

HUI

CLASSIFICATION

ERP UTILIZATION IN THE LIFTING INDUSTRY

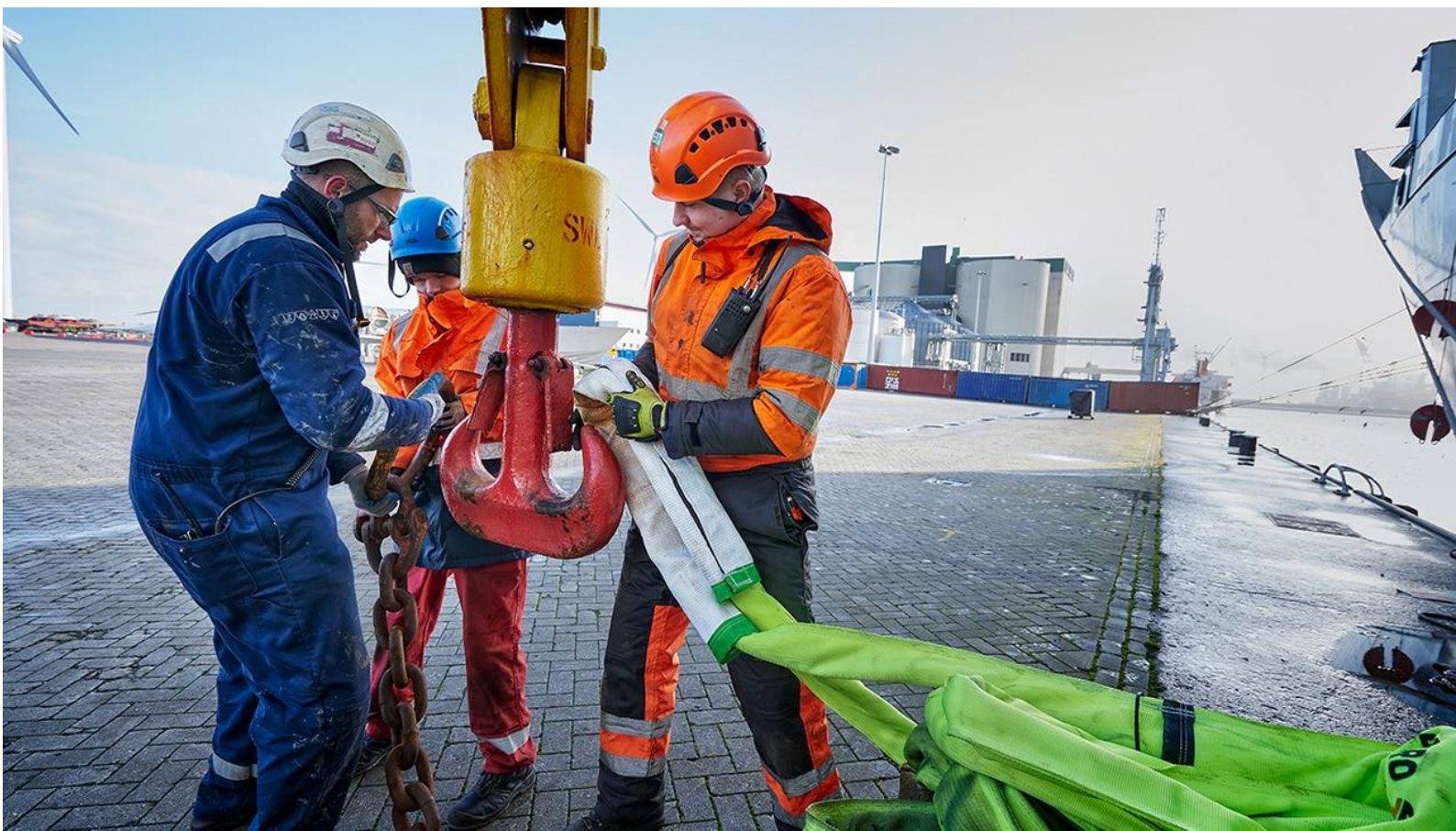
ALISE GROUP – A CASE STUDY

TIM LIMMEN
S2716798

WORD COUNT EXCLUDING REFERENCES: 17074

12-01-2024

UNIVERSITY OF TWENTE.



