced ERP training and knowledge management policies to provide recommendations to distribution centers that will maximize the capabilities by influencing ERP efficiency. As software technology advances in sophistication, so does the requirement to remain knowledgeable and proficient when operating in an ERP setting. Barth and Koch (2019) suggested that advanced training is critical to a successful ERP system. In a business environment where organizations experience decreased employee retention, knowledge management is a vital factor to consider. Santoro et al. (2018) noted that firms that implement knowledge management policies experience an increase in competitive advantage. Organizations dedicate significant amounts of monetary resources to...
ERP systems; failing to remain current or reallocating resources to new employees' development is costly and causes ERP systems to be underutilized until the users can be adequately trained.

**Research Questions**

The specific problem statement focused on the underutilization of small to medium-sized distribution centers' ERP systems. Organizations must be motivated to change; this is accomplished by reminding senior management of the benefits of their original investment. Endorsement from senior management is essential for post-implementation projects. ERP systems are designed to increase efficiencies through shared communication between internal and external partners. The first research question explored in this study focused on understanding the impact of knowledge management policies on an organization. The second question highlighted how advanced training could improve the utilization of ERP systems. The last question provided a shared overview of best practices organizations have used to increase ERP utilization in a competitive market.

**Nature of the Study**

This qualitative case study's design explored a distribution center's opportunities to increase ERP system utilization. Qualitative research leverages an interpretive framework to bear diverse philosophical expectations (Creswell & Poth, 2018). Examining the research through the lens of a pragmatism paradigm created a research environment that encouraged solutions to the identified problem. The research's flexible design enabled the study to draw data from questionnaires, interviews, and past research. The triangulation of the multiple data sources obtained throughout the research strengthens the validity of the conclusions.
Discussion of Research Paradigms

Post positivism, social constructivism, postmodern perspective, and pragmatism are a few interpretive frameworks. Post positivism believes that research evidence is always imperfect. (Robson & McCartan, 2016). Social constructivism is an approach to understanding how individuals develop conclusions based on their views of society (Robson & McCartan, 2016). Social constructivism also interprets the data collected based on individual experiences. Postmodernism's purpose is to change an individual's thinking pattern or group. Pragmatism seeks to find a solution to real-world problems. The research paradigm applied in this case study was pragmatism. Many organizations may feel, based on experience, that they do not have a problem.

The appropriate research paradigm for this topic was pragmatism. Pragmatism focuses on solutions and the research outcome (Creswell & Poth, 2018; Van Dijk & Myin, 2018). Goldkuhl (2017) noted that "pragmatism is concerned with action and change and the interplay between knowledge and action" (p. 136). This paradigm guided the case study by gaining insight into past processes and various sets of future process expectations; each case study may have its ERP platforms. This paradigm enabled the research to highlight critical steps a distribution center can deploy to maximize its ERP system's benefits within organizational processes. The study reached beyond the return on investment for organizations and embraced developing employees' human factors (Visser, 2019), thus capitalizing on the pragmatist perspective.

Discussion of Design

This study applied a flexible design using a qualitative method, specifically, a single case study design. In this study, non-numerical data was the appropriate methodology to explore this problem (Robson & McCartan, 2016). This design has three primary research strategies: fixed,
Flexible, and mixed. Fixed method design is applied when known variables require statistical analysis to prove an identified hypothesis. Robson and McCartan (2016) noted that a fixed structure is used as a quantitative research method but cannot catch human behavior complexities. Fixed designs are best suited for experimentally designed research. The flexible design provides the agility to blend various collection methods depending on the research direction. Case studies, ethnographic studies, and grounded theory studies are all appropriate approaches for a flexible design. Mixed methods are used to collect qualitative and quantitative data from various sources. The mixed methods are appropriate when applying more than one research strategy (Robson & McCartan, 2016).

**Discussion of Method**

Qualitative research is relevant when examining constructs that cannot be easily measured (Creswell & Poth, 2018). The qualitative approach allowed this study to capitalize on the opportunities to understand the problem through various user levels (Kozleski, 2017). Changing how an organization views current processes can be a challenge by itself. Qualitative research is applied when recommending sustainable changes within an organization (Kegler et al., 2018). Qualitative strategies include case studies, ethnographic studies, phenomenology, and grounded theory studies (Abutabenjeh & Jaradat, 2018). Conducting a single case study enables the research to identify gaps within the various ERP processes implemented by a small to a midsize distribution company. Case studies are applied to explore phenomena requiring an empirical investigation combined with multiple evidence sources (Robson & McCartan, 2016). Sharing a deeper understanding of how different organizations can overcome challenges could shape future investments that would increase the effectiveness and mitigate underutilized processes. Case studies are applied when answering research questions that ask "how" and
"why," seeking a deeper understanding of the phenomenon (Ridder, 2017). A case study framework provided insight into answering the first research question by conducting an in-depth exploration. Case studies compare and contrast similarities and differences of real-life cases (Creswell & Poth, 2018). This case study also provided examples responding to the second research question regarding increasing the utilization of ERP systems. Lastly, this design addressed RQ3, providing recommendations to the industry to increase ERP utilization at distribution centers.

Exploring the potential causes of why organizations underutilize ERP systems was a noble starting point in solving the established problem. However, exploring the various solutions that could provide value to organizations was the target of this research. Leveraging the correct research paradigm was critical to the journey the case study traveled along. Applying a qualitative versus a quantitative methodology guided the analysis to an in-depth understanding that may have uncovered productive solutions integrated into current processes. Viewing the organization's ERP challenges through a pragmatism lens, this research used a qualitative methodology using a single case study design to provide solutions that future managers can implement.

**Discussion of Triangulation**

The researcher implemented triangulation to validate the information obtained in this study. Interviews acted as the primary means of data collection for this qualitative research. Qualitative data collection encourages triangulation, using various information sources to increase reliability within the research (Natow, 2020). The literature review guided the research, providing historical references and past research to strengthen the current research assessment. Qualitative research utilizes literature reviews to support case studies' triangulation to elicit
questions about the study's contribution (Farquhar et al., 2020). Past research was used as a secondary data source to support the case study interviews and promote triangulation.

**Summary of the Nature of the Study.**

A flexible design single case study was selected to promote the exploration of the opportunities a distribution center has to increase its utilization of an ERP system. A pragmatism paradigm approach was employed to explore the various opportunities distribution centers can leverage to improve current ERP training and knowledge management policies. Using multiple qualitative data collection methods reinforced the recommendations by implementing a flexible design that minimizes bias through triangulation and synthesizing data from various sources.

**Conceptual Framework**

This qualitative research study's theoretical framework explored specific areas of opportunities between ERP competency levels and the benefits available when a distribution center fully utilizes an ERP system. Low competency levels result in underutilized ERP systems. The opportunity to improve an organization by focusing on advanced training, leadership endorsement, and knowledge management (KM) policies enables the organization to experience competitive advantage, increased work efficiency, and resource utilization. Balancing investments in advanced training, allocating time documenting ERP processes, and supportive organizational leadership can result in distribution centers obtaining the competitive advantage required to capture market share. Figure 1 represents the conceptual framework highlighting the relationship between ERP competency to perform and the benefits of the ERP system available to the distribution centers. The study's findings confirmed that leaders endorsed advanced training and knowledge management programs to improve ERP competency, increasing system utilization. The distribution center's leadership philosophy was the principal force that
determined the degree of organizational emphasis on the three critical elements: leadership endorsement, advanced training, and knowledge management. These elements are required to reach the benefits of full utilization of an ERP system. Exploring the degree to which each element was leveraged was the focus of this research.

Figure 1. The elements of the framework and flow of action and information.

Concepts

Leaders expect that their employees possess the required competency levels to execute a specified task. Past performance or assumed competencies are how managers form their expectations. In a fast-paced distribution center, managers may lack the capacity to learn the employees' capabilities. Herdinata et al. (2019) concluded that employee education and skill level play a significant role in the success of a technological process. Adequately equipping ERP users to meet management's expectations increases the probability that an organization fully utilizes the system. Investing in resource development is equally important as a capital investment (Motahar, 2018). Participating in employee development through mentoring,
providing advanced ERP training, and documenting proven processes in a KM program are opportunities distribution centers should consider.

**Theories**

The leadership style is the leading driver of a successful ERP operation. Hersey and Blanchard's situational leadership theory (SLT) was based on the principle that no leadership style is better than another (Thompson & Glasø, 2018). Originally called the life cycle approach, Hersey and Blanchard's theory is a leadership style that works well in an agile work environment (Raza & Sikandar, 2018). Hersey and Blanchard categorized followers into four styles: telling, selling, participating, and delegating. The employee is willing to execute a task; however, the selling style may lack competency. The telling and participating style employees lack the ambition to accomplish a given task even though the participating employee has the competency (Raza & Sikandar, 2018). Implementing a leadership style that mirrors the employee's personality increases the probability of success, resulting in fully utilizing ERP systems. Leaders must have a working knowledge of an employee's competence and motivation to perform a task (Thompson & Glasø, 2018). The SLT model confirmed that employees should be challenged when they obtain an increased readiness level (Mohiuddin & Mohteshamuddin, 2020). Understanding that each employee will have varying competency levels, the leadership style should be situational-dependent (Krogerus & Tschäppeler, 2018).

**Constructs**

*Leadership Endorsement*

One of the first constructs identified was leadership endorsement. Organizational leaders set the tone from which employees must follow. Corporate leaders should endorse initiatives to build their followers' ERP knowledge base (Lim et al., 2017). Mentoring has been a successful
method that leaders have used to develop promising employees. SLT and the leader-member exchange (LMX) models highlight leader endorsement's significant impact on its employees' development. LMX explores the relationship between management and subordinates (Shen, 2019). The LMX model falls into two categories: well-developed relationships and relationships requiring improvement (Martin et al., 2018). Well-defined relationships between the leader and the follower experience increased attention and shared resources that others may not experience (Khorakian & Sharifirad, 2018). Leaders mentor employees who seek alternative avenues to increase ERP competency, resulting in improved performance. Organizational leaders are interested in developing their employees by investing in their development experience, increased loyalty, and enhanced job satisfaction. Motivated employees seek various means to improve their competency.

**Advanced Training**

In today's competitive marketplace, distribution centers experience lost opportunities when investing in the latest technology without considering the current technology. Organizations may offer initial training during the onboarding process. Once integrated, advanced training becomes an investment in the employees, depending on the degree of leadership endorsement. An increased focus on advanced ERP training will ensure that systems can be optimized (Motahar, 2018). Adopting an ERP training plan that mirrors the distribution center's (DC) business plan is crucial to ensure organizational competency aligns with the center's vision (Barth & Koch, 2019). Integrating external ERP certifications as a requirement to hold key power user positions can increase the probability that the ERP system is being fully utilized (Liu et al., 2017). Key power ERP users can facilitate internal training to end-users as operations permits. These key users document ERP procedures that enable external and or
internal advanced ERP training to act as the foundation from which an organization can continually develop.

**Knowledge Management**

Documenting current processes and ensuring accessibility reduces the time spent training new users. The current business environment, where employees move between distribution centers, presents a good argument against investing in employee development. However, organizations implementing KM policies must realize a return on investment (ROI) that justifies the time and resources spent. Aaron (2009) concluded that leaders who implement a KM program experience a benefit-to-cost ratio of 20:1. Organizations understand the importance of KM programs but may lack the ability to maintain them as processes change. Failing to develop an ERP common operating picture is compounded by difficulty sourcing the proper documents explicitly designed for knowledge retention, which is a significant challenge for organizations (Jayawickrama et al., 2019).

**Relationships Between Concepts, Theories, Constructs**

Competitive advantage, work efficiency, and increased resource utilization are benefits distribution centers realize when fully utilizing an ERP system. Organizations struggle to obtain a competitive advantage. The ERP system is a primary means of setting an organization apart from the competition (Sheik & Sulphey, 2020). Information flow is critical within a distribution network, and ERP systems can reduce data duplication, decrease purchase orders, and order receipt time. Managing the various resources for a distribution center can be overwhelming. The technology ERP systems deliver organizations the ability to manage resources (Zabukovšek et al., 2019).
Summary of the Research Framework.

Organizational leaders are responsible for developing employees, mentoring, and providing advanced training that benefits the organization and motivates employees. This case study focused on research within the past five years on a small-to-medium distribution center that uses an ERP system as part of its operation. An exhaustive exploratory literature review combined with an industry questionnaire supported answering the three research questions throughout this qualitative case study.

Definition of Terms

Defining selected terms was provided for a better understanding.

Data: Data are facts used to define and communicate information for analysis. Data comes in various formats, textual, pictures, sounds, and videos (Stieglitz et al., 2018).

ERP: Enterprise Resource System is a software tool used by organizations to integrate information flow between departments (Ali & Miller, 2017). This software assists organizations in moving away from departmental silos by ensuring sections have the means to cross-communicate. ERP is the primary software platform used in manufacturing and distribution environments. ERP systems align human resources, financial management, S.C. management, and manufacturing strategic objectives. ERP systems are information systems (I.S.) purchased off the shelf or customized for specific use for businesses wishing to leverage advancing technology (Mamoghli et al., 2017).

ERP Competency: The ERP competency level is the degree of understanding necessary to complete a task. Basic, advanced, and expert levels identify the amount of ERP knowledge. Key users are experts in business processes that fill the role of educators, trainers, advisors, and
change agents (Maas et al., 2016). Problem-solving, analytical abilities, and ERP software knowledge define ERP competency (Flöthmann et al., 2018).

*Lead Time*: The amount of time between customer purchase and customer receipt defines lead time, and lead time is the delivery time between the supplier and the retailer's date of request (Chen et al., 2017). Distribution centers' efficiency might have several key performance indicators (KPIs) to measure their ERP process. Lead time is one of the most important. The ERP system manages the flow of information, which is vital in a competitive market.

*SAP* Systems, applications, and products in data processing (SAP) is one of the SC industry's premier vendors of ERP systems (Al-Sabri et al., 2018). The design of SAP software allows organizations to integrate business processes and share data in real time. In the business environment where business intelligence (BI) is relied upon to be a competitive advantage, the rapid transmission of verified data is essential for organizational success. SAP systems are modular in design that can be customized to match the company's requirements or purchased off-the-shelf from SAP.

*Supply Chain*: The process of obtaining raw materials, creating finished goods or parts for assembly, manufacturing the final product, and delivering to the customer directly or through distributors. It can also include the disposal of a product once it has reached the end of life defined by the supply chain [SC] (Turken et al., 2020). The SC consists of suppliers, manufacturers, warehouses, retail stores, and transportation asset strategies that deliver a product in the correct amount at the location and time requested (Liberty University, 2019).

**Assumptions, Limitations, Delimitations**

A few assumptions, limitations, and delimitations were acknowledged throughout the research based on the current S.C. industry and past research. The assumptions for this study
included leadership endorsement, active knowledge management policies, and ERP utilization. The study's confines were highlighted under the limitations, and the research boundaries were documented under the delimitations.

**Assumptions**

A few assumptions were applied throughout this study, the first being that the leadership endorses developing ERP users. Next, the assumption is that knowledge management policies are actively in place at the distribution center. Though KM is a challenging task, it is a critical part of the implementation process (Jayawickrama et al., 2017). Distribution centers have implemented an ERP system and understand its benefits, including the value in the utilization (Huang & Huang, 2019). Moreover, as a part of the strategic business plan, this study assumed that leveraging the power of the ERP system was included. Lastly, after implementing the ERP system, there are significant gaps in how organizations assess the effectiveness of their ERP systems (Kirmizi & Kocaoglu, 2020).

**Limitations**

**Limited Sample Size**

This study employed a single case study design using a qualitative research approach. A single case study limits the research to understand the phenomenon from a single organizational perspective. As a result, there was a limited sample size. Selecting an international organization with 50 years of experience operating in a continuous improvement ERP environment mitigated this limitation by their ability to provide proven recommendations for others to implement.

**ERP Assessments**

Implementing an ERP system into a distribution center is a significant project and another limitation of this study. ERP assessments are used post-implementation as a tool by
managers to ensure their employees retain the required user-level competency to achieve organizational expectations. ERP assessments are applied when evaluating the organization's employee readiness, processes, and technical requirements (Kirmizi & Kocaoglu, 2020). Post-implementation ERP assessments are relatively new to the industry and often overlooked. To ensure an accurate assessment was included in the study, additional sub-questions explaining competency levels were added to the interview questions.

**Delimitations**

The researcher limited this research's scope to exploring advanced training, leadership endorsement, and knowledge management policies' roles in ERP utilization. This research did not assess the competency level of the ERP users nor advocate changing leadership philosophy. Realizing that distribution centers may have varying constraints, this research was restricted to a single case study. This study intended to provide an outline for distribution centers to follow that increases their ERP systems utilization.

The qualitative interviews were limited to a single distribution center within the state of Pennsylvania. Distribution centers headquartered outside of Pennsylvania were not granted the opportunity to participate in the in-person interviews. The researcher sent a recruitment email to the selected organization's employees to increase participation in the study.

**Significance of the Study**

This study provided recommendations to increase work efficiency, reduce training costs, and increase organizational ERP knowledge retention for senior-level managers operating distribution centers. Organizations dedicate vast amounts of monetary resources to ERP systems' implementation and annual cost. A part of the yearly licensing fees is the hidden reoccurring cost of employee training (Mahmood et al., 2019, 2020). Ali and Miller (2017) attributed ERP system
failures to limited training, top-level management's minimal support, and the software's hidden costs. Unfortunately, many employees entering work environments that utilize ERPs come with minimal training. Employers must invest many on-the-job (OJT) training resources until they can achieve the expected ERP level of competency. Liboni et al. (2019) emphasized the importance of the collaborative effort between the SCM industry managers and human resource managers in maintaining the ERP competency to remain competitive. This research created a path for organizations to consider leveraging leadership endorsement and advanced training, followed by how integrating knowledge management policies can reduce training time.

**Reduction of Gaps in the Literature**

There has been an exhaustive amount of research focused on implementing ERP systems. Studies have shown how ERP systems can benefit organizations. Badewi et al. (2018) concluded that organizations utilizing an ERP system experienced innovative benefits. Leadership and leader endorsement have an in-depth research base, with a few studies linking the success of ERP implementation projects to leader endorsement. Li et al. (2017) explored leadership's role in successfully implementing an ERP system. There is a gap in current research identifying the lack of integration of organizational ERP assessments to measure ERP users' competency. ERP assessments are applied when evaluating or establishing a baseline for improving the effectiveness of ERP users. Another gap in current research connects leader endorsement, knowledge management policies, and advanced ERP training to the benefits of fully utilizing the system for small-to-medium distribution centers.

**Implications for Biblical Integration**

As Christians, it is essential to reflect on the activities in which society engages. It is vital to ensure that humanity's actions reflect the wishes of the Lord. Researching, developing
theories, and providing solutions aligned with the Lord's values, are the cornerstones of Christian principles. In an environment where it is easy to deviate from the Lord's path, having a moral compass aid in guiding the research to fruition.

Humanity is inquisitive by nature; seeking solutions to unanswered questions is what drives research. Applying existing research to the business environment can harm or benefit society. However, businesses waste precious resources without research, sometimes paying a costly price. The scriptures state, "Desire without knowledge is not good, and whoever makes haste with his feet misses his way" (English Standard Version Bible, 2001/2022, Proverbs 19:2).

It is the responsibility of humanity to treasure the resources the Lord has provided. Individuals must be good stewards of the gifts given by our Lord by listening to the wisdom of others, remaining inquisitive, and seeking solutions to unanswered questions. Proverbs 2:2 states, "Making your ear attentive to wisdom and inclining your heart to understand" (English Standard Version Bible, 2001/2022). Dedicating time to researching actions of a business that impacts others is considered a good steward of thy neighbors. Innovation can be the difference between success and failure in a competitive business environment. Romans 12:2 states, "Do not be conformed to this world, but be transformed by the renewal of your mind, that by testing you may discern what the will of God is, what is good and acceptable and perfect" (English Standard Version Bible, 2001/2022).

From a Christian perspective, researching innovative technologies, maximizing resources, and developing one another under leaders who embrace God's values is a solid foundation for a successful business model. The exploration answering why ERP systems are not fully utilized can provide organizations with the tools required to correct wasteful steps in intra-processes. This research's secondary benefit was the opportunity for cross-communication
between two organizations that would not normally speak. Sharing best practices and recommending steps that managers can ensure their ERP systems have an increased probability of maximization. Hebrews 10:24-25 reminds us to "consider how to stir up one another to love and good works, not neglecting to meet together, as is the habit of some, but encouraging one another, and all the more as you see the Day drawing near" (English Standard Version Bible, 2001/2022). As Christians, seeking out wasteful processes, identify solutions to improve and teach one another as the Lord's Son taught His word to His children. Colossians 3:23 reminds us, "whatever you do, work heartily, as for the Lord and not for men" (English Standard Version Bible, 2001/2022). Christians in a competitive business environment should remind others what Leviticus 19:18 stated, "you shall not take vengeance or bear a grudge against the sons of your people, but you shall love your neighbor as yourself: I am the Lord" (English Standard Version Bible, 2001/2022).

Seeking answers and researching innovative solutions is human nature and using the solution in a Christian manner to better humanity is the responsibility of all of the Lord's children. Bringing organizations together under a single research topic to teach one another practices and communicate process improvement steps is an opportunity for managers at all levels.

**The Benefit of Business Practice and Relationships to Cognate**

The global business market has increased the need for the S.C. industry to become increasingly competitive. Using ERP systems when automating distribution center processes is a method that can increase work efficiency. The benefit experienced is when the system and user eliminate manual tasks (Badewi et al., 2018). Consumers require increased transparency and expect decreased lead times from suppliers. While distribution centers explore the latest
technologies better to manage the information flow between internal and external partners, many overlook their existing ERP systems. Organizations throughout the S.C. industry can avoid this costly oversight by fully utilizing ERP systems.

The benefits of an ERP system to a business practice begin with increasing the flow of information. The ERP users have also experienced a positive impact on work efficiency from using the system. Increased effectiveness and efficiency are benefits experienced by ERP users (Eid & Abbas, 2017). Communication is the primary link to customer satisfaction, whether to upstream suppliers, internally to the various departments, or downstream to the consumer. ERP systems are designed for information management by integrating multiple internal and external processes to create a centralized information technology (I.T.) system aligned with a firm's strategic objectives. This study explored how organizations can fully utilize the ERP system by ensuring the leadership endorsement that can advocate for advanced ERP training and implement knowledge management policies for intellectual retention.

**Summary of the Significance of the Study.**

Without this study, organizations will continue wasting excessive resources required by OTJ training and investing capital in the latest technological advancements year after year. This study explored positive leadership endorsement's impact on advanced training and knowledge management, increasing user ERP competency. DCs fully utilizing their current ERP systems can improve their competitive advantage, increase employee retention, and realize significant cost savings.

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

An exhaustive review of past research literature provided background information and confirmed current assessments found within this study. Strategic business planning is vital to
today's business practices to remain competitive in the supply chain (SC) industry.

Understanding that a few select organizations can claim to be perfect, most companies have many opportunities for improvement. Exploring the role senior leadership plays in ensuring the enterprise resource planning (ERP) system is fully utilized can prove helpful for companies looking to increase organizational efficiency without investing in additional resources.

An investigation into past research highlighting the importance of leadership endorsement provides a solid foundation from which to begin. Reviewing how organizations have leveraged Hersey and Blanchard's Situational Leadership Theory (STL) may remind leaders of the tools they can apply in their organizations. Unfortunately, utilizing tools that an ERP system can provide is often overlooked. This review explored the impact of ERP organizational competency assessments on a company's strategic vision and how it may yield a competitive advantage. The review was followed by examining how ERP advanced training and knowledge management policies impacted the utilization of the system and the benefits it can provide.

Opposing research enables the study to view the problem statement from an alternate viewpoint, providing an all-inclusive view. The review concluded with discovered themes as well as a thorough summary in the form of synthesis.

**Business Practices**

Organizations use ERP systems to share information across departments and the SC network. An ERP software's ability to capture data used throughout the various levels of an organization enables the seamless flow of information. Managers involved in business planning rely on the information provided by ERP systems to forecast requirements and identify industry trends. During a strategic business planning session, an organization's competitive advantage most likely becomes the topic of discussion. Industry leaders have learned to utilize their ERP
systems to remain agile in fluctuating markets while meeting the accompanying business plan's expectations. Maximizing the utilization of ERP systems leads organizations to increased competitive advantage and higher productivity (Abu Ghazaleh et al., 2019). In a business environment that spans the globe, communication has become increasingly vital for meeting consumers' expectations. Organizations competing in the SC industry utilize ERP systems to increase communication throughout the SC process. (Erkayman, 2019). A few organizations may be fortunate enough to have a local SC network, while most share international resources. Access to global resources has led to a more equitable distribution of material (Schaffartzik et al., 2019). Managing information from suppliers and consumers in various locations can be accomplished by connecting ERP systems via an electronic data interchange (EDI) network. Sharing information between SC partners can improve communication (Smith et al., 2020). However, obtaining an agreement to share data electronically can be challenging. Organizations that integrate an ERP system into operations experience many benefits (Badewi et al., 2018). Process integration, data sharing (internal/external) between departments, decreased data selection times, and data analysis are only a few of the benefits experienced by ERP users. ERP system utility has become increasingly massive and can now incorporate multi-industry platforms (Sheik & Sulphey, 2020). The capabilities of the ERP mature managers are becoming more reliant on the data that feeds the system.

Small to medium size distribution centers rely on the validity of data entering the ERP system. Senior-level management relies on the data provided by ERP systems in their decision-making processes (Hasan et al., 2019). The decision-making process adopted by management impacts all levels throughout the organization. The data provided by ERP systems range from strategic business planning to ordering stock (Danilczuk & Gola, 2020). The data feeding an
ERP system is manually entered or extracted from external systems. Though entering the data into an ERP system can be time-consuming, the time spent developing reports is drastically reduced (Jayawickrama & Hudson Smith, 2016). Organizations base strategic decisions on business analytics (BA) results as the market becomes increasingly competitive. BA is supported by data collected from various sources. As technology develops, so does the pool from which data sources can be drawn. Software companies are developing ERP systems to integrate data from artificial intelligence platforms and stream data from industry data banks and social media platforms (Shi & Wang, 2018). Artificial intelligence, streaming data from social media, and other technological advancements come at a cost. This cost can be challenging for organizations to overcome (Mahmood et al., 2019). Another organizational challenge is the cost of replacing the system after the software's life has run its course. Like many other tools, ERP systems must be maintained and supported by software developers and key users. Organizations must update to newer versions of the ERP system at some point. Unfortunately, maintaining the knowledge base that can retain the degree of competency required to utilize the ERP system is often overlooked.

Organizational market share is threatened by the rapid pace at which the SC industry is evolving, causing distribution centers to struggle while meeting the consumer's expectations. The increased complexity of modern SC networks is stressed by growing customer demand, an expectation of time to market, and global competition (Addo-Tenkorang et al., 2017). Strategic planning that incorporates advanced ERP utilization has had proven industry success. ERP systems enable SC leaders to interlock business processes and forecasting with manufacturing and warehousing activities, significantly mitigating operational costs (Pohludka et al., 2018). The process of merging departmental processes requires advanced training and competency levels.
ERP end-users who are not provided the opportunity to maintain required competency levels are partially linked to system failures (Arasanmi, 2019).

Leaders rely on optimizing ERP systems to gain a competitive market advantage as a part of their strategic business plan. However, many senior-level managers disregard the importance of advanced ERP training. Supply chain leaders who neglect to maintain ERP relevancy lose market share to competition (Pattanayak et al., 2019). In the fast-paced business environment, businesses depend on their staff to take advantage of on-the-job training as an inexpensive alternative. Oelze et al. (2016) found that organizational learning is channeled through training, leadership, and knowledge transfer. Compared to external training, the risk with internal training is the negative habits and shortcuts experienced employees have adopted over the years. Organizations quickly realize that the process that makes them unique will not fit the standard ERP modules (van Beijsterveld & Groenendaal, 2016). At this point, management may consider customizing older platforms to support their requirements better. Organizations with mature ERP systems have found that the standard ERP systems lack the customizations their strategic plans require (van Beijsterveld & Groenendaal, 2016). ERP customization as a business practice can be risky without advanced competency levels at the organization's disposal.

As a business practice, organizations identify select employees and grant them the role of key users. These key users are revered as subject matter experts in their field. Key users are regarded as ERP experts and fill the roles of educators, change agents, and advisors to the organization (Maas et al., 2016). Identifying ERP key users within an organization provides the benefit of knowledge accessibility for the end-users. Key users add significant value to senior-level management teams by understanding ERP capabilities. Understanding the capabilities of the system enables innovative means to improve existing processes. Organizations make
discerning alterations to existing ERP systems to align with strategic objectives (Comuzzi & Parhizkar, 2017). These software alterations provide the required flexibility for capturing market share. ERP change management is instrumental in organizations as departments adopt innovative processes (Park, 2018).

Leadership's business practices for managing the ERP system post-implementation are vital for success. Managerial tactics are the most critical subject resulting in ERP failures (Mahmood et al., 2019). ERP failures can negatively impact organizational performance.

These failures can result in longer customer lead times, causing costly production delays and wrong parts and quantities delivered. Minimal manager involvement in ERP maintenance can lead to diminished performance resulting in poor service quality to the consumer (Misra et al., 2016). A good ERP platform foundation consists of a maintenance plan, advanced training, and knowledge management or sharing. Aslam et al. (2018) stated, "knowledge sharing includes rich information, expertise, and competencies to fostering collaboration, establishing a knowledge-sharing culture, enhancing mentoring, improving communication, developing new ideas and learning and bringing new changes in organizations" (p. 577).

Organizations that overlook the importance of managing an ERP system can experience an underutilized or complete ERP system failure. An ERP system is designed to increase process efficiency and identify underutilization, resulting in process duplication. The lack of leadership supporting ERP operations has led to redundant processes and organizational waste (Gholamzadeh et al., 2016). Top management's impact on ERP performance is often overlooked as a contributing factor to underutilization. Senior management support impacts the performance of the processes adopted by ERP systems (Hasan et al., 2019). ERP operation's top-ranked issues are management methods of endorsement (Mahmood et al., 2019). Workplace culture has been
identified as the responsibility of leadership. The work environment has been identified as the root cause preventing an ERP system from being optimized. The predominant root cause of ERP failures is entrenched in the organizational culture (Peng & Nunes, 2017).

The reasons for ERP underutilization can stem from various sources. Huang (2016) found that the early expiration of an ERP system falls under one of three groupings: internal failure, external failure, or catalyst. Internal failures can be caused by poor management and insufficient training. In comparison, external failures include poor quality of third-party software and security vulnerabilities. Catalyst refers to industry change, a significant shift in the business strategy, or a change in the supply chain. Communicating the strategic vision and mitigating internal elements are within the organization's control. Tyas Darmaningrat et al. (2019) pointed out that a company's lack of communication between leadership support and advanced training contributed to ERP failures.

**The Problem**

**General Problem**

SC networks have been challenged over the last decade by increasing consumer demands placed on distribution centers. These organizations depend on the data ERP systems can provide when making critical business decisions. SC's profits and performance are impacted by the sourcing decisions made by suppliers (Bimpikis et al., 2018). However, ensuring an organization's ERP system operates efficiently is often overlooked. Critical to the success of an ERP system is the organization's ability to evaluate the effectiveness, monitor system utilization, and evaluate the benefits of the ERP system itself (Ali & Miller, 2017). As technology advances, so does the supporting software that drives ERP systems. Contributing elements of ERP failures are failing to communicate the firm's business strategy and understanding of the ERP system
(Lee et al., 2020). The lack of continuous advanced training can result in a negative impact. Unanticipated product delays are caused by inefficient process design and product planning, impacting lead times and service levels (Almaktoom et al., 2016). As ERP's primary purpose is communicating data, underutilization can result in process replication. Master data duplication significantly contributes to poor ERP performance (Zong et al., 2017). Communicating data at both ends of the supply chain has been increasingly complex as networks expand globally. Internal communication is often overlooked as organizations focus on expanding their consumer base and communication between departments. Integrating ERP systems has overcome the departmental focus on information systems (Kenyon et al., 2018). Although ERP systems are designed to exchange data using electronic data interchange (EDI), many organizations lack the organic competence to establish and service these connections.

Organizations find that quality data (QD) can be equally as crucial as obtaining it. Zong et al. (2019) stated, "Gartner survey in 2015 on the usage and adoption of QD tools revealed that the respondents estimated a loss of $8.8 million on average annually due to QD issues" (p. 1275). ERP systems provide companies with the analysis tools to evaluate data quality. However, distribution centers that lack ERP competency may underutilize available resources. Hill II (2018) concluded that by effectively using business analysis tools, the accuracy of evaluations improves. The underutilization of resources can create a breeding ground for inefficiencies. Graveen (2020) noted that higher billing charges, process inadequacies, and the overall increase in operational costs result from underutilizing ERP systems.

ERP systems are expensive; the annual cost of licensing fees, consulting services, and continuing education can make ERP systems an unrealistic option. Pabst et al. (2016) found that the cost and capacity of implementing and servicing required ERP systems outweigh the benefits
of not implementing them. The organizations implementing ERP systems understand the importance of leveraging the ERP system's business analytics tools. Hawley (2016) noted business analytics as a critical component of business plans.

Internal and external communication is essential throughout the supply chain network. While many organizations focus on communicating with business partners, they overlook the damage created by failing to ensure that the internal communication process is effective. Aremu et al. (2018) pointed out that organizations may experience conflicting objectives without ERP assistance in cross-departmental coordination. Departmental alignment can be considered the foundation of most strategic business plans.

**Specific Problem**

Leadership endorsement is the driving force between organizational success and failure. Boudrias et al. (2020) concluded that leaders with either low integrity, tyrannical methods, or self-serving leadership styles negatively impact an organization. A review of past literature has found that leadership philosophies that oppose employee development within an ERP environment cannot fully utilize the software. The lack of leadership support and advanced training has prevented the utilization of ERP systems (Aldossari & Mokhtar, 2020). Wibowo and Sari (2018) hypothesized that the support senior-level management provides impacts the worth of the company's ERP system. Wibowo and Sari (2018) identified the correlation between organizational leadership support and successful utilization. ERP systems process communication between department heads to ensure management objectives are met. Kähkönen et al. (2017) concluded that the misalignment of an organization's objectives caused adverse effects on information system integration.
Insufficient staff training and the high cost of subject matter experts prevent the adequate installation of ERP system upgrades (Lemonakis et al., 2018, 2020). The skillset required to manipulate the ERP software is a perishable skill. Without continuous advanced training, ERP knowledge and skillset will diminish over time (Peng & Nunes, 2017). Companies tend to focus on new hire training while neglecting continuous ERP education. Deranek et al. (2019) concluded that ERP training primarily targets new hires, and future research should explore organizational commitment to continuous training. In many cases, the ERP training provided has been limited to video presentations without added practical exercises. Barkhi and Kozlowski (2017) conducted an analysis confirming that 83% of participants indicated ERP practical exercises would be relevant in future careers.

The literature reinforced the challenges leadership struggles with when implementing ERP knowledge management policies into the work environment. Garcia and Coltre (2017) pointed out that managing employees' intellect, converting the information to shareable knowledge, and placing this knowledge in a place accessible to others is challenging. Research has proven that ERP end-users with questionable skills are more harmful to the system. Users who lack ERP knowledge can manipulate the ERP system, resulting in system failures (Osnes et al., 2018). Retaining employees who have acquired the desired ERP competency has become expensive and challenging for distribution centers. Yi-Yu Shih et al. (2017) stated that "when staff with professional knowledge and work experience leave the corporate, such experience and knowledge will, as well, be gone, resulting in both tangible and intangible loss of the corporate" (p. 28). The greater a company relies on supporting ERP issues internally, the greater the need to retain employees with elevated skill sets. Migdadi and Abu Zaid (2016) stated that organizations
with the goal of self-supporting their ERP system internally find it challenging to retain staff competency.

**Concepts**

**ERP Competency**

Thompson and Glasø (2018) defined competence as the employee's skill and knowledge acquired through formal and non-formal experience or training. Shafi et al. (2019) completed a study in Pakistan exploring key ERP performance enhancements. Their study was conducted using five different ERP projects covering various industries in the public sector. The research concluded that low levels of ERP competency led to poor user-friendliness. They suggested increased training and time could enhance the competency of the user's performance (Shafi et al., 2019). Sternad Zabukovšek et al. (2019) identified the critical elements that led to understanding ERP benefits in an academic setting. This research explored several hypotheses surrounding the theory and found that the simpler an ERP is to use by the end-user, the perceived usefulness of the ERP system increases. Another study conducted surveys consisting of 30 ERP users and 172 students. All hypotheses were confirmed, reinforcing the theory of increasing user perception of ERP systems through practical experience. ERP competency is gained by combining a hands-on technical and functional approach (Zadeh et al., 2020). This study also provided recommendations to organizational leadership that ERP vendors offer academic alliances which assist in educating and providing hands-on experience to students (Sternad Zabukovšek et al., 2019).

Misra et al. (2016) explored the phenomenon of evaluating ERP competency through periodic assessment. Businesses are discovering the requirement to have an agile ERP system flexible enough to support an organization through turbulent economic environments. Using
periodic assessments to evaluate ERP competency is recommended to remain competitive (Misra et al., 2016). This research focused on defining an agile ERP system through the use of surveys both on and offline. The study concluded that an agile ERP system should be controlled by assessment focused on maximizing the tools with the ERP system, monitoring the system (which allows management to ensure proper utilization), and auditing quality assurance.

**Leadership Endorsement**

Mahmood et al. (2019) research explored the issues organizations are having with ERP systems. This study investigated small and large companies that were identified as having challenges with ERP systems. Using a systematic literature review of research between 1999 and 2018, the authors uncovered the primary issues challenging management. The authors were able to identify 31 different issues while ranking management endorsement as number one. The second-ranked issue was change in management, followed by the lack of training and development. Mahmood et al. (2019) found that management's approach led to the failure of the organization's ERP systems. It was concluded that management should focus more on supporting workplace culture than the technical issues of ERP systems.

Barth and Koch (2019) investigated small to large organizations pressured to upgrade their ERP system in competitive marketplaces. The research consisted of a qualitative approach and a literature review. By interviewing 12 organizations' senior leaders, Barth and Koch identified 14 vital elements required for an effective ERP system (2019). ERP upgrades bring a high cost and impact the workforce through organizational change (Barth & Koch, 2019). Management is responsible for organizational change, training, and operational demand, all critical if not endorsed. Organizational leaders continue to be challenged by balancing the training and execution of ERP processes (Shao et al., 2017).
Advanced Training

The inability to integrate advanced technology into daily operations challenges supply chain organizations (Singh et al., 2016). Organizations rely on advanced technologies to increase consumer and supply chain network visibility. Singh et al. (2016) studied the major practices organizations operating within a supply chain face in this competitive environment. The research was completed using a case study of the manufacture of automotive components. By interviewing several managers and collecting data from published internet sources, this study concluded that the lack of advanced information technology systems is a significant challenge that led to unreliable forecasts, poor lead times, and poor quality of raw materials.

Ghobakhloo and Fathi (2019, 2020) identified that organizations could fully utilize ERP systems by properly leveraging technology to provide a sustainable competitive advantage. After conducting a five-year case study of a manufacturing company, Ghobakhloo and Fathi concluded that digitized processes are a worthwhile business strategy to sustain a competitive advantage (2019, 2020). Advanced ERP training is vital to implementing this new form of process. Organizations facing a failing ERP system experienced success after providing advanced ERP training for their employees (Ghobakhloo & Fathi, 2019, 2020). After the new employee's initial training, ongoing training is recommended to reduce time spent refining the initial skill set. Continual ERP training minimizes the learning curve for new employees (Abu Ghazaleh et al., 2019).

Alcivar and Abad (2016) confirmed the importance of advanced training for ERP users. Alcivar and Abad's study presented the theory that ERP users learn better using a gamified teaching method than the traditional means of instructing ERP modules to increase the training’s ERP effectiveness (2016). Various ERP modules present challenges for system users (Alcivar &
Abad, 2016). In this study, two groups were used, one using traditional teaching methods and the other using a gamified method. Alcivar and Abad (2016) concluded that advanced training is essential for organizations, but training is equally vital for the success of the ERP program.