1. ACKNOWLEDGMENTS

Writing this thesis has been both challenging and rewarding. While I have to thank a lot of people for the help I received, I can only use this chapter to cover most of them.

First, I would like to thank Igors Skute & Martin Stienstra for their guidance throughout the master thesis. Their support, well-structured feedback sessions, and valuable feedback had a lot of influence on this research. Without their help, this thesis would not have been possible.

Furthermore, I would like to thank all employees of the Alise Group, especially the ones I got the chance to interview. Without your willingness to help me with my thesis, this result would have not been possible. Finally, I want to thank all the mentors and teachers I've had during my master's journey. Thank you for the wisdom and inspiration for both my academics and professional career.

2. ABSTRACT

Digitalization is revolutionizing industries, and doing so transforms traditional processes into digital ones (*The World*, 2022). One of the most prominent developments of this digitalization is the rise of so-called ERP systems. While these digitalization processes have been researched many times in the last few years, industry-specific models and approaches are not fully available. The lack of industry-specific models for technology implementation can therefore lead to the potential missing of important factors. This thesis aims to specify these factors for implementing such an ERP system in the Lifting Industry. Building upon existing literature such as the TAM model to suggest an industry-specific model for implementing such a technology. Aspects that are researched are the influence of top-management leadership styles, training and support, performance expectancy, perceived reputation, system anxiety, and system scalability. This research grants insight into the specifics of successful ERP implementation within a dynamic manufacturing environment in the lifting industry.

First, this research looks at digitalization itself and explains why some companies struggle with introducing new technologies in general. Furthermore, the existing Technology Acceptance Model will be introduced along with its limitations. Then the goal of this research and its contribution to the literature and the Technology Acceptance Model will be discussed. To suggest a modified Technology Acceptance Model for the selected industry, the previously named variables will be discussed. Doing so will highlight past research done on them, as well as introduce a way for the variables to be measured considering the past research. A case study has been selected to measure these variables for the lifting manufacturing industry. This case study will collect data through a mixed-method approach using available documentation, a closed questionnaire, and a semi-structured interview. These will be processed via the Gioia method using its First-order themes, Second-order themes, and Aggregate Dimensions.

The results suggest a driving relationship between Training, System Documentation, and Guidance on both Perceived Usefulness and Perceived Ease of Use. Furthermore, Perceived Efficiency Gains and Motivations and Perceived Value and System Utility were shown to have a driving effect on the Perceived Usefulness of the ERP system. Additionally, resistance to change is suggested to be a barrier to the attitude of using the system. A central role of the leader during the implementation is found to be a driver of this attitude towards using the system. Moreover, results show that one's IT proficiency can be a moderating variable on the effect between one's attitude towards the system and using the system. Finally, manager enforcement is found to be of direct driving relation with actual system use.

TABLE OF CONTENTS

1.	Acknowledgments.....	1
2.	Abstract.....	2
3.	Introduction	4
3.1	Problem statement.....	6
3.2	Research objective	7
4.	Theoretical framework	8
4.1	ERP-Systems	8
4.2	Technology Acceptance Model	9
4.2.1	Top-Management Leadership styles on perceived usefulness	11
4.2.2	Training and Support on perceived usefulness	12
4.2.3	Performance Expectancy	13
4.2.4	Limitations of the Technology Acceptance Model	15
4.3	Perceived Reputation	16
4.4	System Anxiety	17
4.5	System Scalability.....	17
4.6	Theoretical Overview	18
5.	Methods	19
5.1	Research strategy: Mixed Methods Approach	19
5.2	Case selection	20
5.3	Data collection	20
5.3.1	Data Triangulation	21
5.4	Data Analysis.....	22
6.	Results.....	23
7.	Conclusion	29
8.	Discussion	31
8.1	Tam-Model - Manufacturing Firms in the Lifting Industry	31
8.2	Theoretical implications	35
8.3	Practical implications	37
8.4	Limitations and Future Research Avenues	38
9.	Appendices	39
9.1	Appendix 1 – Documented system adoption phases of the Alise Group.	39
9.2	Appendix 2 - Semi-Structured Interview Guide	40
9.2.1	Potentiële vragen:.....	40
9.3	Appendix 3 – MLQ Results Percentages from maximum score.....	43
9.4	Appendix 4 – MLQ Results.....	44
10.	References	45

3. INTRODUCTION

Digitalization is reshaping the world, changing the way we work, live, and interact with each other (*The World*, 2022). By introducing digitalization, traditional processes get changed into digital ones. Technologies like ERP systems, Cloud computing, Big Data, Artificial Intelligence, and Machine Learning are facilitating these changes (*The World*, 2022). By introducing these new technologies to our daily lives we shift towards a digital-first approach, enhancing efficiency, introducing informed-decision making, and amplifying levels of customer and user engagement.