Whether an organization is implementing a new ERP system or integrating new modules, an organization will require key users, also known as super users, to play a vital role. Selecting which employees should be critical users and how to train them presents a challenge for most organizations. Obwegeser et al. (2019) conducted a study that outlined which organizations can follow. This outline presented a super-user selection process through the different phases of advanced ERP training. This study used a qualitative method for selecting and training processes and quantitative approaches to measure the users' skills. The researchers selected a single case study of a Danish wind turbine manufacturer (Vestas) with a revenue of 10.2 billion euros in 2016. The skills measured in this study were the selected super-users' technical, human, and conceptual skills. The technical skills referred to the user's analytical aptitude and competency using ERP tools. Human skills referred to the user's ability to work as part of a team, and conceptual skill was the ability to comprehend the management macro vision and ensure alignment with the functionality of the ERP system. Neglecting to develop these skills can result in miscommunication and underutilization of the ERP system.

In this case study, the selected organization developed seven key attributes a key user must possess. The key user must be: 1) proactive, 2) well-respected associate, 3) have a solid operational and business understanding, 4) comfortable with information technology systems, 5) teachable, 6) ability to communicate, and 7) enjoy troubleshooting (Obwegeser et al., 2019). Figure 2 provides organizations with a road map of the process from selection to completing the initial super-user training (Obwegeser et al., 2019).
Figure 2. Super-user selection / training.

The training process to develop the selected super user consist of five different milestones; each milestone has attached activities. The human phase has post-implementation activities for documenting processes and knowledge management activities. The first phase is the selection phase. This phase is accompanied by mobilization activity. This is the point at which organizations select their super users. With super users selected, the training phase can begin. This is categorized under the technical phase, which consists of several activity milestones: solution validation is comprised of management in-briefs (setting expectations), workshops, self-training, preparation milestones focused on classroom training and testing, and go-live activity (the point at which the end-users are trained). The conceptual phase overlaps the technical phase by adding the stabilization activities to ensure the necessary support is available for the users to ensure organizational alignment. The human phase focuses on the activities that support the end-users. Obwegeser et al. (2019) concluded that the roadmap provided in the study is a valuable tool that organizations can implement when developing a training plan for super-users.
Knowledge Management

Migdadi et al. (2016) introduced a theory stating that knowledge management (KM) positively impacts ERP performance. This was an empirical investigation that included 455 originations within the country of Jordan. One hundred seventy-three business and information technology managers provided information. This research applied a survey of 36 questions intended to assess the degree of KM competence and ERP success. Migdadi et al. (2016) provided an illustration linking KM and ERP success, shown in Figure 3 below.

![Figure 3. Knowledge management competency ERP impact.](image)

The research model encompasses knowledge management competencies for ERP system success adapted and modified from Sedara and Gable (2010) and Ifinedo and Nahar (2009). KM is a tool to transfer skills management for a competitive advantage (Heredia-Calzado & Duréndez, 2019). Organizations leverage KM as a part of a competitive business strategy, and KM has become critical in developing a company's competitive strategy (Acar et al., 2017). Unfortunately, senior-level management teams view KM as a tool to fix short-term problems versus a means to leverage during continuous improvement initiatives (Wickhorst, 2002). Supporting the assessment by Migdadi et al. (2016), Li et al. (2017) found a statistically
significant relationship between knowledge management and an ERP system's effectiveness. This study concluded that improving KM processes increased efficiency throughout the different ERP levels (Migdadi et al., 2016).

ERP knowledge management is the key to an organization's competitive advantage (Deranek et al., 2019). Deranek et al. (2019) conducted a study that explored the relationship between employee competency, skill level, and attitude to ERP systems under simulated conditions. This research investigated several hypotheses focused on the perception that knowledge management, process management, and employee competency impact the user's attitude using an ERP system. The study sampled 52 employees from three separate organizations covering various manufacturing industries.

The user experience using an ERP system under 10 years was 79%, with the mean at 6.7 years. Deranek et al. (2019) found that ERP users' experience is enhanced when they understand the "why" behind the job they are completing. An increase in employee understanding positively enhances the attitude of the end-user operating within the ERP environment. This research was limited to three industries: food, auto, and steel, and each organization was allowed to handpick which employees were allowed to participate in the study.

Once an organization acknowledges the benefits of a KM system, understanding the barriers that prevent implementing this system is the next step. After overcoming any challenges, organizations need to have a phased approach to implementing a well-designed KM program. Orenga-Rogla and Chalmeta (2019) identified in their research these key barriers and provided managers with a phased means of integrating KM into an organization. This research used an oil and gas company case study to validate their proposed implementation model. Orenga-Rogla and
Chalmeta (2019) identified five barriers that prevent companies from using a KM system. The five barriers consisted of the following:

1. Individual barriers (fear, low motivation, and weak commitment).
2. Organizational barriers (culture, management, and business objectives).
3. Technology and tool barriers (user competency, access, and limited training).
4. Project management (limited time, resources, and business expertise).
5. Knowledge (detailed knowledge that is difficult to share).

The methodology proposed is shown in Figure 4, a phased KM implementation guide.
### Figure 4. Knowledge management implementation guide.


Defining the scope before beginning is essential when an organization attempts to implement a knowledge management program. At this point in the implementation, the organization has yet to commit to the program. After the scope is defined and leadership commitment is obtained, a team will begin to form. The team will establish the various short- and long-term objectives and perform a risk analysis. (Orenge-Rogla & Chalmeta, 2019).
Without leadership endorsement, organizational resources will be challenging to obtain. Next are the development and implementation phases. These are critical in identifying the different ERP processes which the organization identifies as being essential. The last phase is dedicated to monitoring and improving the program as processes change. Orenga-Rogla and Chalmeta (2019) concluded that the model used to implement this KM system has been proven successful by using an active oil and gas organization as a pilot for future enterprises. However, this single case study is limited, and other organizations may not experience similar results.

ERP systems benefit organizations by increasing information flow throughout the supply network. Erkayman (2019) conducted a study that witnessed the transformation experienced by an automotive supplier (Kibar Lumbering) once an ERP system was integrated. Erkayman understood the disadvantages organizations experience when an integrated system has not been implemented. Erkayman's (2019) qualitative research method evaluated the organizational and managerial methods applied throughout the supplier's processes. Organizations can improve production, order, and inventory management (Erkayman, 2019). After the study, Kibar Lumbering implemented an ERP system that enabled the organization to transition from warehousing parts to an agile just-in-time (JIT) production system, eliminating their requirement for a warehouse. ERP systems improve resource management, making decision-makers more agile (Gnevanov & Sharlaimova, 2019).

Elgohary (2019) studied how an ERP system affects the organization's competitive advantage and the manager's decision-making process. This study aimed to explore the different ERP capability categories, highlight which capabilities affect organizational decision-making, and discuss the impact of the decision-making process on the company's competitive advantage. Data was collected through a series of questionnaires and literature reviews using a qualitative
method for research. Elgohary (2019) concluded a positive, direct correlation between competitive advantage and the decision-making processes for an organization using an ERP system.

The supply chain industry has become increasingly competitive over the last few years; innovation, flexibility, and responsiveness to the customer have become key performance indicators organizations have adopted. Sayed and Yasmin's (2019) study concluded a strong relationship between ERP systems and the organization's supply chain competitiveness degree. This study focused on a single organization in Egypt and sampled 222 employees and 328 customers. The study examined the relationships between the independent variable of ERP integrity, compatibility, reliability, scalability, and serviceability with the dependent variables: reliability, responsiveness, agility, and asset management efficiency (Sayed & Yasmin, 2019).

Scheid and Sulpeh (2020) concurred with Sayed and Yasmin (2019), stating that ERP systems provide organizations with a competitive advantage by increasing data and process responsiveness, agility, and reliability.

Theories

Hersey and Blanchard's Theory

Leadership styles vary depending on the environment. Itzkovich et al. (2020) explored various leadership behaviors and proposed a comprehensive style for leaders. The study addressed the gap between leadership theories and empirical findings. Not all leaders portray positive behaviors; few may engage in destructive leadership styles. Destructive or dark side behavior significantly impacts the followers' attitudes (Itzkovich et al., 2020). The complete full-range theory, drawn from Hersey and Blanchard's model, combines negative and positive leadership styles. The authors pointed out how the four leadership styles, delegating,
participating, selling, and telling, correspond with the competence level of the followers (Itzkovich et al., 2020). While the full range model consists of three leadership styles: laissez-faire, transactional, and transformational, it is extended by the proposed model. While both negative and positive leadership styles will always exist, integrating the proposed complete full-range model provides a sustainable alternative method of leadership.

Employee motivation is an art that challenges many leaders. Getting employees interested and motivated to achieve a goal or perform positively is not as easy as one might think. Many leaders depend on their relationship with the employees, while others focus on rallying the team around a specific task. Task-driven leaders are more effective in larger environments than in smaller groups. Task-driven leaders have tremendous success in more extensive group settings (Tortorella et al., 2018). Tortorella et al. (2018) explored the relationship between leadership styles, organization size, and age in a manufacturing environment. The researchers surveyed 225 Brazilian leaders operating in a lean manufacturing environment. The results of this research confirmed that task-focused leaders outperformed relationship-style leadership. This study applied Hersey and Blanchard's theory to explore the relationship and task behavior styles of leadership. The company surveys were separated into two categories, small and medium.

Above 500 were considered to be medium in size, while below 500 were small in size. Hersey and Blanchard's model of leadership effectiveness and adaptability description was integrated into the questionnaire (Tortorella et al., 2018). Tortorella et al. (2018) concluded that a relation-oriented leadership style underperforms leaders that apply a task-oriented style. Also, researchers noted that the older leaders might be challenged in a task-orientated lean manufacturing environment. In summary, this study suggested that younger task-oriented leaders
can perform well in smaller teams with a specific goal. In contrast, senior leaders are better suited for larger groups and a relationship leadership style.

The leadership style should be agile enough to adjust to match the followers' willingness and ability (Raza & Sikandar, 2018). An employer's relationship with an employee is similar to what a teacher has with a student. Using Hersey and Blanchard's model, Raza and Sikandar (2018) investigated how leadership styles influence student performance. This experimental study assessed the performance gap using different leadership styles based on the results of student exams. Out of 150 students, this research selected 80 students, all attending eighth grade at an all-girl school. Half the students acted as the control group, while the second group of 49 was the experimental group. The control group was taught using traditional teaching methods, while the experimental group used Hersey and Blanchard's readiness categories. The study concluded with a significant difference in scores between the two groups, and the experimental group had significantly higher scores than the control group.

Alefari et al. (2020) explored manufacturing companies in the United Arabic Emirates (UAE) to better understand the importance of supportive leadership styles, specifically in the manufacturing environment. The study was based on an in-depth literature review and questionnaires sent to companies throughout the UAE. The first questionnaire focused on the company's understanding of challenges and critical elements required for Lean manufacturing success. The second questionnaire focused on understanding the present state of the different leadership styles using Hersey and Blanchard's telling, coaching, supporting, and directing the model. Moreover, how this model affects employee performance. Figure 5 reflects the results of the critical elements that affect employee performance. Figure 6 displays the employees' and management's perceptions of the different leadership styles.
Figure 5. Factors affecting employee performance


Figure 6. Employee / management perception.

Note: Difference of perception of leadership style employed by management in company A. Reprinted from “Lean manufacturing, leadership, and employees: The case of UAE SME manufacturing companies,” by Authors M. Alefari, M. Almanei, K. Salonitis, 2020, Production & Manufacturing Research, 8(1), p. 239 Copyright 2020 by the Creative Commons Attribution License. Reprinted with permission.
Realizing how critical it is to have a leadership style aligned with the follower's maturity, Anzengruber et al. (2017) conducted a study that explored leader relationships, task styles, and management's ability to change styles throughout the various levels. Leaders who can change leadership styles by mirroring the situation and levels can provide the agility organizations require in today's market. The leadership style must be agile enough to support change in varied environments, and no single leadership style will fit all situations (Anzengruber et al., 2017). The hypothesis within this study focused on managerial effectiveness at a company's lower, middle, and top levels. The results drawn from Anzengruber et al.'s (2017) research were driven by information accumulated from performance evaluations from 2,307 managers from a single organization. The subjects covered various levels of management from a high-tech organization operating in the health care industry. The authors concluded that the relation-orientated leadership style is more effective in senior-level positions, and the task-orientated style provides better results at the lower management level.

The study also noted that organizations operating in a continually fluid environment find leadership style flexibility vital in a manager's role. Leaders can be developed through training and education (Bosse et al., 2017). Leadership models vary from formal to informal models; these challenges managers when developing employees with leadership abilities. Bosse et al. (2017) explored a computational leadership model that can map group leaders' and members' leadership development. This research proposed a software tool enabling managers to map the four steps or levels from which a leader can be developed. The levels used were extracted from Hershey and Blanchard's situational leadership model; unable and willing, unable but willing, able but willing, and able and willing (Bosse et al., 2017). This research assigned corresponding characteristics to each level of development. This study concluded that the computational
leadership model software provided data as the student traveled through the four developmental levels, increasing the effectiveness of the leadership style independent of the situation. As a result, executives' and employees' behaviors vary depending on the situation presented (Bosse et al., 2017).

**Constructs**

Leadership endorsement can vary depending on an organization's leadership style and priorities. Eileen Chou from the University of Virginia conducted a study that explored the relationship between the leaders that fill a supportive role and leaders that are perceived to be hostile yet powerful (2018). The study included the impact experienced throughout all levels. Chou (2018) presented a model identified as the Naysaying-Agency-Power-Leadership Efficacy model (NAPLE). This model aimed to identify which leadership style is most likely to be desired by subordinates. The research applied 11 empirical studies, 10 experimental studies, and an assessment of 518 Taiwanese voters. For the study examining power versus likability, the researcher selected a sample size of 109 students from a single university to participate in this study. For the study investigating naysayer versus leader, 528 out of 550 subjects were selected. The study also included examining leadership effectiveness; many applicants were eligible to participate in this study, strengthening the results. This research concluded that supportive leaders were more desirable in times of peace, while naysayer or pessimistic leaders were desired in times of conflict (Chou, 2018). Chou added that in a market where the expansion and contraction of the business environment can be experienced within the same fiscal year, organizations are forced to maintain a flexible leadership model with their subordinates (2018).

The organizational leadership style has an impact on ERP integration. Research confirmed that transactional and transformational leadership styles significantly affect ERP
competency (Shao et al., 2017). Shao (2017) developed a theoretical model highlighting how the culture in the workplace and leadership style can impact end-users' understanding of the ERP system. This research investigated the effects of transactional and transformational leadership. Shao et al. (2017) defined a transactional leader as a leader who maintains current status that is not interested in change, while a transformational leader continually seeks change and improves existing processes. The authors noted that ERP assimilation is the amount an ERP system is leveraged across various organizational processes and has gained more interest as ERP implementation research declines. The research methodology used in this study consisted of a questionnaire using a seven-point Likert scale given to business graduate students of a Chinese university. The researcher received 50 questionnaires out of 70 students enrolled in the business program. The students aided the researcher in narrowing the questions that were used later in the study. The researchers extracted data from firms that use an ERP system throughout several cities within China. Shao et al. (2017) concluded that the leadership style selected by management dramatically influences the ability of ERP users to learn, and a culture where learning is supported is better able to link transformation leadership and ERP competency. Managers with transactional and transformational leadership skills will experience tremendous success in ERP assimilation (Shao et al., 2017).

Motivating employees is a challenge faced by managers at all levels. Rezvani et al. (2017) studied how transactional and transformational leadership methods can be leveraged to inspire ERP end-users. A few of the hypotheses in that study focused on the relationship between leadership style (transactional or transformational) and the perceived level of ERP self-sufficiency. At the same time, another hypothesis was concerned with the connection between the perceived level of ERP competence and ERP usefulness (Rezvani et al., 2017). The research
method used in this study included a survey of past literature and an examination of an organization in Malaysia that had implemented its ERP system over two years. The research concluded that the lack of natural or external motivation could decrease the probability of fully utilizing an ERP system (Rezvani et al., 2017). The study encourages organizations to provide managers with the necessary training that fosters supportive skills, which provides employee perception of leadership endorsement. Direct managers found positive results by applying team-building events and holding regular meetings with the end-users (Rezvani et al., 2017).

The construct outlining which leadership style can create an organizational culture that promotes a healthy ERP environment varies depending on the leadership’s strategic business plan. Drummond et al. (2017) found that implementers and end-users agree that a supportive environment facilitates a positive organizational culture. Drummond et al. (2017) conducted a study to investigate and identify the roadblocks and success factors preventing or enabling ERP success in a multinational Brazilian organization. The study provided a well-rounded picture displaying how multiple constructs interact using the perspective of the implementer and the end-user. This research used a case study that explored the viewpoints of ERP implementers and end-users of a mining company in Latin America. Implementers consisted of individuals tasked with implementing the ERP software. At the same time, the end-users can be defined as the employees who use the ERP system to function in their daily activities. This study spoke with 30 employees, 20 categorized as end-users. The research was able to identify four strategies critical for ERP success. Process alignment to the business strategy increases leadership commitment, builds qualified project members and users, and increases communication (Drummond et al., 2017). Organizational stability, dated processes, and resource capacity are factors that impact the perception of ERP utilization (Drummond et al., 2017). Organizational culture is impacted by the
business mission, vision, leadership behavior, and overall organizational culture. This study concluded that although there are varying perceptions, the common link is leadership's behavior and the culture created by leadership that determines the success or failure of the ERP system.

Another construct is the amount of advanced ERP training offered to employees by the organization. Managers value the ability of their organization to remain competitive but undervalue the need for advanced training. Maintaining a competitive advantage in an environment that relies on technology to communicate upstream in the supply chain using an ERP system requires a constant state of continuous advanced training. The amount and quality of training allow organizations to capture market share. Chadhar and Daneshgar from a university in Australia conducted a study in 2018 investigating why an ERP system failed in an information technology organization in Australia. Using an interpretive study, Chadhar and Daneshgar explored the phenomenon through interviews, observations, and data analysis obtained from a collection of records stored by the organization. Senior management from Bravo proclaimed that their ERP implementation was completed on time; however, middle management and end-users had different perspectives (Chadhar & Daneshgar, 2018). Chadhar and Daneshgar (2018) addressed the difference between on-the-job and formal classroom training. Formal training may be beneficial for familiarization with the functionalities within a given ERP system. Conceptual training in a classroom environment does not allow the development of the skill required to accomplish daily tasks (Chadhar & Daneshgar, 2018). The authors confirmed the existence of a disconnect between formal ERP learning and real-world applications. In this study, the ERP failure was inadequate training that provided textbook answers but failed to convey how and why the end-users encountered it (Chadhar & Daneshgar, 2018).
The construct outlining the level of use of a KM process depends on the size and priorities of the organization. Larger organizations tend to have more complex processes than smaller firms, requiring a KM process. In 2019, Heredia-Calzado and Duréndez conducted a study outlining the impact KM has on small to medium-sized organizations, impacting the competitive advantage (2019). The study's first hypothesis explored the relationship between KM and the organization's use of an ERP system. The second hypothesis investigated the positive relationship KM has with corporate ERP training.

The third hypothesis confirmed the relationship between ERP utilization and a firm's competitive advantage. Heredia-Calzado and Duréndez (2019) defined a small company as hiring less than 50 employees and a medium company with less than 250 employees. The researchers extracted a pool of 600 subjects in Spain; 137 responded to the online survey (77 from small companies and 137 from medium-size firms). Heredia-Calzado and Duréndez (2019) confirmed all three hypotheses to be valid by applying a Structural Equation Method (SEM). The authors of this research recommended that managers utilize ERP systems to improve existing processes. The study confirmed the vital role KM contributes to an ERP system's utilization. Heredia-Calzado and Duréndez (2019) found deficiencies in organizations that use ERP systems stemming from poor quality of information, internal process coordination, and limited access to information.

Many organizations often dismiss the importance of KM policies and the impact it has on their competitive advantage. Abu Ghazaleh et al. (2019) conducted a study that reinforces the importance of KM policies and their impact on an organization's competitive advantage. Abu Ghazaleh et al. (2019) from Abu Dhabi University in the United Arab Emirates examined the various elements influencing post-implementation ERP utilization. One of the hypotheses
presented in this study was that ERP capabilities are related to KM capabilities. The researchers used a quantitative research method in this study; surveys were distributed to two service organizations working within the UAE. The study's second phase used AMOS software to test the relationships of the hypothesis. Using a five-point scale, the researchers gathered the data from Survey Monkey (an online resource). Ghazaleh et al. (2019) concluded that organizational readiness, interactive communication, and KM are essential elements for a sustainable ERP system. Organizational readiness includes leadership endorsement, environmental culture, and leadership skills at the top level of management. The researchers noted interactive communication as the end-users' ability to communicate with information technology (IT) staff. At the same time, knowledge management was considered to leverage the employees' ERP experience, educational background, and educational level (Ghazaleh et al., 2019). The authors recommended that future research include other industries, outside the service industry, in various geographic regions.

**Related Studies**

ERP systems provide an organization with many benefits; however, these benefits come at a cost. Rîndașu (2018) stated that ERP systems are vulnerable to exposing critical information. Rîndașu (2018) conducted a study that exposed the top ERP vulnerabilities that organizations typically face. This research focused primarily on data security and how the human element can impact organizational security. Rîndașu conducted an empirical study that used a survey addressed to graduate-level students to collect critical data points. Eighty students were in attendance from the University of Bucharest.

Of the 80 potential student surveys, 49 (61.25%) responded. Rîndașu (2018) concluded that cloud computing and ERP systems remain immature in their development and are vulnerable
to data security threats. The study also concluded that organizations need to create an organizational culture of risk management that protects confidential data (Rîndaşu, 2018).

Many organizations use knowledge management to retain critical information and understand how to complete the essential task. However, too much information can overwhelm employees to the point of confusion. Eisenberg and Mattarelli (2017) recognized that in a global environment, the increasing amount of subject matter experts available to draw from knowledge management could be counterproductive. Venkitachalam and Willmott (2017) conducted a study that examined the delicate balance between codification and personalization. Codification is the process of retaining treasured documents and systems explaining how to perform a critical task. At the same time, personalization can link the subject matter experts (SME) with the employees. Venkitachalam and Willmott (2017) concluded that managers need to identify the knowledge required to be retained through documentation and the best types passed by employee-to-employee.

Leader endorsement is only as practical as followers' trust in their leader. Leaders who endorse projects or organizational strategic vision can negatively impact the outcome of their position if abused. Samian et al. (2020) confirmed that leader endorsement could be abusive and negatively impact an organization's operation. Samian et al.2020) researched the relationship between leader endorsement and followers' trust in the leader. This study utilized a survey sent to 941 employees of a government-owned company in Indonesia, out of which 165 were returned. The survey consisted of responses from 74.5% males, with 61.2% of the total participants holding a high school education. Samian et al.'s (2020) study concluded that endorsement could harm the organization's culture without trust from subordinates.
ERP systems do not come without challenges. Many organizations find that the expense of time and resources fails to correctly implement or maintain an ERP system. Osnes et al. (2018) conducted a study that concentrated on the post-implementation challenges of ERP systems. Beginning with a systematic literature review, the authors obtained a good overview and recognized gaps in current research and common catalog conflict areas. The research question proposed in this study highlights the conflicts experienced by organizations with parent companies. Communication, organizational independence, and environmental culture were managers' top three challenges when utilizing an ERP system. Cross-departmental communication can be challenging when departments face conflicting tasks and objectives (Osnes et al., 2018). Organizations with subsidiaries are challenged by independence. Processes may differ between locations, adapting to the employee and independent objectives. The culture of the ERP environment will also vary depending on priorities, experience, and competency. Osnes et al. (2018) concluded that although there are many benefits to integrating an ERP system into an operation, an organization will face many challenges. Awareness, relationship balance, standardization, diversity, and continuous improvement are recommendations to managers considering ERP systems (Osnes et al., 2018).

Organizations that can overcome the challenges mentioned above cannot escape the increasing expense of ERP systems. Haddara and Constantini (2017) stated that ERP systems are expensive, and cloud-based alternatives are available at a lower cost. On-station ERP systems and cloud-based systems reach a point where they become ineffective as technology becomes increasingly sophisticated and the need to retire archaic systems increases. ERP systems have a lifecycle that requires retirement; this cycle phase is costly for the organization (Demi & Haddara, 2018). Many organizations will attempt customization to increase process efficiency
and extend the life of the current ERP system; however, this comes at a price. Modifications to ERP systems can be expensive (Saeed et al., 2018). In 2018, Demi and Haddara (2018) investigated cloud-based ERP systems and their effect on the retirement phase of an ERP system. The retirement phase is when the current technology becomes obsolete, and the new ERP system's requirement arrives. Figure 7 provides a graphic representation of the ERP life cycle.

Figure 7. ERP life cycle.


Demi and Haddara's (2018) research used a case study of Xledger, a cloud-based ERP software platform. Through a qualitative methodology, the researchers could develop a series of questions for the interviews. Eight interviews were conducted with marketing, sales, accounting, integration, and project module experts. Demi and Haddara (2018) concluded that organizations depending on ERP systems would eventually gravitate to cloud-based platforms. They reduced the time spent in the retirement phase, creating a longer lifecycle, and eliminating the need for KM policies and the amount of advanced training required for the ERP end-users. The study also shared that their respondents suggested that the need for vendor support can be reduced in the future.
Anticipated and Discovered Themes

The anticipated themes before this literature review projected that the amount that leaders within an organization endorse the utilization of ERP systems positively impacts the effectiveness an ERP system has on daily operations. The level of leader endorsement was revealed by examining the organization's KM policy. The larger the role KM plays in an organization is a crucial representation of the organization's decision-makers involvement, partially or fully endorsing the ERP system. It was expected to discover a theme encouraging continual advanced ERP training. Changing technology requires organizations to remain relevant or lose their competitive advantage. By providing a combination of external and internal ERP training, an increase in competency can be experienced.

Discovered Themes

In general, the common theme throughout past research was identified as full ERP utilization. Full ERP utilization provides organizations with a competitive advantage over those that use the tools in ERP on a minimal basis. The supply chain industry relies on providing vendors with data and obtaining customer orders when a request is made. This ability to provide reliable and transparent data up and down the supply chain enables distribution centers to capture market share from those lacking competency and ability. Table 1 represents organizational recommendations from various researchers over the past five years.

Specifically, to effectively increase an organization's competitive advantage, ERP utilization must be a priority that leaders endorse to enable all levels of staff to perform their daily tasks efficiently. Understanding that there are many leadership styles, not one style fits all leadership situations. Studies have demonstrated transactional and transformational techniques have been proven effective in an ERP environment. The capabilities of employees are an
essential factor in a thriving ERP environment. As technology continues to develop, so should the competency of the ERP users. Organizations that invest in their employees can experience a greater return than organizations that neglect training by purchasing the newest technology. Organizations that promote advanced training increase the probability of having reliable data supporting consumer and distribution processes. KM policies were an essential element of a competitive strategy that requires employee retention, decreased training time, and ERP effectiveness. Employees’ knowledge over time is a valued asset that organizations need to retain and transfer to new ERP users.
### Table 1

**Recommendations for Managers**

<table>
<thead>
<tr>
<th>Published Year</th>
<th>Author</th>
<th>Organizational Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>Abu Ghazali et al.</td>
<td>Maximizing an ERP system's utilization leads organizations to increased competitive advantage and higher productivity</td>
</tr>
<tr>
<td>2018</td>
<td>Pohludka et al.</td>
<td>ERP systems enable SC leaders to interlock business processes and forecasting with manufacturing and warehousing activities that significantly mitigates</td>
</tr>
<tr>
<td>2019</td>
<td>Arasanmi</td>
<td>ERP end-users that are not provided the opportunity to maintain required competency levels are partially linked to system failures</td>
</tr>
<tr>
<td>2019</td>
<td>Pattanayak et al.</td>
<td>Supply chain leaders that neglect to maintain ERP relevancy will lose market share to competition</td>
</tr>
<tr>
<td>2016</td>
<td>Oelze et al.</td>
<td>Organizational learning is channeled through training, leader engagement, and knowledge transfer</td>
</tr>
<tr>
<td>2020</td>
<td>Graveen</td>
<td>Higher billing charges, process inadequacies, and an overall increase in operational cost result from underutilizing ERP systems.</td>
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</tbody>
</table>

**Leader Endorsement**

<table>
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<tr>
<th>Published Year</th>
<th>Author</th>
<th>Organizational Recommendations</th>
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<tbody>
<tr>
<td>2018</td>
<td>Tortorella et al.</td>
<td>Younger task-oriented leaders will perform well in smaller teams with a specific goal, while senior leaders are better suited for larger teams and a relationship style of leadership.</td>
</tr>
<tr>
<td>2017</td>
<td>Bosse et al.,</td>
<td>Leaders can be developed through training and education</td>
</tr>
<tr>
<td>2017</td>
<td>Shao et al</td>
<td>Transactional and transformational leadership styles significantly affect ERP competency</td>
</tr>
<tr>
<td>2017</td>
<td>Rezvani et al</td>
<td>Organizations should provide managers with the necessary training that fosters supportive skills that provide employee perception of leadership endorsement</td>
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**Advanced Training**

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<th>Published Year</th>
<th>Author</th>
<th>Organizational Recommendations</th>
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<tbody>
<tr>
<td>2016</td>
<td>Singh et al.</td>
<td>Lack of advanced information technologies systems is a major challenge that led to unreliable forecast, poor lead times, and poor quality of raw materials.</td>
</tr>
<tr>
<td>2016</td>
<td>Alcivar and Abad</td>
<td>Advanced training is essential for organizations</td>
</tr>
<tr>
<td>2019/2020</td>
<td>Ghobakhloo and Fathi</td>
<td>Properly leveraging technology, organizations could fully utilize ERP systems in a manner that provides a sustainable competitive advantage.</td>
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**Knowledge Management**

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<tr>
<th>Published Year</th>
<th>Author</th>
<th>Organizational Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Migdadi et al.</td>
<td>Improving KM results in increased efficiency throughout the different ERP levels</td>
</tr>
<tr>
<td>2019</td>
<td>Heredia-Calzado &amp; Duránez</td>
<td>KM is a tool used to facilitate the transfer of skills management leverages for a competitive advantage</td>
</tr>
<tr>
<td>2017</td>
<td>Acar et al.</td>
<td>KM has become a critical element in developing a company's competitive strategy</td>
</tr>
<tr>
<td>2019</td>
<td>Deranek et al.</td>
<td>ERP knowledge management is the key to an organization's competitive advantage</td>
</tr>
<tr>
<td>2017</td>
<td>Li et al.</td>
<td>There exist a statically significant relationship between knowledge management and an ERP system's effectiveness</td>
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</table>
Five common themes were developed during this study's analysis phase: reduced answer searching, increased ERP understanding, training increased utilization, functional experts, and knowledge of available training. Each theme was linked back to the specific research questions.

**Theme 1: Reduced Answer Searching.** Knowledge management was found to be a term recognized more in past research than by the participants in this case study. Even though familiarity with this term was lacking, the action of sharing organizational data was a part of the employee's daily process. Razzaq et al. (2019) stated, "Knowledge-workers experience of knowledge management practices (e.g., knowledge creation, knowledge sharing, knowledge codification, and knowledge retention) can improve their performance” (p. 924). Goldston (2021) concluded that knowledge sharing is an important element of a supply chain. When challenged by a process, many participants expressed frustration with the amount of time spent searching for answers.

**Theme 2: Increased ERP Understanding.** Understanding the full breadth of an ERP system's capabilities was common throughout the interviews. The key users were found to have a better grasp of the ERP capabilities than the end-users and managers. Tarawneh et al. (2020) found that organizations face the challenge of understanding the ERP environment. All participants agreed upon the need to increase their understanding of the ERP system's capabilities.

**Theme 3: Training Increases Utilization.** Advanced training can increase ERP utilization was a theme voiced by past research and all participants in this study. ERP technology is advancing with new processes and tools in the current market environment. Arasanmi (2019) found that leader-supported advanced training increases ERP utilization and user satisfaction.
ERP users must integrate continual training into their daily tasks to remain relevant in the SC industry.

**Theme 4: Functional Experts.** Online and on-the-job training are both low in cost and provide ERP users with the flexibility to train on an ad-hoc schedule. However, this type of training lacks the quality of training and the ability to ask task-specific questions. Janssens (2020) found that the training conducted by an ERP champion is more effective for the user. The study’s participants, supported by past research, recognize the benefits of in-person training by an individuial that fully understands ERP capabilities.

**Theme 5: Knowledge of Available Training.** Providing ERP training is the first step; ensuring employees know when and where the training is available is the second step. Arasanmi (2019) stated that integrating training as a part of the organizational culture increases key training attendance. This discovered theme found that, although training was available for all ERP users, many were unaware of how to access it. If not monitored or mandated by the organization, many ERP users would never receive this training.

**Summary of the Literature Review**

This literature review consisted of an exhaustive examination of peer-reviewed research published within the past five years. Past research reviewed leadership endorsement, advanced ERP training, and the benefits ERP KM can provide organizations. General and specific problems were addressed in this study. A review of business practices sets the foundation for this review. Strategic business planning is essential for organizations striving to gain a competitive advantage. Globocnik et al. (2020) concluded that the business strategy is focused on the competitive atmosphere and attaining a competitive advantage.
ERP systems provide the tools necessary for end-users to provide reliable data during the company's decision-making process. Parhizkar and Comuzzi (2017) stated that the analytic tools ERP systems provide enable management access to critical reports and metrics. As market competition is now on a global playing field, meeting consumer expectations is one of the driving forces behind a distribution center's ability to capture market share. Fully utilizing an ERP system provides organizations with the agility required to sustain operations during periods of expansion and contraction. Organizations that dismiss the importance of adequately managing an ERP system can experience inefficient processes or system failure. User competency, endorsement by senior leaders, and organizational ERP policies were the critical elements of a healthy ERP system. ERP competency is either learned from on-the-job training, within a classroom setting, or through theoretical knowledge and first-hand experience. Business practices that promote advanced ERP training have an increased probability of keeping pace with advancing technology.

Businesses can be positively or negatively impacted by the leadership style the organization chooses to implement. The leadership style was the foundation of the environmental culture in which the ERP system operates. Leaders in distribution centers experience the general problem of creating a culture that can meet the consumer's demands. The consumer demands the correct item to be delivered at the right time, in the common condition presented at the time of purchase. In today's market, the consumer also expects clear transparency detailing at what stage the items are in the shipment process (Bimpikis et al., 2018). Providing this type of transparency is one of the benefits communicated using an ERP system.

Process transparency is not just for the consumer; upstream partners integrate this data into their value streams. ERP under-utilization is the specific problem supported by past
research, which could be caused by a lack of leadership endorsement, advanced ERP training, and KM processes.

Tasked with motivating and developing employees to achieve organizational goals is the art of leadership. Leadership and management style ranked second below financial incentives for factors affecting employee performance (Alefari et al., 2020). Leaders are challenged to balance the workplace culture and operational objectives. Leadership endorsement was found to be instrumental in the success of ERP systems. Developing relationships, increasing job satisfaction, improving the ERP culture, and increasing employee retention are the responsibility of an organization's leadership.

Employee retention benefits the organization by reducing the added cost of hiring new employees. Employee satisfaction increases as the unknowns become the knowns. Unknowns are experienced in events leading up to ERP implementation, system upgrades, and integrations. Change and lack of competency are also uncertainties employees fear when entering a new environment. The leadership style selected by managers plays a significant role in end-user stress levels during organizational change. Mikkelsen et al. (2017) concluded that managers play a critical role in organizational processes through their actions. Supportive leaders interested in developing employees while endorsing the organizational strategic vision have succeeded. Managers have also found success in having a flexible leadership style instead of a singular style that fits the manager.

As the supply chain increases in competitiveness, software intelligence also advances. Organizations that neglect ERP user development may be subject to witnessing their competition excel within their market. Hietala and Päivärinta (2021) noted that leaders’ competing priorities often overshadow post-implementation ERP development. Organizations that have integrated
advanced ERP training into their policies have realized the benefits ERP system can provide. Training programs can vary depending on the resources an organization can dedicate to advancing user competency. The type of training (internal or external) can provide varying returns on investment. Abu Ghazaleh et al. (2019) found focus groups beneficial when user collaboration is permitted, and cross-talk enables ERP users to share solutions to real-world ERP issues in a learning environment. A combination of balancing various training methods has proved to yield better results. Organizational leaders struggle with balancing employee intellect and operational performance. Knowledge management has been a successful means by which companies can retain critical knowledge while enabling employees to efficiently self-educate.

Fully utilizing ERP systems increases the organization's probability of retaining the competitive advantage in a fluctuating marketplace. Leaders in the supply chain industry realize the importance of maintaining appropriate ERP competency levels. Understandably the cost of ERP systems may prevent organizations from integrating all available ERP modules. However, the basic ERP modules can be sufficient for developing organizations and be the basis for advancing usage as the company matures.

**Summary of Section 1 and Transition**

This section provided the study's foundation and explained the problem's background, purpose, nature, and significance. Research questions and constructs were presented, followed by an exhaustive literature review highlighting past ERP research. This section included a discussion accenting biblical context's integration into the current business environment.

The following section shifts the discussion to outlining the researcher's role and methodology applied throughout the study. The discussion identifies the participants and the
sampling process implemented in the study. Section Two provides the measures used for the data collection, analysis, reliability, and validity.
Section 2: The Project

This case study explored the potential absence of advanced Enterprise Resource Planning (ERP) training and knowledge management policies, resulting in under-utilized ERP systems. A qualitative approach was best suited for this study to understand why this issue is challenging organizations. The utilization of ERP systems was explored using a flexible design to ensure the study's validity. The collection of information and presentation of recommendations must be executed ethically, unbiasedly, and without preconceptions (Robson & McCartan, 2016). Bracketing was used to guard against past experiences and personal bias from entering the study (Creswell & Poth, 2018). Finally, the triangulation method was leveraged to validate recommendations that may result from this study. Understanding the study's purpose and the researcher's role established the tone for the entire study.

Purpose Statement

The purpose of this qualitative case study was to explore the benefits of advanced ERP training and knowledge management policies and to provide recommendations to distribution centers. Ideally, the recommendations made to distribution centers will maximize their capabilities by influencing ERP efficiency. As software technology advances in sophistication, so does the requirement to remain knowledgeable and proficient when operating in an ERP setting. Barth and Koch (2019) suggested that advanced training is critical for a successful ERP system. In a business environment where organizations experience decreased employee retention, knowledge management is a vital factor to consider (Papa et al., 2018). Santoro et al. (2018) noted that firms that implement knowledge management policies experience an increase in competitive advantage. In addition, organizations dedicate significant amounts of monetary resources to ERP systems (Janssens et al., 2020). Failing to remain current or reallocating
resources for new employee development is costly and causes ERP systems to be underutilized until leadership can adequately train the users (Hasan et al., 2019).

**Role of the Researcher**

The role of the researcher was to provide viable, ethically collected information (Robson & McCartan, 2016). Throughout the case study, the researcher took the following actions to ensure verifiable data supports the information collected and that all ethical standards were observed. Before conducting interviews, filtering the participants based on experience, management, and user levels mitigated non-value-added data from entering the study. The researcher used Otter's software program to transcribe conversations during interviews to guard against personal bias during the documenting process. Next, to better ensure employee confidentiality, the researcher limited access to the transcripts of the interviews. Confidential communication between participants and the researcher is essential to provide valid and reliable information (Palys et al., 2018). In this case, the researcher ensured document security by retaining exclusive access to the transcripts on a password-protected hard drive. Finally, to ensure the information was presented ethically, the researcher published all interviews conducted.

Preconceived theories and experience can prevent studies from delivering fair and impartial data. A bracketing method was applied throughout the study to avoid a personal basis. Tufford and Newman (2012) defined bracketing as a "method used by some researchers to mitigate the potentially deleterious effects of unacknowledged preconceptions related to the research and thereby to increase the rigor of the project" (p. 81). This study excluded personal assumptions based on experience to increase the research's validity. As a part of the selection process, the researcher included interviews with employees and managers with perspectives that
agreed and disagreed with the research questions. The researcher included all the data found during the study to avoid biased recommendations. It is critical to avoid omitting vital information obtained during the interview process (Dempsey et al., 2016).