The recent coronavirus pandemic even further accelerated the digitalization of processes, technology integration, and use of Big Data. Mass data collection introduces a lot of new possibilities to the production floor, moving toward the phenomenon of Industry 4.0 (Gupta, 2021). This level of Digitalization introduces a new type of organization (Gupta, 2021). These organizations are directed mostly by collected data and adjust their processes accordingly. The Fourth Industrial Revolution, as Industry 4.0 is also called, allows companies to control the value chain of the life cycle of their products (Gupta, 2021). In general, increasing digitalization to the level of Industry 4.0 promotes the optimization of manufacturing processes, supply chains, and access to real-time data and insights. Since Digitalization is a broad term that refers to "creating a digital representation of physical objects or attributes (M. S. Gupta, 2020)" covering all possible technologies for Digitalization is not feasible. One of the most prominent examples of digitalization is the increasing development of ERP systems, especially in the manufacturing industry (Chopra et al., 2022). Therefore this research will focus on ERP systems as part of Digitalization. ERP systems are used to collect, store, and process data (Asprion et al., 2018). For that reason, ERP systems are part of digital transformation among companies. These systems create a digital representation of a company's object or attributes. An ERP system does this in various ways, from storing data of various company processes to introducing supply change management, customer relationship management, and even human resource management. The use of ERP systems, among other technologies, contributes to the improved environmental performance of digitally advanced companies by providing a foundation for optimization and efficiency.

Specific industries can make digitalization even more difficult, let alone the lifting market. This industry is known for the very specific dimensions of its products (*Heavy Lifting*, 2022). The produced equipment is only in use for 1 specific project (*Projects - Enduro Softslings*, 2022). Van der Molen and Oosterwijk (2022) state that the environment of manufacturing firms in the lifting industry is very dynamic. This means that manufacturing instructions, lifting capacity, temperature resistance, equipment length safety factors, lead times, and certification differ from sale to sale. Additionally, Van der Molen and Oosterwijk (2022) state that manufacturing companies mostly use traditional manufacturing processes for the lifting market. Together with the use of specific equipment and machinery makes for a difficult scenario to digitalize. Due to the high customizability of lifting equipment digitalization is quite hard. The company mentioned in Van der Molen and Oosterwijk (2022) has over 10,000 possible variants on its lifting equipment. Due to the rapid development of the lifting market, new configurations are requested every day. ERP systems can be helpful in this regard. Since in general ERP is part of digitalization and therefore moves on from the standard handwritten sales orders. Due to the overall dynamic environment of manufacturing companies in the lifting

industry, it can also be difficult to allocate time and funds toward digitalization procedures. The dynamic environment forces these companies to have funds ready for the dynamic purchasing of specific resources, like types of yarn and covers (Björkdahl, 2020).

The implementation of these new technologies, however, comes with a set of its own challenges. For example, according to Hylving (2015), a company's socio-technical congruence is challenged. This is due to the change in the fit between an organization's coordination requirements and the organization's social interactions (Sierra et al., 2018). Apart from the research by Hylving (2015) the Technology Acceptance Model (TAM) by Davis (1985) has proven a accurate basis for analyzing the implementation of new technologies. The original TAM model focused on both perceived usefulness and perceived ease of use as the influencing factors on technology acceptance. These factors may not fully cover the complex reality of technology adoption in a specific industry like manufacturing for the lifting industry, since they might be influenced by other external factors. Which is often the case in a dynamic environment. Additionally, Holzmann et al. (2018) show that facilitating conditions, anxiety, performance expectancy, and attitude towards using significantly affect the adoption of new technologies.