**Summary**

The purpose of this study was to share best practices that organizations have successfully implemented while they worked on increasing ERP utilization. The researcher's role was to present information unbiasedly, and data security control measures were implemented to ensure the integrity of the collected interviews. By using a bracketing method, this study mitigated any preconceived perceptions by the investigator.

**Research Methodology**

ERP systems are integrated into an organization's supply chain (SC) depending on the firm's strategic objectives. Companies encounter varied challenges and deploy different tactics depending on their vision. ERP vendors are now customizing platforms to meet the organizations' needs (Wang et al., 2021). The study provided valuable recommendations to ERP users by selecting the appropriate research method and design. In addition, the research ensured reliable and valid recommendations for organizations to experience an ERP system's benefits through advanced training and knowledge management policies.

**Discussion of Flexible Design**

The most appropriate design for this research was a flexible design. This design provides the investigator the unrestricted ability to remain fluid as the understanding of the problem evolves. A flexible design allowed for assembling qualitative data from an assortment of methods. Flexible designs are used if the research requires adaptation as the data evolves
(Robson & McCartan, 2016). Depending on the participant's user level, the interview process was expected to encounter varied perceptions.

**Discussion of the Qualitative Method**

This study was centered around an organization's utilization of ERP systems. A qualitative research method was the most appropriate for this study to understand why the problem existed and how knowledge management and advanced training could increase operational efficiency. The researcher selected a single case study to thoroughly understand a specific organization's challenges. A single case study was used to illustrate critical organizational issues (Creswell & Poth, 2018).

**Discussion of Method for Triangulation**

Data triangulation was leveraged to validate the information acquired from many sources. This triangulation method collects data using various methods in a qualitative case study (Fusch et al., 2018). This study relied on past research and interviews with managers, key users, and end-users to establish credibility. This study gathered information from past research found during this study's literature review and a series of interviews during the case study. Questionnaires were used to ensure participant qualification.

**Summary of Research Methodology**

A flexible design was chosen to explore underutilized ERP systems qualitatively. The qualitative approach was selected for this study to develop practical recommendations organizations can implement. This study produced credible recommendations using a triangulation method of the information used for analysis. Mitigating personal bias through triangulation increased the reliability of the resulting recommendations. Ensuring the security
and validity of the information obtained during the study was vital to the integrity of the research.

Participants

This study selected a population of ERP users from the Phoenix Manufacturing company. Phoenix Manufacturing was used as a pseudonym to protect confidentiality. Phoenix is an international manufacturer of industrial hydraulics. Operating within an international supply chain, Phoenix obtains raw materials from around the globe. Functioning in the North American region, 12 distribution centers allow customers to purchase manufactured parts globally. To efficiently track, process, and manage purchase orders and delivery requests, this manufacturer relies heavily on an ERP system.

The Phoenix Manufacturing company was selected because it met the following criteria. The decisive factors used for selecting this organization were based on the following:

1. At least five years of experience implementing the ERP system into daily operations.
2. The various locations utilize knowledge management processes for internal and external processes.
3. The support by management provides advanced ERP training.

Furthermore, by selecting individuals from this organization, this study gained valuable insight into how an organization can efficiently utilize an ERP system to satisfy the demand from vendors and consumers on an international scale. To be eligible to participate in this study, employees must have been employed and worked in a logistics department for at least three years. Employees with less than three years in the organization may not have gained enough experience to understand how to access critical resources. Madiedo et al. (2020) linked employee performance with time spent going through the learning curve introduced by the new processes.
Organizational departments outside of logistics seldom impact distribution operations; these departments were prohibited from participating. Senior-level executives rely on departmental managers for ERP process development and resource management; these executives were also requested not to participate in this study.

**Population and Sampling**

A population of ERP users who work as part of the distribution centers across Phoenix, North America, will have varied perspectives on ERP utilization. A combination or mixed type of sampling was used when triangulating multiple perspectives (Creswell & Poth, 2018). Quota sampling allowed the researcher to categorize the interviewees into three subgroups: managers, key-users, and end-users. Interviewing a total of 24 participants ensured that the researcher obtained data saturation. Saturation is the point at which no new data is introduced into the study (Alam, 2020, 2021). At a minimum, Weller et al. (2018) noted that 95% of relevant themes come within the first 10 interviews.

**Discussion of Population.**

The Phoenix Manufacturing company is an organization that has facilities in Europe, Asia, North America, and South America. This study focused solely on ERP users residing in North America. This study defined the population as ERP users employed by Phoenix Manufacturing company operating in North America. The researcher selected a quota sample of 24 ERP users from managers, key users, and end-users to participate in this case study. Quota sampling is used when selecting participants to provide the most significant input related to the problem (Creswell & Poth, 2018). The manager subgroup consisted of employees that hold a leadership position with two or more direct reports. Key users were defined as ERP users assigned vital ERP roles and the responsibility of leading ERP projects. The ERP end-user was
defined as an employee with fundamental ERP roles and without direct reports. Out of 17,337 ERP users operating in North America, 9,571 have been employed by the organization for over three years (M. Budka, personal communication, July 22, 2021). A total of 223 of the selected participants have been employed and functioned in the organization's logistics community for more than three years. As the organization's human resource bench continues to expand, excluding employees with less than three years of employment was important to understand this phenomenon. Figure 8 displays how the sample population was selected.

Figure 8. Population filter.

Note. This model shows the filtering process of the eligible population at the Phoenix Manufacturing Company. First, the population was filtered by ERP users who had been with the organization for over three years, followed by another filter displaying ERP users functioning in the logistics field.

Discussion of Sampling

For this study, quota sampling was the most appropriate method to ensure this study included a good representation of the various levels of ERP users. Quota sampling is ideal when interviewing categorized subgroups of a population (Robson & McCartan, 2016). The sample
frame included ERP users logistically linked to the distribution center’s operations. This sampling strategy provided perspectives from within the distribution center and the logistics departments that connect. Sampling users from the various ERP levels operating within the organization increased the probability of capturing various viewpoints. Quota sampling provided a robust representation of several perspectives from the selected subgroups (Górny & Napierała, 2016). This method of sampling was appropriate to ensure perceptions were reinforced by reality.

The subgroups consisted of 8 ERP users from each group: management, key users, and end-users. Evaluating the research questions through the lens of the management team was vital in understanding the organization's intent. As the ERP technical experts of the organization, interview responses from key users shared insight into the execution of management's objectives. Subsequently, the end-user was the group receiving the advanced training and utilizing the knowledge management tools making their responses essential to this study. A collective total of 24 interviews provided the study with varying perspectives enabling the investigation to conclude with a comprehensive analysis.

This study sought to obtain a sample size large enough to reach a complete understanding of this phenomenon. A total of 24 interviews increased the probability that this research could reach saturation. Saunders et al. (2018) define saturation as the point at which any new data introduced to the research has become repetitive. Malterud et al. (2016) concluded that the sample size depends on how narrow or extensive the study is; larger scoped studies require a larger participant pool. Interviews of the selected sample were conducted in-person or via business skype.
Summary of Population and Sampling

Selecting ERP users who could provide various perspectives was essential to provide sound recommendations. Sharing perspectives from the various levels of the organization provided the study with a well-rounded understanding of the best practices and challenges faced by this organization. The number of ERP users who work in conjunction with the distribution centers was a fraction of the overall population. Phoenix's ERP users operating in North America were the targeted population, while employees with over three years of employment in the logistics departments framed the pool of potential participants. Quota sampling allowed the study to divide the interviews into three smaller subgroups of ERP users. The researcher obtained 24 interviews with logistics managers, key users, and end-users, ensuring the study could reach saturation.

Data Collection & Organization

Data collection for this qualitative case study consisted of a literature review and staff interviews from the Phoenix organization. Each participant was categorized into one of three subgroups according to the selected participant's ERP user levels. The first subgroup included management-level employees, and the second subgroup was the company's key users. Lastly, the researcher included the ERP end-users within the organization were included in the interview process. Instruments used in this study included the participants, researcher, a qualifying questionnaire, interview guide, and NVivo was the analysis tool. Data was organized and maintained to protect participant confidentiality; sensitive information was held in secure files. Each file was secured by a password unique to the participant and maintained by the researcher on a single password-protected hard drive. Once secured, the data was cross-referenced with past research and data obtained during the interview. Recommendations for increasing the
organization's efficiency through ERP utilization were formatted and presented to the appropriate management level.

**Data Collection Plan**

The data collection plan contains research procedures and general rules for the investigator to follow during the study (Robson & McCartan, 2016). The data collection process for this qualitative case study included interviews and an exhaustive literature review of past research. As a qualifier, each potential participant completed a standardized questionnaire before starting the interview process (see Appendix A). Only participants over the age of 18 with three years of experience in the logistics department were allowed in the study. Next, only selected participants were notified by email or phone to schedule their interview time. Researchers use interviews to gain an in-depth understanding of the issue rather than an overall generalization (Setia, 2017). This method was appropriate because it allowed the collecting of various organizational perspectives and past research. Based on the outcome of the interviews, no follow-up questions were required to clarify or validate responses from the interviewees.

**Instruments**

The researcher was the primary instrument in this case study, followed by select participants. A standardized list of interview questions was used to ensure that the interview process was consistent and to assist the interviewer in remaining focused during the interview (see Appendix B). Archival data was added to the research by sharing insight from past studies. Only the participants who met the criteria were selected by integrating a questionnaire.

**Interview Guide**

Open-ended research questions are used to examine the selected phenomenon in-depth to provide structure to the research (Kross & Giust, 2019). Using a series of open-ended questions
allowed the researcher to gather various information and helped gain a better understanding of ERP users' challenges. Open-ended questions are used to gain insight into the phenomenon (Creswell & Poth, 2018). The interview questions asked the participants about their past experiences and understanding of knowledge management and advanced ERP training. Questions also addressed increasing utilization of their ERP system. The sub questions sought to understand the participants' beliefs regarding the ERP system's value and how their management team supports initiatives that promote ERP utilization. The last question requested their recommendations for increasing ERP utilization.

Archival Data

Credible archival data were presented throughout this study; data that has not been substantiated could negatively impact research credibility. Only peer-reviewed historical data was permitted. Archival data is often used to understand past perspectives and experiences (Creswell & Poth, 2018). The rapid advancement of ERP technology has created a need to understand the past challenges of ERP users. Selecting participants with enough experience through a questionnaire was critical for this study's credibility.

Questionnaire

Questionnaires are used as a data collection instrument to gather specific information from a select group of individuals (Robson & McCartan, 2016). The larger the pool of potential participants, the more challenging the selection process can be. Individuals with varying competency levels and years of experience will also vary depending on the size of the population. Using a qualifying questionnaire provided value to the study by ensuring the selected participants met the required criteria to respond based on substantial experiences.
**Data Organization Plan**

Once participants completed the standardized questionnaire and were deemed eligible, the researcher chose a select number of eligible participants to participate in the study. Once the interviewees were identified, the selected participants were notified by email or phone. Upon gaining consent from the participants, interviews were scheduled at the interviewee's earliest convenience. The face-to-face interview technique may be the most popular approach; however, due to cost and convenience, online interviews were often recommended as a welcomed alternative (Heath et al., 2018). In addition, online interviewing is a cost-effective and good alternative for meeting geographically challenged participants (Gray et al., 2020). Before the transcription process, aliases were assigned and maintained under a password-protected folder retained by the researcher. Due to the various employment levels, the researcher conducted all interviews, ensuring confidentiality and professional respect for each participant. Upon completing each interview, all notes and recordings were separated into three categories: management, key-user, and end-users.

**Summary of Data Collection & Organization**

This section covered how the data for this study were collected and organized. By organizing the information provided by the participants, valuable time was spent during the analysis phase. Leveraging the various instruments provided an overview of the current problem to uncover solutions that can benefit the organization. Collection and organization of information were essential for gathering valuable data used during the data analysis phase.

**Data Analysis**

The detailed analysis provides common themes extracted from interviews and documented past research (Azungah, 2018). Data analysis was used to identify common themes
and patterns throughout the study (Creswell & Poth, 2018). Analysis tools were used to assist the researcher in coding and triangulating the presented information once data saturation was obtained. Data analysis is complete once saturation has been achieved (Robson & McCartan, 2016).

**Emergent Ideas**

Emergent ideas are random thoughts that can provide valuable insight into an individual or group of ERP users' perspectives; these thoughts could have developed at any point throughout the study. The researcher included these emergent ideas in the analysis as critical concepts developed. Creswell and Poth (2018) recommended noting emergent ideas either on a memo pad or in a text file. The interviewer noted emerging ideas during each interview by applying memoing as the primary method of recording unexpected ideas. These notes were categorized and then added to NVivo for coding and analysis.

**Coding Themes**

Coding communicates independent qualitative data into reliable data (Skjott Linneberg & Korsgaard, 2019). The researcher uploaded all transcripts, notes, and past research into the NVivo software. This software program categorizes and codes qualitative data. All names, emails, and personal data were omitted to protect the organization and participants of the study. Researchers are confronted by ethical issues linked to safeguarding participants from the damage of wide-ranging conclusions (Creswell. & Poth, 2018). The data analysis began with a thorough examination of the interview transcripts. Next, common themes were labeled and categorized for the coding phase. Coding classifies answers to interview questions into common themes (Robson & McCartan, 2016). Coding simplified the various responses gathered from the participants,
along with any notes entered, by assigning a number value to the common themed words and phrases. Finally, an analysis was completed, and the findings were presented.

**Interpretations**

Data interpretation can impact the validity of a study and is crucial in qualitative research (Neale, 2021). The researcher used paraphrasing to clarify responses to ensure the interview had the correct interpretation. To minimize errors in interpretation, Wohlfart (2020) recommended using the interview guide as a guide and not as a strict outline while keeping the questions simple yet flexible. Next, if required, each participant agreed to a follow-up discussion for clarification. Finally, ERP-specific acronyms were limited to minimize the possibility of error while interpreting the data obtained from the various sources.

**Data Representation**

This research intended to collect data and succinctly present the findings of the analysis. Multiple perspectives were included in this study to ensure a comprehensive picture. The researcher noted graphic representations of the developed themes within a table for visual reference. As individuals have various methods of processing information, inserting graphical representation increases the probability of comprehension (Harsh et al., 2019). Finally, a reference table was provided that depicted how the discovered themes were coded.

**Analysis for Triangulation**

The software NVivo assisted in triangulating recommendations that end-users through managers can use to improve ERP utilization. Five common themes were developed using past research and participants' responses to provide recommendations to industry leaders. The researcher extracted shared themes from each interview group and the interview process, and
these common themes were compared to past research examined in the literature review. Alam (2020, 2021) used NVivo to produce common themes and easily categorized research data.

**Summary of Data Analysis**

Discovering the common threads from this qualitative study was critical when developing value-added recommendations for the supply chain industry. The researcher included questions from past research, the interview transcripts, and the analysis phase leveraged the NVivo software. NVivo cross-referenced data from past research and compared the transcripts obtained during the interviews of this case study. This ability to cross-reference information provided the study with a means of triangulating data from various sources.

**Reliability and Validity**

Qualitative studies use terms such as reliability, trustworthiness, and validity. When performing research, consistent processes are essential to producing reliable data. Validity is accomplished by integrating a proven strategy that supports the given outcome. Cypress (2017) proclaimed that "the interface between reliability and validity is essential, especially for the direction of the analysis process and the development of the study itself" (p. 256). Research validation is the outcome of assessing the findings of a study (Creswell & Poth, 2018).

**Reliability**

In qualitative research, reliability is the idea that the data is accurate enough to show consistent sustenance for analysis across the study's contributors (Spiers et al., 2018). The researcher ensured that reliable sources were used throughout the investigation. Reliability refers to the consistency of the information evaluated by the investigator (Creswell & Poth, 2018). Only one coder was employed during the analysis phase to increase the reliability of this research. An exhaustive literature review and interviews from different employment levels were
the primary information source for this case study. The investigator examined only peer-reviewed research studies performed within the past five years. Furthermore, discussions were held with only ERP end-users and managers to increase research credibility. By including participants with a variety of views, the credibility of this research was enhanced. A standardized interview guide led the researcher to ask the same questions to each participant. Results of the interview were recorded to ensure an accurate depiction of the selected participants' responses. To ensure that each group was thoroughly represented, interviews continued until saturation was obtained.

A vital component of this research was the trustworthiness of the data. When presenting trustworthy information, credibility, transferability, dependability, and confirmability are all elements to address (Rose & Johnson, 2020). Findings were drawn from multiple sources and various perspectives to ensure the data was credible. The researcher leveraged the interview guide and transcripts to confirm the transferability of the study. Triangulation, questionnaires, and member-checking were deployed to ensure the data was reliable. Finally, full transparency of all research material used throughout the study was available to encourage confirmability.

**Validity**

The following validation strategies were applied during this study: saturation, triangulation, member-checking, and bracketing. Saturation is the point at which, when reached, new information fails to exist (Robson & McCartan, 2016). Interviews were independently evaluated for new information at the subgroup level. For this case study, triangulation was used to increase the validity of the research (Creswell & Poth, 2018). The four forums of triangulation include data, observer, methodical, and theory (Robson & McCartan, 2016). Data triangulation is the collection of data from various sources to bolster research credibility (Jentoft & Olsen, 2019).
Heesen et al. (2019) stated, "The idea behind methodological triangulation is that the convergence of multiple methods upon a single conclusion better supports that conclusion than just one of those methods concluding" (p. 3068). As some studies can be too large for a single interviewer, observer triangulation is applied to enlist multiple observers' assistance (Robson & McCartan, 2016). Collecting various perspectives and theories is defined as theory triangulation (Caillaud et al., 2019). While examining interviews and past research documents, this study applied data triangulation. To ensure the validity of the participants' perspectives, once the findings were available, the selected participants were invited to review and member check the results. Candela (2019) found that "member checking can also be used to help the researcher capture the voices of the participants" (p. 626). Furthermore, the researcher engaged in bracketing to remove any bias by the researcher.

**Bracketing**

This study looked at the underutilization of ERP systems through the eyes of the participants. Gregory (2019) defined bracketing as eliminating the researcher's bias from the study. Bracketing was used to detach the researcher's expectations and understand the issue through the lens of the participants (Cypress, 2017). The interview process bracketed the researcher's individual experience by adhering to the predeveloped interview script found in Appendix B.

**Summary of Reliability and Validity.**

Providing accurate and reliable information was the primary responsibility of the researcher. Consistent processes used throughout the study were essential to ensure the reliability of the study. Validating the data through triangulation enabled the study to confirm data points
from various non-connected sources. Bracketing has been proven to prevent personal bias from entering the study.

**Summary of Section 2 and Transition**

The preceding section described the researcher's actions to ensure ethical standards were adhered to throughout this case study. This section covered the study's participants, research methodology, population, and selection process. Rules and procedures were discussed, outlining how the data would be collected, organized, and coded. Key instruments were identified to ensure the data used throughout the study was credible. Next, the researcher outlined the steps of data collection and analysis. Finally, the importance of valid and reliable data was highlighted and described for this study.

Section 3 consisted of presenting the findings surrounding the discovered themes. The investigator then discussed the findings, their applicability to current industry practices, and recommendations for future studies. The following section reflects on personal and professional growth from a biblical perspective. The section closes with a summary of the study and concluding remarks.
Section 3: Application to Professional Practice and Implications for Change

Section Three consisted of an overview of the study and strategies distribution centers can use to increase the efficiency of ERP systems. In this section, the researcher discussed the findings of this study and how the discovered themes can be integrated into general business practices. An interpretation of the discovered themes provided answers to how each theme was related to the individual research questions. This section provided strategies using common themes obtained from the various perspectives of the study's participants that increase ERP utilization. The researcher concluded this section with recommendations for future research.