Furthermore, according to Bughin et al. (2018), implementing a new technology comes with some other difficulties. Bughin et al. (2018) states that leaders within companies don't have a general idea about what Digitalization entails and often only focus on one part of Digitalization. Additionally, Bughin et al. (2018) states that lacking a proper understanding of Digitalization disables companies to adapt their business model with a digital strategy. Not fully understanding the use of ecosystems is also a difficulty of Digitalization according to Bughin et al. (2018). The market is looking for the largest inventory, fastest delivery time, and greatest customer experience. Achieving all these points is normally very difficult (Bughin et al., 2018). However, digital platforms aim to achieve this (Bughin et al., 2018). The disability of not noticing the rise of such a quickly rising platform for the company's target market is a danger to the business (Bughin et al., 2018). While the research of Bughin et al. (2018), Davies (1985), Hylving (2015), and Holzmann et al. (2018) provide useful general insights, they do not provide insights for a dynamic manufacturing environment in the lifting industry. Therefore, there can be stated that there is a research gap between the generally known theory and industry-specific demand.

As a result, while the previously named research provides a solid framework for understanding technological acceptance, it must be made specifically with industry-specific elements for a more complete picture. By doing so, organizations can acquire a deeper knowledge of the dynamics at play and design more successful technology adoption and utilization strategies by having a broader picture. While this insightful academic literature contributes to the technology adoption field in general, this research will focus specifically on ERP adoption for manufacturing firms in the lifting industry. However, the previously named academic literature will be the basis for this research on which we will aim to test these theories towards a relatively untested industry.

3.1 PROBLEM STATEMENT

Despite the fact that digitization is becoming increasingly important, many companies find it challenging to successfully implement digital transformations (Bughin et al., 2018). The absence of an in-depth understanding of digitization and the inability to adapt business models with digital strategies are significant challenges for firms (Bughin et al., 2018). During this research, we will focus on researching 3 variables that possibly have a relation to this dilemma. These variables, Leadership, Training & Support and Performance Expectancy are assumed to play an important role during technology adoption in general. Therefore, these are investigated further in order to see if they are deemed important factors specific for the Lifting Industry as well.

The importance of examining leadership's involvement in digitalization stems from the fact that digital transformation has become essential for firms to maintain competitiveness in the quickly evolving business environment of today (Bughin et al., 2018). Understanding how leadership affects digitalization initiatives may assist firms in identifying the skills and tactics required to effectively navigate the challenging terrain of digital transformation (Vial, 2019).

The research of Davis (1985) provides a foundation for technology adoption research as a whole, and many iterations have been made upon it. For this research, we will use the TAM model as a basis as well. While it does provide a good basis, the TAM model lacks in providing a specific model for every industry available. The impact of Leadership Styles on digital transformations is such a variable that can potentially differ between industries. For this reason the variable is fully covered by the TAM model by Davis (1985). When looking at these leadership styles we can distinguish a few with different pros and cons. These include transformational, transactional, and laissez-faire, and can bring about contrasting outcomes when implementing digital transformations. The situational leadership model suggests that leaders should adjust their styles based on the team's competence and commitment level. This adds a layer of intricacy in comprehending how leadership plays a crucial role in digital transformation success, making it a vital variable to explore.

The variable of Training & Support emphasizes the critical role of equipping employees with the necessary skills and support to handle digital transformations Venkatesh et al. (2003). Training programs can increase the perceived usefulness of new technologies, while ongoing support can aid in resolving technical challenges and increase effective technology usage. Furthermore, the availability and quality of training and support can significantly impact the user's attitude and acceptance of new technologies, underscoring its importance in the successful implementation of digital transformations (Bradford & Florin, 2003).

Performance Expectancy, as defined by Venkatesh et al. (2003) in their Unified Theory of Adoption and Use of Technology (UTAUT), is a critical variable in understanding a user's adoption and use of new technology. This construct depicts an individual's belief that employing a new technology will help them increase their job performance. This belief can have a substantial influence on a user's decision to embrace and employ new technology.

These variables have been researched before even in the TAM Model, but not in a specific context of the lifting industry. Therefore, the findings in this research will grant insight into ERP utilization in a specific high-demanding manufacturing environment. Additionally it will show if the usefulness of the TAM model in this industry is accurate or if new variables should be added. This can aid firms in this industry by identifying and implementing effective

ERP utilization in the lifting industry

Tim Limmen

S2716798

strategies for navigating digital transformations, a critical undertaking in today's rapidly evolving business landscape.