Overview of the Study

This qualitative case study explored the benefits of advanced ERP training and knowledge management policies to provide recommendations to distribution centers. The recommendations from this study can potentially influence ERP efficiency by maximizing the company's capabilities. This section provides organizations with recommendations on improving general business ERP practices by applying potential strategies identified from the findings in this study. Due to the logistical complexities of the Phoenix Manufacturing company, the researcher selected this organization utilizing a single case study. This organization employs a global supply chain network. However, this study focused primarily on the regional level of North America.

Through interviews with the organization's key users, end-users, and managers, this study identified best practices and potential areas of improvement from which the organization could benefit. The participants in this study were randomly selected and prequalified before the commencement of the interviews. The qualification criteria were as follows: over the age of 18 and have been employed by the organization working in the logistics field for at least three years.
Transcripts from the interviews were returned to the participants, providing them an opportunity to review for inconsistencies in interpretation to ensure the reliability of the data obtained. Voice recordings of the interviews were used to validate each transcript used in this case study. Parameswaran et al. (2020) proclaimed that voice recordings enhance coding by providing normally overlooked content. During the analysis phase, the investigator discovered five common themes: reduced answer searching, increased ERP understanding, training increased utilization, functional experts, and knowledge of available training. Triangulation was leveraged to ensure the validity of the themes. Sridharan (2021, 2020) noted that triangulation suggests reliability in the data obtained, inspiring confidence in the results. An exhaustive literature review prior to the study provided similarities and differences between past research findings and this study. Natow (2020) stated that triangulation enhances the validity of qualitative research.

**Presentation of the Findings**

This study was designed to answer research questions surrounding ERP utilization. The rapid rate at which technology has increased the need to ensure ERP systems are utilized as much as possible. This case study identified a single manufacturing company that leverages distribution centers across North America to reach its customer base. A sample of the associates employed at Phoenix Manufacturing was asked to participate in this study. The sample population consisted of 223 ERP users employed within the logistics department. The researcher sent out 53 randomly selected recruitment emails; 28 responded, and 2 of the 28 respondents did not speak English. Moreover, two were not qualified, providing the researcher with 24 eligible participants.

The following section discusses the themes discovered, followed by an interpretation of the emergent themes. Realizing that perspectives of each theme may vary depending on the level
of ERP use, the interviews were categorized into three different user groups. These user groups consisted of ERP users who hold managers' responsibilities, key users, and end-users. These participants all had varying perspectives. Managers were defined as leaders that have two or more direct reports. Key users were responsible for problem-solving, integrating system updates, and teaching other ERP users. End-users were responsible for the operational task of data input and completing the daily processes. For this study, the different participants were labeled as key users (KU), end-users (EU), and managers (M), with their corresponding numbers. For example, KU1 would be key user number one. Themes will be discussed from the viewpoint of each group. A visual data representation is provided to ensure the reader leaves with a clear picture of how the data was processed. Next, a detailed discussion of how the findings relate to critical areas of the study and the research questions were outlined. This section revealed how the results relate to each element in the research framework. Anticipated themes were reviewed for differences, similarities, and unanticipated and missing themes. Past research from the literature review in Section 1 was reviewed, paying close attention to parallel themes and variances. Lastly, this section concludes with a summary of the findings that address the problem being studied in this case study.

**Themes Discovered**

The resulting data provided by this study uncovered five primary themes when considering increasing ERP utilization. Each theme was linked to increasing how an organization utilizes an ERP system. When interpreting the themes, the researcher highlighted perspectives from the end-users, managers, and key users. The first theme discussed how reducing the time spent searching for answers to ERP questions is essential to maintaining a successful ERP system. The second theme addressed how key and end-users prefer formalized training programs
to increase their understanding of ERP. The third theme highlighted was that training increases ERP utilization by optimizing user time and increasing organizational efficiency. The fourth theme addressed having a functional ERP expert at the local level. The final theme identified the need to provide knowledge of accessible training to the end-users. Table 2 denotes the relationship between the research questions and emergent themes.

Table 2

Research Questions, Alignment, Themes

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Research questions (RQ)</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can KM policies impact the utilization of ERP systems?</td>
<td>RQ1</td>
<td>1) Reduce answer searching, 2) Increased ERP understanding</td>
</tr>
<tr>
<td>How would advanced ERP training increase the utilization of ERP systems?</td>
<td>RQ2</td>
<td>2) Increased ERP understanding, 4) Functional Experts, 5) Knowledge of available training</td>
</tr>
<tr>
<td>How can distribution centers increase ERP utilization?</td>
<td>RQ3</td>
<td>3) Training Increases Utilization</td>
</tr>
</tbody>
</table>

Interpretation of the Themes

Theme #1 Reduce Answer Searching. RQ1 explored the impact knowledge management policies have on the utilization of ERP systems. This theme focused on the time spent searching for answers. Knowledge management (KM) was not a well-known phrase throughout Phoenix Manufacturing. Even though the term was not well-known, the practice has
been embraced and expected throughout all locations. Knowledge-sharing tools have been integrated to reduce the amount of time an associate spends searching for an answer.

**End-User Perspective.** The end-users agreed that KM tools are frequently used when ERP users are no longer with the organization. KM policies reduce the time an ERP user spends searching for answers (EU8). EU7 explained their department's KM tool used to reduce searching time:

> We use a OneNote in our department that whenever we have information that needs to be updated or changed, such as customer information or material information. We store that in our OneNote that anybody that's assigned to that OneNote on the team can go in and have access to that information.

A common thread between the end-users was that they rely on these tools to ensure they work efficiently by reducing wasteful time, streamlining processes, and minimizing ERP errors.

**Manager's Perspective.** Managers have multiple tasks that need to be completed daily, and supporting their end-users is one of those tasks (M3). However, the managers agreed that the amount of time spent answering questions and teaching users how to complete a simple task could be overwhelming. Managers indicated that providing KM tools to their end-users reduced their time to answer questions. M9 stated:

> It knows where to look and how to understand what you are looking at. It solves many interruptions that people get daily, just because they do not know where to look. If they are appropriately trained across the areas, it will cut down on that, and you will get your answer. There is no more waiting for an answer.

**Key User Perspective.** As part of the critical user's responsibilities, key users assist ERP users in troubleshooting and teaching others how to run the various transactions in the system
(KU1). However, key users agree that they are also challenged by answering ERP user questions. Key users expressed how they still need to leverage organizational information sharing tools to search for information. KU4 noted:

I use the Wiki pages all the time. There are many things that I have had to self-teach regarding SAP. So, if there is a difference in the SAP knowledge pages, sometimes I google things and try to find information. It is not always the best source, but sometimes that is a tool that can be useful. However, like the Phoenix Wiki page and the learning spaces, that is the official term. I use the learning space to access information about SAP, and I usually look online for whatever I cannot find there.

KU1 elaborated:

We have too many different applications where you can find the documentation. An end-user is partially overwhelmed. Where do I even have to go to look for documentation? We have the learning space, Wiki pages, Phoenix Connect, and individual file folders from departments where we can find data.

Many key users shared that to reduce the time ERP users spend searching for answers, the Phoenix organizations have united a documentation and information sharing process within local departments and extended it to their global network. The key users noted that information is readily accessible to associates using multiple access points, including SharePoint, intranet, and MS teams. Work instructions detailing how to complete any given task were the minimum requirement for sharing knowledge. To expedite clarification of user questions, managers and key users are available as needed to resolve ERP issues (KU4).

**Theme #2- Increase ERP Understanding.** RQ2 investigated the impact of advanced ERP training on the utilization of ERP systems. The organization has successfully provided new
associates with basic ERP user training as part of their onboarding process. Afterward, on-the-job training has been the primary means for ERP users to learn how to complete various tasks. Once an ERP user has been integrated into the assigned job, the local management team coordinates additional training specific to their job.

**End-User Perspective.** Collectively, the end-users embrace advanced training and the opportunity to increase ERP competency, mitigate mistakes, and streamline their daily tasks. EU6 stated, "There are areas that are unnecessary, which the users could use better than what we are currently using, that we can utilize to find things quicker and easier." EU2 stated:

- Advance training provides ERP consistency, so associates limit costly mistakes.
- Increasing advanced training provides a knowledge base that will allow individuals to progress within the company and learn how to take on more responsibilities because they will have more exposure to ERP incidents. Training also gives the associate a better opportunity to land positions with increased ERP responsibilities.

**Manager's Perspective.** Managers understand the complexity of the ERP system and embrace increasing the user's understanding of the ERP system's capabilities. M1 noted, "ERP systems are very complicated. Managers agreed that mastering an ERP system aims to understand better how to source, extract, analyze, synthesize, and present information in a meaningful way. The more training you get, the better you are." M10 stated:

- You sometimes do not use a particular process for six months. In those types of situations, we are grateful for advanced training. Continuous training also limits the amount of retraining, and if you have not used it for a while, there is somewhere you can go to refresh yourself.
**Key User Perspective.** KU1, KU2, KU3, KU4, KU5, KU6, KU7, and KU10 posited that they increased their ERP competency by attending monthly virtual meetings with their ERP expert integrating new modules into the system. Furthermore, findings from the key users revealed a more advanced training level to increase ERP understanding; monthly key user training was designed to enhance competency and provide appropriate teaching points to the end-users.

**Theme #3- Training Increases Utilization.** RQ3 explored how distribution centers can increase ERP utilization. When analyzing ERP utilization, the common theme was that participants agreed that increasing ERP utilization provides an organization with a better picture of critical metrics and can reduce organizational costs.

**End-User Perspective.** The end-users agreed that advanced training allows them to efficiently reduce the number of manual tasks as part of their daily tasks. EU3 noted the benefits of advanced training "Obviously, any benefit would be streamlining your job, make different processes easier to do, and not be so time-consuming in some cases." EU1 proclaimed that "increasing utilization would provide a better understanding of our current processes and how we are performing."

**Manager’s Perspective.** Managers agreed that advanced ERP training is essential for increasing ERP utilization (M1). Managers noted establishing a standardized training platform that documents the type of training the user holds and the various responsible parties accountable for the user's competency. M4 stated:

To increase ERP utilization, somebody from each site needs to coordinate the training, and then there needs to be some official documented training. Whether that is XML-
based or word-based, or it is a book. Each of the critical users needs to be able to bring up or at least ensure minimum standards are met.

**Key User Perspective.** KU1 shared that the organization's regional key users' current initiatives to increase ERP utilization consist of projects that identify the manual task that can be automated and cleanse existing data. KU1 stated, "We can save much money on those manual applications if we just start using SAP more." Increasing the amount of advanced training will also increase system utilization (KU2). KU10 stated:

Additional training would increase ERP utilization. Like I am a key user, we have key users who troubleshoot problems. However, I would go one step above the key user and like somebody thoroughly knowledgeable in SAP and all the settings and information you could pull from your ERP system.

While identifying the actual initiatives to increase utilization, the participants had split responses. While local-level Continuous Improvement Processes (CIP) projects are encouraged by management and end-users, they are met with the challenges of gaining approval and budgeting resources to increase ERP utilization. KUs from this organization collectively recommended that the benefits gained from a formal advanced training program would increase utilization.

**Theme #4 Functional Experts.** Participants collectively agreed that they spend a significant amount of time googling, searching various organizations' links, or reaching out to the organization's subject matter experts to find the answer to a specific how-to question. These experts act as a single point of contact for ERP users.

**End-User Perspective.** The end-users rely on asking management for help when resolving the "how-to" questions or leveraging the organization's KM tools (EU5). The end-users
proclaim that having a local functional expert would increase their ERP competency by introducing new transactions and increasing ERP efficiency. EU8 stated:

> It could be beneficial if we take on maybe having somebody who is certified in SAP or somebody who has a healthy knowledge in SAP documenting more of what they know to distribute and share that information. Whether it be through files or a training session and a group to give us that experience and knowledge of what they can do with SAP rather than just a one-off thing because we asked, we found out about it.

**Manager's Perspective.** As a common thread between the managers, they understand the importance of advanced training and its role in increasing the ERP competency of their employees. Admittingly, the managers shared that training led by other associates and even key users may not meet the desired outcome of a specific departmental manager. Functional experts are leveraged to provide ERP-specific training related to applicable ERP tasks (M7). M2 stated:

> I think the best type of training is training led by the functional experts in the facility. The training needs to be tailored towards how that facility uses SAP and how it should be used in the future. It needs to be given by someone that understands the nuances of that plant's operations. While getting best practices from other plants is good, get in some new ideas. That can be very beneficial, but you need to ensure that those ideas, concepts, and transactions can be used.

**Key User Perspective.** Functional experts are used when defining processes for local and overseas locations (KU2). These experts provide training aids to assist key users in training at the local level (KU10). The key users understand international organizations' challenges in providing advanced ERP training. The Phoenix organization has overcome these challenges by having the
functional experts provide video-based training and storyboards to selected key users. KU5 noted:

Those functional experts that define the process must provide some level of training. Because the central groups overseas who define these processes are developing short video-based training, I think it will be essential because now we do not have to have a functional expert from overseas fly to the US to come and provide this training.

Key users and managers have recommended that the functional experts provide training videos as an interim solution until they can be sourced locally. Currently, the functional experts are overseas, which makes the process difficult to share challenges local networks face. The key users agreed that localized functional experts would be able to provide instruction on critical, ERP-specific tasks applicable to each department while maintaining an overall picture of how each department's roles are aligned with the overall operation.

**Theme #5- Knowledge of Available Training.** This research also found that some associates were unaware of existing training beyond the fundamental training on the organization's intranet. Managers and key users believe that unless they are involved with a technical upgrade, it is up to the associate to seek any advanced training they might need.

**End-User Perspective.** Most associates will ask their managers for one-on-one training, while others think training may be available on the Phoenix Manufacturing intranet (EU6). EU4 stated, "When I come across something, I will go up to a manager, and based on my scenario, they will go through certain steps to teaching me certain transactions, and then I just retained through my time with the company." EU9 said, "We have, I think they have training on our intranet through our HR global, where people can sign up for pieces of training. Then, of course, the day-to-day training that happens whenever somebody has a more advanced question." EU8
stated, "Phoenix Connect has a lot of different pieces of training you can self-assign them to yourself if you choose."

**Manager's Perspective.** Managers understand that ERP training is available to the associates but feel that it is the associate's responsibility to ask for the training. M5 said they "do have training available, and it is open to all associates. Generally, it is pushed by the associate to initiate a training request." M1 noted:

I certainly think that it is incumbent on the individual to figure things out. Furthermore, it is incumbent on the individual to ask questions. If you do not have that sort of an inquisitive mindset, no amount of training will help you write.

**Key User Perspective.** Key users stated that they are trained as projects are implemented. KU1 noted that the best training they receive is when they "have so-called upgrades, we use predefined storybooks, those storybooks are supposed to represent a process and can be used repeatedly." However, the key users cannot train the other associates. KU4 stated, "Many times you learn more hands-on during a training session, you might not pick up quite everything. Nevertheless, just repetitive or just the ability to ask questions after the fact after the training is complete."

The current process of providing fundamental ERP training to new users and providing access to advanced training when the associate feels the need has been met with great success (KU3). Throughout the interviews, interest from the users focused on improving the type of ERP training available. A solution that was discussed by the majority of the participants was to create a standardized, formalized training platform for the North American region. Formalized training would ensure ERP users are aware of the expected training and monitor completion progress
Key users agreed that this benefits the organization by increasing ERP utilization and reducing the time spent searching for solutions.

**Representation and Visualization of the Data**

Creswell and Poth (2018) noted that data collection, analysis, and report writing are not separate steps; these are stages in research that occur simultaneously. This case study began with a pool of qualified candidates to participate in this research. The spiral image best represents the analytical strategies used during this study, and Figure 9 displays the data analysis spiral to showcase how the data traveled during this case study.

![Data analysis spiral](image)

**Figure 9. Data analysis spiral.**

The software Otter was used during the interview process for two reasons: to audio record each interview and to confirm accuracy during and after the transcription process. The second reason was to allow the interviewer to devote all his attention to the interview versus the transcription process. This data was held on a secured network and hard drive during the entire research period. Once the file was prepared and organized, the researcher separated the interviews into three subgroups, key users, end-user, and managers. At this time, the interviewer
could read and reread the transcripts, identifying emergent themes throughout the interviews. Using the software NVivo, the researcher properly coded each interview accordingly. Next, the theory development began, using the reports and analysis tools provided by NVivo to identify the relationship between the emergent themes and the research questions.

The following tables highlight the word count used when developing the themes related to the research questions. Table 3 represents the word count and weighted usage from the collective interviews. Using the transcripts from each interview, the investigator used this information to highlight words with greater frequencies. These words were coded into individual themes by grouping similar words into common themes. The common themes were used to reference when answering the different research questions. The percentage of coverage was provided in Table 4, which displays the coverage percent of themes referenced.

Table 3

<table>
<thead>
<tr>
<th>Word</th>
<th>Count</th>
<th>Weighted % usage</th>
<th>Similar Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>219</td>
<td>1.88</td>
<td>Train, Trained, Onboarded, on-the-job</td>
</tr>
<tr>
<td>Utilization</td>
<td>84</td>
<td>0.72</td>
<td>Utilize, Utilizes, CIP</td>
</tr>
<tr>
<td>Increase</td>
<td>42</td>
<td>0.36</td>
<td>Increasing, increases, improve, improved, improvement</td>
</tr>
<tr>
<td>Searching</td>
<td>36</td>
<td>0.29</td>
<td>Searched, Googled, Share-point, Portal, Wiki pages, Learning Space, Work instructions, DCWIs</td>
</tr>
<tr>
<td>Questions</td>
<td>26</td>
<td>0.22</td>
<td>question, questions</td>
</tr>
<tr>
<td>Experts</td>
<td>22</td>
<td>0.19</td>
<td>Expert, Champion,</td>
</tr>
</tbody>
</table>
Table 4

*Reference Code per Theme*

<table>
<thead>
<tr>
<th>Theme Name</th>
<th>Reference Code</th>
<th>% Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Answer Searching</td>
<td>26</td>
<td>9.92%</td>
</tr>
<tr>
<td>Training Increases Utilization</td>
<td>23</td>
<td>4.97%</td>
</tr>
<tr>
<td>Increased ERP understanding</td>
<td>21</td>
<td>3.46%</td>
</tr>
<tr>
<td>Functional experts</td>
<td>19</td>
<td>6.51%</td>
</tr>
<tr>
<td>Available training</td>
<td>14</td>
<td>6.80%</td>
</tr>
</tbody>
</table>

**Relationship of the Findings**

The specific problem to be addressed was the potential absence of advanced ERP training and KM policies, potentially resulting in underutilized ERP systems. The study found that two of the research questions have multiple themes. The following section discusses the relationship between the research questions and the findings. Furthermore, the conceptual framework, anticipated themes, unanticipated themes, and missing themes were examined. This section also explored the similarities and differences of past literature.

**The Research Questions**

This section explored the relationship between the research question and the corresponding theme. The research provided a detailed discussion covering how the findings addressed each research question. The researcher applied past research as supporting references reinforcing the themes applicable to each question.

**RQ1: How can KM policies impact the utilization of ERP systems?** This research question was addressed by the first theme below. KM policies impact the utilization of ERP
systems by reducing time spent searching for answers. The easier an ERP task is for the user, the more likely they can leverage the system. Zadeh et al. (2020) stated that the easier an ERP system is, the more understandable it becomes. Without a pool of knowledge to draw from, creating new processes can be time consuming and may require additional resources.

**Theme #1 Reduce Answer Searching.** Although the term "KM" was unknown by most, the organization's policy of documenting, organizing, and sharing accessible information has been heavily relied upon throughout the various locations. The interviews concluded that work and process-specific instructions are held on the various share drives per location and used more by end-users. Laviola et al. (2021, 2022) indicated that work instructions are used to simplify complex operations, easing the user's burden. In the absence of this information, associates rely on transferring tribal knowledge or asking management for assistance, slowing productivity and increasing the probability of errors. Lam et al. (2021) stated that KM is an efficient method that enables users to overcome challenges and fluctuations quickly.