3.2 RESEARCH OBJECTIVE

This research will contribute to the research field of ERP utilization factors as well as digitalization aspect. It proposes a unique insight into a dynamic manufacturing environment in the lifting industry. The research will elaborate on the topic ERP implementation success between SMEs in the lifting manufacturing industry. Because there has been practically no research done within this industry, there remains a research gap. This research could be a gateway to other industries and help clarify why ERP implementation effectiveness differs per company, as described by Buer et al. (2020).

In this research study, only two companies are currently using an ERP system. One company is currently migrating, but the adoption has been delayed for more than a year. The other 2 companies are still using self-made software stemming from the early 2000s.

This situation allows for comparative research between the companies that are currently using ERP systems as well as why one of the companies is struggling with the actual adoption. Furthermore, the companies that are currently still using ancient software can be used as a reference point before they migrate to an ERP system as well.

This research will therefore target the ERP effectiveness of manufacturing firms within the lifting industry. The research question corresponding with this research gap will be as follows:

- What are essential adoption factors of ERP utilization for manufacturing firms within the lifting industry?

4. THEORETICAL FRAMEWORK

4.1 ERP-SYSTEMS

An ERP system can support an organization in different ways. It is a central platform on which employees of an organization can manage various assets of an organization such as Inventory Management, Sales, Purchases, and Financial Management (Bartram, 2023). Not all functionalities of an ERP system are always used within a company, this comes often with the size of the company. While small companies might only use the Financial Management functionalities, bigger companies might need to use more of the ERP systems potential. There are a lot of different companies that offer ERP software, with their additional features ranging from employee/time management to integrated websites (Bartram, 2023). These ERP solutions are generally hosted on an online server or cloud platform, making them accessible online. Adopting an ERP system therefore often introduces the potential to work from home. These ERP systems are generally accessed via a computer but some of them can also be accessed via a mobile application.

ERP stands for Enterprise Resource Management. ERP is designed to improve competitiveness by upgrading an organization's ability to generate timely and accurate information throughout the enterprise and its supply chain (Beheshti, 2006). An ERP system is an information system that optimizes all business processes and transactions within a company. This means that all information regarding, sales, purchase, inventory, finance, accounting, and HR are registered in a central system. Using an ERP system makes a company more efficient. Having all information in a central place allows for easy information distribution. Such a central place of information allows for process control in general, enabling organizations to streamline their processes. By having all information regarding sales, purchase, inventory, finance, accounting, and HR in a central system, the company has control over all its processes. For example, since companies know what their inventory is, they are more likely to be able to achieve their lead times and keep their promises to their customers (Beheshti, 2006).

ERP effectiveness and the level of digitalization in general differ quite a lot between companies. Buer et al. (2020) state that LEs (large enterprises) have a significantly higher level of shop floor digitalization and organizational IT competence than SMEs (small and medium-sized enterprises). This is a noteworthy finding because Buer et al. (2020) did not find any difference in the implementation methods and levels between LEs and SMEs. In general ERP systems can be used to make a company more distinctive in its service differentiation. Shajrawi & Aburub (2022), found that introducing an ERP system within the hotel sector increased service differentiation. Organizational agility is a mediating factor in the research of Shajrawi & Aburub (2022), mediating between ERP system usage and service differentiation. Shajrawi & Aburub (2022), suggest that being an agile hotel will increase the ability to achieve service differentiation by using ERP systems.

4.2 TECHNOLOGY ACCEPTANCE MODEL

To determine factors of effective ERP utilization, we can look into the Technology Acceptance Model. In 1985 Fred Davis proposed "The Technology Acceptance Model. For ease of use, this will be shortened to just TAM. Fred Davis (1985), suggests that the use and acceptance of new computer-based information systems in an organization are determined by factors. Fred Davis (1985) designed the model with 2 objectives in mind. Its first objective is to improve the understanding of the user acceptance processes. The second objective of the model was to introduce a theoretical background for a practical "user acceptance testing" methodology (Davis, 1985). Davis (1985) indicates two major factors in the use of new technology, Perceived Usefulness and perceived Ease of Use. As can be seen in Figure 1, the factors of Perceived Usefulness and Perceived Ease of Use are influenced by design features.