Key users and managers leverage a global portal for shared information while working on ERP projects with a regional impact. MS Teams, organization-specific Wiki pages, and OneNote are a few tools used when sharing regional and global information with international locations. Everly (2019) mentioned that Microsoft's Office 2016 tools like OneNote and other resources are digital tools for sharing data with individuals or groups. Lessons learned and completed storybooks are achieved on these sites and available to all ERP users for future reference. Implementation and use of these tools have significantly increased the utilization of this organization's ERP system. However, Phoenix Manufacturing has found that storing information in multiple locations can present challenges with integrating a central point of sharing knowledge to improve their current process.
**RQ2: How Would Advanced ERP Training Increase the Utilization of ERP Systems?**

This research question was addressed by themes two and four below. Increasing ERP understanding (Theme #2) gives the ERP users an understanding of the mechanics behind the various ERP functions. Functional experts (Theme #4) pass their experiences and know-how to the users through formalized advanced training. Combining understanding with advanced training has the potential to increase ERP utilization.

**Theme #2 - Increase ERP Understanding.** The second research question was selected to understand the impacts of advanced training and increasing ERP utilization. The advancement of technology demands that organizations increase their understanding of ERP systems' tools. Erkayman (2019) pointed out that data intelligence tools are increasingly united with ERP systems. Anticipating that the participants' perspectives in this study may vary depending on the ERP user level, all ERP users were asked to provide their understanding of the benefits of advanced ERP training and experience. As a foundation for these questions, this study needed to identify if Phoenix Manufacturing offered advanced ERP training. The results were split between the key users responding positively, listing many resources available for advanced training.

In contrast, the end-users concluded that advanced ERP training was not available, and management had split results between the two. The organization's consensus is that advanced training is available; however, it is incumbent on the user to locate the resources. These findings support RQ2, indicating that ERP utilization would be increased if all ERP users knew available advanced training sessions.

**Theme #4- Functional Experts.** The participants confirmed that on-the-job ERP training is the primary means of introducing and maintaining ERP competency within the Phoenix organization rather than formal classroom training. This type of ad-hoc training has presented
this organization with unique challenges. From the local perspective, on-the-job training, seminars, and online courses have been good tools to maintain competency levels for the user to complete daily tasks. Larger organizations depend more on educational programs and on-the-job training to increase employee competency (Lössbroek & Radl, 2019). In this study, 21 out of 24 participants (key users, managers, and end-users) agreed that increasing ERP understanding would provide the users with clarity if they understood the why behind each ERP transaction.

Grimmelikhuijsen et al. (2019, 2021) stated that explaining the how and why of ERP training creates transparency between the system and users which develops trust. However, this type of formal training needs to be endorsed using a top-down approach (M4). M2 suggested:

I think the best type of training is training led by the experts in the facility. The training needs to be tailored towards how that facility uses SAP and how it should be used in the future. It needs to be given by someone that understands the nuances of that plant's operations. While getting best practices from other plants is good, get in some new ideas. That can be very beneficial, but you must ensure that those ideas, concepts, and transactions can be used. So many times, we see best practices, but they do not make sense to us. It is never going to work for us. Yeah, it works great for them. It is not going to work in our process. So, we just spent two hours training and going through all this stuff, and it will never be used.

Understanding how specific ERP transactions are integrated with other transactions and why certain functions are used are important to the users. Iris and Cebeci (2014) suggested that learning using a modular or functional method may be more useful for ERP users. The participants noted that having the ability to attend selected training specific to a given task would
reduce the amount of searching, waiting for responses, or time pulling others away from their projects.

**RQ3: How Can Distribution Centers Increase ERP Utilization?** This research question was addressed by themes three and five. Distribution centers can increase ERP utilization by improving training platforms offered to ERP users; this is discussed in Theme #3 below. Theme #5 discusses the user's knowledge of available training provided by the organization; understanding the training offered leads back to increasing ERP utilization.

**Theme #3- Training Increases Utilization.** The last research question recommended increasing a distribution center's ERP utilization. All of the respondents agreed that advanced training can increase ERP utilization. Malik and Khan (2021) confirmed that education and training are critical for the success of ERP systems. This question was designed to solicit best practices from organizations that successfully use an ERP system that could be shared throughout the industry. Zerbino et al. (2021) stated, "ERP updates or modifications usually require users time to adapt by additional specific training and education activities" (p. 15). The information gained from this case study provided insight into two common themes (Theme #3 and #5) developed by the participants. EU4 suggested:

> We need the training to understand if there is a better way of using SAP. It would be beneficial if management would make training an assignment, like a mandatory assignment required to be taken within any period, so we are exposed to SAP's knowledge that we do not know about.

**Theme #5- Knowledge of Available Training.** Increasing the knowledge of available advanced training to ERP users through ERP-specific C.I.P. projects is designed to redirect the manual task the users complete through automation. This can increase the users' capacity
elsewhere in the ERP system. Foroughi (2021) stated that digitized training had created an opportunity for organizations to broadcast the availability of customizable training to match their requirements. The common theme of increasing ERP utilization through knowledge of available advanced training was increasingly seen throughout the key users, end-users, and management responses. M1 stated:

I would say that everybody should get training on extracting information from SAP and using Excel analysis programs because those are the tools. ERP users use Business Warehouse to run detailed reports. Training in Business Warehouse or now Excel analysis would be instrumental. And then, on top of that, training on instruments like Power BI takes those reports and makes them into dashboards that are useful for managing other players within the organization.

KU10 stated:

To increase ERP utilization, we probably just need additional training. I mean, we do have key users. I am a key user, and we troubleshoot problems. However, I would go one step above the key user, somebody completely knowledgeable in SAP and all the settings and information you could pull from your ERP system. Like a champion, if you want to use that term, that has more in-depth knowledge than even a key user.

EU1 emphasized, "Increasing ERP utilization is linked to a user's understanding of the system. More of the kind of training on how things work in general and some work instructions about the utilization overall." Heredia-Calzado and Duréndez (2019) stated that organizations should ensure training resources are understood and available for users to improve competencies and enable professional development.
Figure 10 represents how each ERP user group responded to research questions upon completing the coding. The participants agreed that KM policies increase ERP utilization by reducing time spent searching for ERP-related answers. Secondly, they referenced that KM tools provide a central information point to increase their overall ERP understanding. The themes from the second research question showed that advanced training could increase ERP utilization by providing associates with an increased overall understanding of the system. In Figure 10, the respondents also noted that functional experts should provide advanced training at the local level. This type of customized learning can provide specialized training needed for specific locations. Lastly, key users, end-users, and managers agreed that advanced training is required to increase ERP utilization. Deranek et al. (2019) stated that "best-in-class organizations view their employees as strategic resources and look for innovative ways to foster and manage their knowledge, making investing in ongoing situational training a priority" (p. 1).

Figure 10. Research question theme, query results by group.

The Conceptual Framework
The researchers' findings support the themes between ERP users' competency and the ability to utilize an ERP fully. The researcher discovered themes that could impact the amount of advanced ERP training and access to KM tools. Information sharing, continuous learning, and ERP utilization are themes promoted by organizational leadership. Kwahk et al. (2020) noted that organizational leaders should try to develop effective KM policies that encourage sharing information. The Phoenix Manufacturing company encourages ongoing improvement projects, ERP knowledge sharing, and continuing ERP education. All these methods are needed to improve ERP competency continually. Figure 11 is a tree diagram showing how data flows through different development levels. It supports the theory that advanced training and KM are vital to fully increasing an organization's ability to utilize an ERP system. The tree diagram represents diverse levels of a construct (Creswell & Poth, 2018).

*Figure 11. Hierarchical tree diagram.*
The researcher leveraged RQ1 to reveal how leader endorsement of KM policies impacts ERP utilization. Haraldsdóttir (2020) concluded that leaders who have experienced successful KM cultures provide accessible locations for employees to share information. In this case study, the Phoenix Manufacturing organization's business practice has integrated several tools from which their associates can easily access information. All associates have access to whether the information is location-specific or if processes are used on a regional or global scale. The research found that this has allowed the ERP users to be quickly onboarded into new positions and provides a reference tool for answering future questions. These tools also enable the motivated associate to increase their competency by learning more advanced tasks at their own pace as they become comfortable with the ERP system. Key users and managers leverage the KM tools to participate in conversations and projects in more remote locations. Choi et al. (2020) stated that organizational success is dependent on the quality of information applied to the business practice and development, which impacts the quality of services and products. As key users' competency increases, the Phoenix Manufacturing policies of documenting shared information are critical to ensuring a clear understanding and access to available information for future reference. This study found an opportunity to form a centralized information source that would create a single point of inquiry for associates with key user or management responsibilities. The research found that sharing information through KM tools can increase the competency of the ERP users, therefore, increasing ERP utilization. Deranek et al. (2019) stated that increasing ERP KM can benefit organizations and encourage bottom-line results.

This case study reinforced the conclusion found in past research stating that continuous training is critical for organizational retention of their competitive advantage. Kumar et al. (2021) noted that ERP education and training are essential factors of success for an organization.
to remain competitive. Using the Pareto chart in Figure 4, the word count from past research indicated that knowledge, system, learning, and information were the highest referenced words. Theme Four (functional experts) was supported by participants from the study who indicated a preference for learning by formal training. This approach played a crucial part in improving their ERP competency. M10 said holding associates accountable and placing deadlines on learning objects would increase ERP utilization. KU10, EU8, and M10 noted that themes three and five (training increases ERP utilization and knowledge of available training) would support the answer to RQ3.

EU1 said, "Increasing ERP utilization is linked to the understanding a user has of the system. More training on how things work in general and providing work instructions on the overall operation would increase the utilization of our ERP system." End-user participants indicated they used on-the-job training more than the key users and managers during the interviewing process. As EU1 stated, a stronger basic training course would provide the "why" for the user. Figure 4 illustrates that past research referenced knowledge more than a system, learning, or information.

The themes supporting the conceptual framework were increased ERP understanding, knowledge of available training, and increased utilization. The findings suggest that the organization selected for this case study has experienced success by utilizing the concept of advanced training to increase ERP competencies and utilization. Ghazaleh et al. (2019) stated that ERP use increased when the training provided mirrored the user's needs. Phoenix Manufacturing has found that the amount an ERP system is utilized is related to the competency of the users. Therefore, increasing ERP competency throughout an organization leads to the ability to reduce the manual task of gathering information. K2 pointed out the relationship
between understanding the capabilities of an ERP system and utilization. ERP systems enable information to be shared instantly versus waiting for email responses, thereby saving time. EU7 stated, "As an intercompany process, we can see notes from our international partners or whoever enters information regarding the materials. If it were not used, we would be sending many more emails asking for the information." Increasing utilization can depend on the benefits perceived by the ERP user. This organization has experienced success by communicating the benefits of using advanced ERP processes to the end-users and increased user utilization (M5).

**Anticipated Themes**

An anticipated theme from Section One proposed that the greater the role KM policies have in an organization is related to the amount of endorsement by the leadership supporting ERP systems. This case study and past research verified the anticipated theme of KM's role in a successful organization. Deranek et al. (2019) noted that best-in-class organizations utilized shared knowledge and the experiences of their employees. An unanticipated theme highlighted the impact KM policies have on reducing the amount of time searching for answers to ERP-related questions. An organization's additional varying databases can increase the probability of user time spent searching for solutions and encountering conflicting data. Lam et al. (2021) proclaimed that organizations should focus on building KM databases that transfer the time spent searching for information to develop intellectual assets.

Another anticipated theme proposed was organizations encouraging and offering continual advanced ERP training; combining internal and external training would increase ERP competency. Bhatt et al. (2021) stated that training employees is vitally important when building competency, which gives the user the confidence needed when working with new technology. However, an unanticipated theme was uncovered, marking the need for functional experts with
departmental ERP knowledge specific to logistics. This study found that having this resource at the local level would be beneficial by saving time and providing value stream-specific training. Malik and Khan (2021) found that functional experts are key to the success of local ERP processes.

An unexpected theme arose, focusing on the availability of advanced training. Although advanced training was available, knowledge of the training was mixed. As the participants were questioned about the types of ERP training available, the responses were split, with only a few key users and managers supporting the availability of advanced training. Most of the participants felt there was little available training. EU6 stated, "Honestly, there are no training opportunities outside of each area I am aware of."

The Literature

The themes discovered in this case study showed similarities and differences from past research and the findings of this study. After coding the literature from past research, the common words are shown in Figure 4. Knowledge, system, learning, information, organization, training, and performance were frequently referenced. This section of the report discusses the relationship between past research and the themes found in this study.

The study found similarities between Theme #1 (reduce answer searching) and past research suggesting that KM and increasing competency of an ERP system can increase overall system performance. Past research supported the theme relating to reducing time spent searching for answers, and this theme indicates that KM reduces the time an associate spends searching for answers. Opposing most research supporting KM, Carvalho et al. (2021) pointed out that organizational records stored on a server are susceptible to malicious activity. However, Acar et
al. (2017) discussed KM’s role in providing an organization with a competitive advantage by maintaining critical how-to knowledge accessible to ERP users.

Similarities were found in past research supporting the theme indicating that increasing ERP understanding (Theme #2) leads to increased ERP utilization. Marciniak et al. (2014) stated that when ERP users from various silos better understand the ERP system, they have increased knowledge of how the data is generated. Jayawickrama et al. (2019) stated that leader endorsed KM combined with formal and informal training increased ERP utilization and created a user-friendly environment. No significant deviations from the supporting data were found in all research conducted.

Past research also agrees with Theme #3, stating that training increases ERP utilization. Bradley and Lee (2007) stated, "The results confirm that practitioners should allocate ample budgets for training and measure training satisfaction as a predictor of employee attitudes toward the ERP system during and after implementation (p. 44)". A contrasting argument was made by a study conducted in Pakistan by Malik and Khan (2021), which concluded that training and education were less significant to ERP success but linked to humans than technology. The target audience of this study consisted of consultants, project leaders, and senior management with high degrees of ERP competency. This study found a positive relationship between organizations that invest in training and reduce manual ERP tasks. Kolev and Otsetova (2022) stated that an ERP system could save an organization multiple person-hours per week when fully utilized.

Past research and Theme #4 in this study supported the benefits of having functional experts. These individuals can bring value to organizations. Wenrich and Ahmad (2009) stated the value of utilizing functional experts but noted that the associated increase in expense could deter organizations from the application. Kevin et al. (2012) noted that organizations have
recently considered functional experts vital to ERP success elements. Although different from a key user, the participants stated that an ERP expert for a specific department would benefit the ERP users by providing a more hands-on approach to completing their daily tasks. Baharuddin (2020) concluded that increasing the user's ability to gain ERP knowledge increases daily system utilization.

The similarities between Theme #5 (knowledge of available training) and past research stopped after the point at which training should be available to ERP users. Morawiec and Soltysik-Piorunkiewicz (2022) stated that during an ERP system's operational phase, key activities essential for ERP utilization are training and user support. The difference lies within the knowledge of available training. Although not specifically stated, past research assumes that ERP users are aware of available training. This study concludes that not all users have knowledge of available training. Many participants from the Phoenix Organization were unaware of where to find or could not access advanced training.

![Word Count](image.png)

*Figure 12. Past research.*
The Problem

The general problem that was addressed was the failure of organizations to maximize the capabilities of enterprise resource planning (ERP) platforms, resulting in ineffective processes and excessive waste of organizational resources. The specific problem addressed was the absence of advanced ERP training and KM policies, potentially resulting in underutilized ERP systems. This study confirmed that in the absence of KM policies and advanced training, ERP systems are likely to be under-utilized. Al-Lozi and Al-Qirem (2021) noted the importance of refining basic ERP skills related to specialized knowledge. By utilizing the themes uncovered by the research questions, distribution center leaders will realize the benefits of increased ERP utilization. The themes linked to RQ1 found that KM policies impact ERP utilization by reducing time spent investigating answers to ERP-related questions. Themes connected to RQ2 found that using functional experts at the local level combined with the knowledge of advanced ERP training provides an outcome that can be directly applied to the functionality of an ERP system. RQ3 was linked to the themes that confirmed the importance of ensuring the ability of advanced ERP trainers.

Summary of the Findings

By addressing the general and specific problems stated earlier in the research, examining the purpose of the study, and discussing the relationship between the research questions and the findings, the researcher provided an exhaustive summary of the results. The findings in this study addressed the general problem of the failure of organizations to maximize the capabilities of ERP platforms, resulting in ineffective processes and excessive waste of organizational resources. Specifically, the problem of the absence of advanced ERP training and KM policies in the organization potentially results in underutilized ERP systems. The interviews from this case
study found that various methods apply KM tools in the Phoenix organization. The information shared at local levels is used primarily by the end-users. Information that the key users and managers require is shared in a few locations on the organization's intranet. Many ERP users have confronted time consuming challenges in finding answers to critical questions to enable them to complete their daily tasks more efficiently. Several methods are currently used to seek needed information within the organization. These methods include asking local managers and key users, googling information, using YouTube, or doing internet searches. These challenges require solutions to improve efficiency and associate satisfaction with their jobs.

Opportunities for organizational improvement have been identified as reducing the time an ERP user spends searching for answers solved by streamlining access points to information and adding ERP functional experts to each location. Kirmizi and Kocaoglu (2021, 2022) found that using consultants or experts impacts ERP systems' readiness. Although this organization has found success with on-the-job training, work instructions, and advanced training, it is left to the associate to find and schedule any advanced training. To increase ERP understanding, the organization must ensure each ERP user knows the available training provided within each department. Mahmood et al. (2019, 2020) recommended that organizations focus on training and developing ERP competency to sustain ERP functionality. This study concluded that increasing the advanced training through a formalized training program would increase ERP utilization throughout the organization.

This qualitative case study explored the benefits of advanced ERP training and KM policies to provide recommendations to distribution centers. The resulting recommendations have the potential capability to maximize ERP efficiency. The findings of this study provided recommendations that can increase ERP utilization for select organizations and other distribution
centers. This study confirmed that KM reduces the time an ERP user spends searching for task-specific answers and can also be used to increase the user’s overall understanding of the system. This study also found that organizations can increase their ERP utilization by ensuring the training provided by a functional expert is made available to all users. Epizitone and Olugbara (2019) ranked training and education for ERP users within the top 10 critical success factors for a sustainable ERP system.

The study's findings addressed RQ1 by confirming that KM policies impact the utilization of ERP systems through internal and external information sharing. Deranek (2019) defined organizational knowledge as disseminating and transferring information between employees. KM tools have increased the user's understanding of executing transactions, enabling the system to process data more efficiently. This study confirmed past research that KM tools are vital for a successful ERP system. By sharing the information required to support ERP operations, the user becomes increasingly comfortable with the system, increasing utilization.

The study addressed RQ2 by reinforcing the construct stating that advanced training increases ERP utilization. Admittedly, the benefits of on-the-job training are low-cost and provide the ability for training on an as-needed basis. However, formalized functional training holds associates and managers accountable for utilizing available training while increasing departmental-specific ERP utilization.

Themes four and five addressed the final research question (RQ3). These themes focus on increasing the amount of training and ensuring the users understand that ERP training is available. The more comfortable the ERP process is for the users, the more likely they will leverage the capabilities. By ensuring the availability of quality training for end-users,
knowledge gained through training can increase the probability that critical systems will be utilized.

**Application to Professional Practice**

This section discusses how the findings from this study can improve general business practices. This section also includes a detailed discussion of some potential strategies that organizations can use to leverage the findings of this study. By integrating the strategies into organizational practices, organizations can improve ERP utilization. Elgohary (2019) noted that ERP utilization is directly linked to organizations that can sustain a competitive advantage within their industry.

**Improving General Business Practice**

The participants in this case study made it clear that knowledge management policies and advanced training positively impact ERP utilization. Organizational leaders have an opportunity to improve operational and departmental efficiencies by fully utilizing their ERP systems. When organizational leaders endorse an ERP system, users are more likely to integrate new ERP functions into their daily tasks. Baharuddin (2020) stated that the amount of leadership endorsement directly impacts the performance of information systems. The literature researched in this study revealed that organizational leaders who endorse ERP knowledge management and advanced training policies experience a competitive advantage over their competition. ERP systems' complexity is continually increasing as many supply chains are developing into a global network.

**Knowledge Management**

Knowledge management tools are quick reference points users can easily access to find answers to questions relating to a specific task. Organizational leaders understand that
knowledge management and advanced training are linked to cost, and organizations must leverage shared know-how to reduce the expense of training. Swanson and Hepner (2011) noted that organizations with a knowledge management database experience a shortened learning curve and experience a lower cost of training due to the reduction in required training. By streamlining processes and providing a centralized location from which to access necessary tools, ERP users can more effectively find what they need to assist them in accomplishing their daily tasks. Talamante-Lugo et al. (2019) noted that KM tools enhance business strategies by providing easily accessible data. Past literature has shown that general business practices can be improved by managing information in a centralized location (Maier & Hädrich, 2006).

In this case study, the organizational leaders of Phoenix Manufacturing have integrated knowledge management into the workplace culture by developing several tools for ERP users to store and share information. This study has highlighted an organization that has successfully implemented a knowledge management policy shared by locations on a global level. The participants of this study indicated that information linked to a local task is shared on location-specific share drives. At the same time, data concerning regional or global processes are managed in several locations on the organization's intranet. Saide and Sheng (2021) recommended using a combination of direct sharing and online KM transfer points to provide the user with the flexibility needed in today's marketplace. This division between local and regional data has minimized the required storage space and increased the information security control gates. General business practices can be improved by having a centralized knowledge-sharing point while maintaining local access to location-specific information. Yang et al. (2021) found that centralized KM systems for single entities experience enhanced network performance at a reduced cost. However, cyber-attacks are a risk that accompanies this benefit.
**Advanced Training**

Van Roekel and Van der Steen (2019) agreed that ERP systems could not be simplified by adding technical parts to their systems. The preferred solution is for the user to understand the different ERP variations. This study's results indicated that utilization could be improved by providing generalized training. However, this business practice would most likely increase ERP utilization by providing formalized training taught by functional experts. Task-specific training increases utilization and provides a competitive advantage for the company. This requires strong knowledge management policies and advanced ERP training for their employees. Past literature has shown that business practices can be improved by incorporating advanced ERP training into the organization's business plans (Esteves, 2014). ERP skills acquired through advanced ERP training provide leadership with critical information that can be included in the company's business plan. The user can also attend advanced ERP courses as their availability and workload allow. This flexibility creates an opportunity to implement mandated training to support employees as they increase their ERP competency. By implementing a formalized training program, managers can track subordinate employees' progress and skill level as they mentor employees. The leadership can leverage this development by placing associates with increased competency levels in strategic positions as they become available. Choi et al. (2007) posited that advanced ERP training is a critical success factor for a company due to advancing technology.

**Potential Application Strategies**

The findings of this study provided two primary strategies that organizations can leverage to increase ERP utilization. As organizational demands increase, the importance of increasing ERP understanding also increases. Managers rely on specific data when making vital decisions that impact the direction of their organization. The tools provided by ERP systems provide vital
information that requires extreme accuracy. Kopka and Kudělka (2019) noted that ERP analysis tools are frequently utilized by management when solving complex supply chain issues. This information enables managers to make decisions quickly and provide their customers with a flexible supply chain. In a market environment where flexibility is critical, having reliable data gives an organization a competitive advantage in capturing market share. Lawson and Street (2021) emphasized the importance of having reliable data for analysis. The strategies below increase ERP understanding through advanced training and information sharing.

The two main strategies are implementing ERP training programs and knowledge management platforms. Sharing information and improving ERP competency through advanced training increases ERP utilization. Knowledge sharing can reduce the cost of training programs by sharing organizational knowledge, thereby eliminating non-value-added training courses. Organizational leaders can apply the findings in this study to implement a strategy that increases ERP competency, which benefits the organization by fully utilizing its ERP systems.

The first strategy can be accomplished by reviewing the following steps: review, design, endorse, quality, and accessibility. First, a complete review of current ERP training offered to users provides a foundation for improving the training program. Secondly, the organization's key users and functional experts must ensure the training applies to the user. Time spent learning a non-relevant process is counterproductive to the organization. The third step to review is the extent to which leadership endorses the training program. Managerial support is vital for the success of the program. Epizitone and Olugbara (2019) stated that an ERP system's number one success factor is having organizational leadership's support and commitment. The next step to consider is the quality of training; functional experts should consider the relevant subject matter
when developing the training syllabus. Lastly, having easy access to the training can increase the probability of user attendance.

The second strategy increases the organization's shared knowledge database. Managing information sharing within an organization is vital for increasing ERP utilization. Kolev and Otsetova (2022) pointed out that "logistics activities require processes that incorporate a continuous flow of information among all agents involved in the supply chain to coordinate and execute the whole process efficiently" (p. 11). A few points to consider when implementing this strategy are accessibility, updated data, and limited access points. Ensuring the shared data remains current is critically important. Outdated data can harm an organization with a flexible supply chain. Employee accessibility is another important factor to consider when implementing this strategy. The easier it is for the user to access, the more likely the tools will be used. This strategy recommends two centralized access points, one for location-specific processes and one for processes that impact the organization on a regional or global level. The more locations the users must search, the more valuable time will be spent searching for the needed information. At times, the user may become confused about exactly where they should be looking to get answers to their questions.

These two strategies address underutilized ERP systems by ensuring an organization has a robust ERP training program complemented by a healthy knowledge management platform. Formalized training developed by functional experts reduces the amount of redundant and non-value-added training. Hart et al. (2019) noted that training must ensure that it is related to the user's job. A centralized database that shares information between or within departments decreases the time spent searching for answers to specific questions. Data maintenance is critical to ensure updated information is shared as processes and systems evolve.
Summary of Application to Professional Practice

This study demonstrated that general business practices can be improved through knowledge management and advanced training, which greatly impact the organization's ERP competency level. The general practice of utilizing shared information through managing organizational knowledge reduces the time an ERP user spends searching for task-specific solutions and provides a central point at which organizational knowledge can be stored. Providing advanced ERP training increases user competency, making it easier for the end-user to complete their daily task and quickly provide management with accurate and applicable data.

The two strategies businesses could integrate into their business practices are maintaining a robust advanced ERP training program and building a database of organizational knowledge.

Recommendations for Further Study

This qualitative case study highlighted a few opportunities that should be addressed in future research. The quality of learning was not addressed in this research. Future studies investigating the quality of learning an ERP user attains through self-paced courses compared to instructor-led learning would be beneficial to study. Zimin et al. (2018, 2019) stated that the quality of ERP training is vital to increasing ERP competency. Costa et al. (2020) concluded that the quality of ERP training impacts user satisfaction and system use. Based on these results, the research would suggest that future studies include multiple cases. Multiple case studies would enhance the researcher's ability to extract data from several organizations, thus providing contrasting perspectives. This case study demonstrated how the Phoenix organization applied knowledge management policies and advanced training within their organization; however, gaining insight into several organizations would strengthen the outcome of this research.
Reflections

The following section highlights the personal and professional growth I was privileged to experience throughout this doctoral program. In the section below, I elaborate on how I have been blessed personally and professionally while conducting this study. As a Christian, it is important to reflect on the biblical perspective of this study and how it honors our Lord's name. This section will discuss how the business functions explored in this study relate to and integrate with a Christian worldview.

Personal & Professional Growth

This doctoral degree has been a journey of high and low points, learning from both. The first growth I experienced was my relationship with our Lord. The task of integrating biblical scripture into my studies has brought me closer to our heavenly Father. While finishing high school in 1988 and moving into military life, a mentor taught me the importance of education. While serving in the National Guard, I completed my MBA and continued into the doctoral program. A good friend who completed his doctoral degree told me that going through this program would be a journey, but I never imagined the challenges I would face. This journey has taught me humility, patience, respect for the unknown, and the importance of quality research.

This journey has strengthened my definition of humility and enhanced my ability to accept my weaknesses while developing my strengths. It gave me grace and helped me realize there are various perspectives to consider before making assumptions. During this process, each hurdle has expanded my level of patience, enabling me to relinquish control while realizing that everything does not happen at the pace I would have liked. The deeper into this doctoral program I went, I realized how much I did not know. As I developed this dissertation, the importance of carrying a common thread throughout each section became more evident as I progressed.
Researching quality articles and past research provided supportive perspectives needed to develop this case study. The personal growth I experienced during this journey has carried over to my professional life. When corresponding through emails or presentations, attention to grammatical detail has increased understanding that perspectives will vary depending on background and motives. Setting small achievable goals enables the bigger goals to be reached.

**Biblical Perspective**

The Bible does not reference ERP systems or technology as it is known today. However, scripture referenced information sharing 92 times, learning 100 times, and teaching 24 times. It is the responsibility of today’s leaders to share not only the Lord's words but helpful information to others as well. Matthew 28:19-20 states:

> Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the Son and the Holy Spirit, teaching them to observe all that I have commanded you. And behold, I am with you always, to the end of the age.

Sharing information is considered a form of helping one another. As good stewards of our careers, equally important, we have a vested interest in the successful careers of others. Philippians 2:4 stated, "Let each of you look not only to his interests but also to the interests of others." Organizations guide this sharing of information by providing opportunities for their employees to increase their knowledge, hopefully having employees who share their professional and personal growth with others within the organization.

As Jesus mentored and taught His disciples, leaders from best-in-class organizations must ensure their employees are educated in a manner in which their competency is increased. In this case, organizations must ensure ERP users have the knowledge and tools to be successful in their everyday tasks. The Bible states, "All Scripture is breathed out by God and profitable for
teaching, for reproof, for correction, and training in righteousness that the man of God may be competently equipped for every good work” (2 Timothy 3:16-17). Teaching others through the skills developed by functional experts is similar to the disciples. Functional experts use storyboards as parables to aid in remembering biblical stories, and parables have been known to assist with teaching tough lessons (Chia, 2020). Applying advanced ERP training to an organization's business model is a means of instructing one another, as instructed in the Bible. Psalm 32:8 stated, "I will instruct you and teach you how you should go; I will counsel you with my eye upon you." Mentoring reassures and builds the confidence of ERP users.

Integrating the Lord's Word into general business practice can be challenging; however, the values learned from scripture should be used as a constant guiding light. An important note is that developing ERP users by teaching advanced skills and providing tools necessary for their success strengthens an organization's culture. The Lord has blessed the world with His Word, and it is incumbent on humanity to treat one another with respect and kindness while teaching during one's journey through life. In 1 Corinthians 11:1-2, Paul reminds us, "Be imitators of me, as I am of Christ. Now I commend you because you remember me in everything and maintain the traditions even as I delivered them to you."

As distribution centers compete for market share and profitability, aligning biblical and organizational perspectives can be challenging. Viewing the strategy of developing employee competency while enriching the organization's knowledge database through the lens of Christianity provides organizations with a reliable azimuth to travel. Psalm 25:4-5 states, "Make me know your ways, O Lord; teach me your paths. Lead me in your truth and teach me, for you are the God of my salvation; for you, I wait all day long." As leaders in faith and organizations, we must encourage humanity to seek knowledge and develop competency in spiritual readings.
and our careers. The Lord has blessed humanity with individual gifts, specifically ERP users with the technological ability to extract data from complicated software. The book of 1 Peter reminds us, "Each has received a gift, use it to serve one another, as good stewards of God's varied grace" (4:10). It is our responsibility to be good stewards and fully utilize this gift. The small sacrifices organizations overcome by providing ERP training are returned through increased ERP utilization, including increased employee retention and job satisfaction.

**Summary of Reflections**

This journey has been quite the experience, teaching me surprising specific and general life lessons. Anticipated lessons included research, grammar, and professional formatting. Unanticipated lessons consisted of patience, how to overcome unexpected roadblocks, and developing different coping mechanisms. All of which enrich my personal and professional development. This course has brought me back to my spiritual foundation by encompassing the Lord's Word in required assignments. This journey was extremely challenging but worth every minute in the end. Matthew 7:14 reminded me, "The gate is narrow, and the way is hard that leads to life, and those who find it are few." With these words and my family's support, I was granted the strength to drive through difficult times.

**Summary of Section 3**

Section 3 provided an exhaustive review of the findings of this study. This study used data from past research and interviews with selected groups of ERP users and managers. To develop enriched recommendations to organizations that could increase ERP utilization, perspectives from managers, key users, and end-users were included. Participants that met key criteria were selected from ERP users within the North American region.
Findings revealed that advanced training and knowledge management are critical when maximizing the utilization of ERP systems. Epistome and Olugbara (2019) asserted that knowledge management and training are among the top seven critical success factors of an ERP system. This research uncovered five common themes through the study: 1) reduced answer searching, 2) increased ERP understanding, 3) training increases utilization, 4) functional experts, and 5) knowledge of available training. The participants concluded that formalized task-specific advanced training taught by functional expects was more advantageous when learning ERP-related tasks. Abu Ghazaleh et al. (2019) recommended using a single employee to monitor training progress. This study highlighted that knowledge management policies that provide centralized data points were found to reduce the time spent searching for answers and are a cost-effective means of transferring knowledge between users. Chen and Xu (2021, 2022) stated that a centralized knowledge transfer point improves the efficiency of knowledge transfer.

This study offered several key takeaways from this research. First, obtaining functional experts to conduct the ERP trainings. Leveraging these resources provides the users with the opportunity to ask questions unique to their daily tasks. Secondly, organizations should ensure that their shared data is centralized and that users can access knowledge management tools. Third, ERP users are eager to learn new ways to execute tasks that will enhance their productivity. Increasing the users' understanding will also increase ERP utilization.

Summary and Study Conclusions

In conclusion, this qualitative case study aimed to explore the benefits of advanced ERP training and knowledge management policies to provide recommendations to distribution centers that will maximize the capabilities by influencing ERP efficiency. This study filled a gap between implementing an ERP system and ERP utilization. It was important to include
perspectives from different ERP user groups to obtain an overarching view of the best practices and challenges that organizations might be facing. This study sampled ERP users from three different groups of users: key users, end-users, and managers working in a manufacturing company's logistics field. Utilizing peer-reviewed past research and interviews gained through the case study resulted in obtaining perspectives from various sources. Voice recordings during the interview process, memo taking, and member checking were used to ensure the validity of the data used in the analysis phase.

The researcher found scripture supportive throughout this study during challenging times. Philippians 4: 6-7 states, "Do not be anxious about anything, but in every situation, by prayer and petition, with thanksgiving, present your requests to God. And the peace of God, which transcends all understanding, will guard your hearts and minds in Christ Jesus." The study's results provided five common themes promoting the benefits of increasing ERP utilization. Each theme supported recommendations required to increase ERP utilization. This study confirmed that organizations that provide a centralized access point to share knowledge could reduce users' time searching for information. The study also recommended that formalized relevant advanced ERP training led by functional experts increases ERP understanding and utilization. This researcher is hopeful that the strategies provided increase ERP utilization for manufacturing and distribution organizations.
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Appendix A: Standardized Questionnaire

Name: ______________________________________________________________

Email and Phone #: __________________________________________________

Question 1. Are you 18 years of age or older?

(Place a “X” next to your answer)

A. Yes _____

B. No _____

Question 2. Have you been employed by your current employer for at least three years?

(Place a “X” next to your answer)

A. Yes _____

B. No _____

Question 3. Have you worked in the logistics department for a minimum of three years?

(Place a “X” next to your answer)

A. Yes _____

B. No _____

Question 4. How familiar are you with enterprise resource planning (ERP) systems?

(Place a “X” in the applicable box)

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Appendix B: Interview Guide

Thank you for electing to participate in this part of my dissertation. By agreeing to this interview, your comments will provide data to help organizations increase their operational effectiveness. This study is exploring the answers to research questions related to the utilization of ERP systems. To ensure each question is fully understood and answered thoroughly, I will ask additional questions and further clarification.

Before we get started, for documentation purposes, I would like to understand:

What is your understanding of an ERP system?

Thank you.

What is your understanding of knowledge management?

Great, thank you.

Now, let us start by exploring knowledge management in your organization.

RQ1a. Explain what experience you have had with knowledge management.

RQ1b. Define your organization's knowledge management policy.

RQ1c. Describe a time when you used your organization's knowledge management tools.

Thank you, that was very helpful.

Now let us explore the benefits of ERP training.

RQ2a. What is your perception of advanced ERP training?

RQ2b. What types of training opportunities are available for ERP users?

RQ2c. What type of ERP training do you think would be valuable to the organization and why?

RQ2d. What are the benefits of the ERP training your organization provides?

RQ2e. Explain how you have applied the ERP training your organization provided to
your everyday task.

Once again, thank you. For the third question, I would like to hear your opinion on ERP utilization.

RQ3a. Why should ERP utilization be increased?

RQ3b. Describe your organization's initiatives used to increase ERP utilization.

RQ3c. What recommendation would you make to increase ERP utilization?

This has been very insightful and valuable information for the case study. If, during the transcription process, I find that I need clarification of your answers, may I reach out to you again?

Thank you again for your time.
Appendix C: Consent Form

Title of the Project: Distribution Center ERP Utilization

Principal Investigator: Andrew Davidson, MBA., Doctoral Candidate, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age or older, must have been employed by the selected organization for at least three years, must have worked in the logistics department for three years, and be familiar with enterprise resource planning systems. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to participate in this research.

What is the study about and why is it being done?

The purpose of the study is to explore the benefits of advanced enterprise resource planning systems (ERP) training and knowledge management policies in order to provide recommendations to distribution centers that will maximize their capabilities by influencing ERP efficiency.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Participate in a virtual interview, with the researcher, at your convenience. This interview should take approximately 30-45 minutes. The researcher will use an electronic means of audio-recording for the purpose of transcription.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include an increase in resource utilization and access to shared knowledge.
What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the documents.

Participant responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation. Data will be stored on a password-locked hard drive and in a locked desk. The data may be used in future presentations. After three years, all electronic records will be deleted and all physical records will be shredded. Interviews will be recorded and transcribed. Recordings will be stored on a password-locked computer for three years and then erased. Only the researcher will have access to these recordings.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free not to answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you decide to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Whom do you contact if you have questions or concerns about the study?

[Address/Phone number]

[Name]

[Department]

[University]
The researcher conducting this study is Andrew Davidson. You may ask any questions you have now. If you have questions later, you are encouraged to contact him at xxx-xxx-xxxx or xxxxxxxxxx@liberty.edu. You may also contact the researcher’s faculty sponsor, Dr. Arnetra Arrington, at xxxxxxxxxx@liberty.edu.

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

<table>
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<tr>
<th>Your Consent</th>
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<tr>
<td>By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.</td>
</tr>
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I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.
☐ The researcher has my permission to audio-record me as part of my participation in this study.

___________________________________
Printed Subject Name

___________________________________
Signature & Date
Appendix D: Recruitment Email

Dear Employee

As a graduate student in the School of Business at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to explore the benefits of advanced enterprise resource planning systems (ERP) training and knowledge management policies in order to provide recommendations to distribution centers that will maximize their capabilities by influencing ERP efficiency. I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older, must have been employed for at least three years in the selected organization, must have worked in the logistics department for three years, and must be familiar with ERP systems. Participants, if willing, will be asked to participate in an interview that should take approximately 45 minutes to complete. Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, please complete the attached questionnaire and return it by contacting me at xxxxxxxxx@liberty.edu.

A consent document, which contains additional information about my research, will be emailed to participants that successfully pass the attached screening questionnaire. If you choose to participate, you will need to sign the consent document and return it to me via email at the time of the interview.

Sincerely,

Andrew Davidson
Doctoral Candidate
Cell: xxxxxxxxx
Email: xxxxxxxxxxxxxxxx
Appendix E: Recruitment Follow-up Email

Dear Employee

As a graduate student in the School of Business at Liberty University, I am conducting research as part of the requirements for a doctoral degree. Last week, an email was sent to you inviting you to participate in a research study. This follow-up email is being sent to remind you to respond if you would like to participate and have not already done so. The deadline for participation is Feb 15th.

Participants, if willing, will be asked to take part in a brief interview (45 minutes). Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, please complete the attached questionnaire and return it by contacting me at xxxxxxxxxxx@liberty.edu.

A consent document, which contains additional information about my research, will be emailed to participants that successfully pass the attached screening questionnaire. If you choose to participate, you will need to sign the consent document and return it to me via email at the time of the interview.

Sincerely,

Andrew Davidson
Doctoral Candidate
Cell: xxxxxxxxxxx
Email: xxxxxxxxxxxxxxx
Appendix F:

License to use Knowledge Management Implementation Guide

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Permission to use Factors affecting employee performance
Appendix H:

Permission to use Employee / Management Perception

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Permission to use ERP Life Cycle