Davis (1985) defines the proposed variable Perceived Usefulness as the degree to which an individual believes that using a particular system would enhance his or her job performance. As can be seen in Figure 1, the variable Perceived Ease of Use has a direct influence on Perceived Usefulness. Davis (1985) hypothesized that this effect is there because an easy-to-use system increases job performance, making employees see the technology as useful.

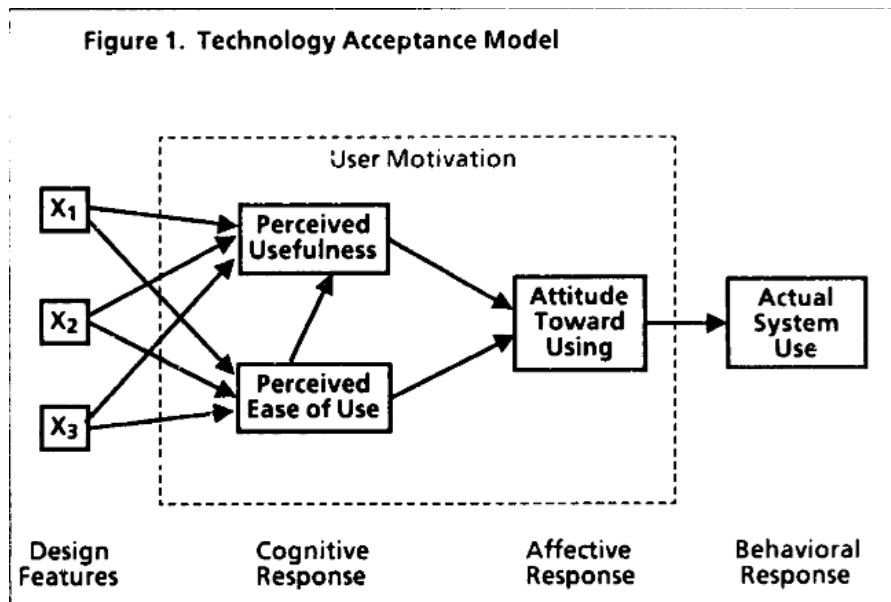


Figure 1: Technology Acceptance Model by Davis (1985)

Since 1985, the TAM has been investigated and added upon by many researchers. Hamid et al., (2016) focused on the effect of perceived usefulness and perceived ease of use on one's continuation intent to the use of e-commerce platforms. Hamid et al. (2016) showed that both perceived usefulness and perceived ease of use are both significant indicators of one continuation intent of e-commerce platforms.

In 1989, Davis updated the model and included the Intention to Use variable in the TAM.

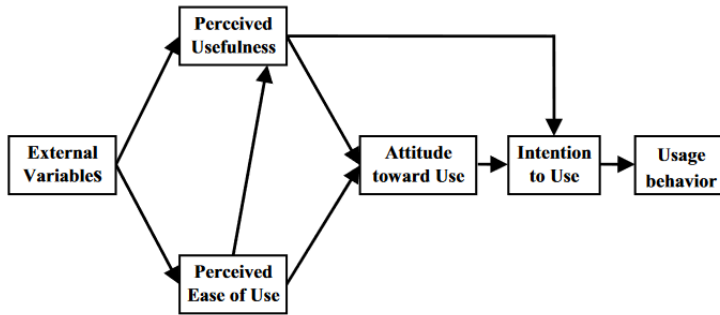


Figure 2: Updated TAM by Davis et al. (1989)

Yusoff et al. (2009) researched the influence of individual differences on perceived ease of use and perceived usefulness in an E-Library environment. Yusoff et al. (2009), showed that computer self-efficacy and knowledge of the search domain have a significant positive relationship with perceived ease of use. Furthermore, Yusoff et al. (2009) showed a positive relationship between perceived ease of use and perceived usefulness. Confirming the findings of Davis (1985) 24 years prior. The actual use of the E-library showed a significant relationship with the perceived usefulness factor. Indicating that using the E-Library affected seeing the platform as useful.

The first revision to the TAM was made by Davis himself together with Professor Venkatesh. Venkatesh and Davis (2000) called their revision the TAM2 model. In their research, Venkatesh and Davis (2000) tested their model at three points in time at the tested organizations. Pre-implementation, one-month postimplementation, and three months postimplementation. Venkatesh and Davis (2000) showed that both social influence processes and cognitive instrumental processes were significant factors for user acceptance of new technology.

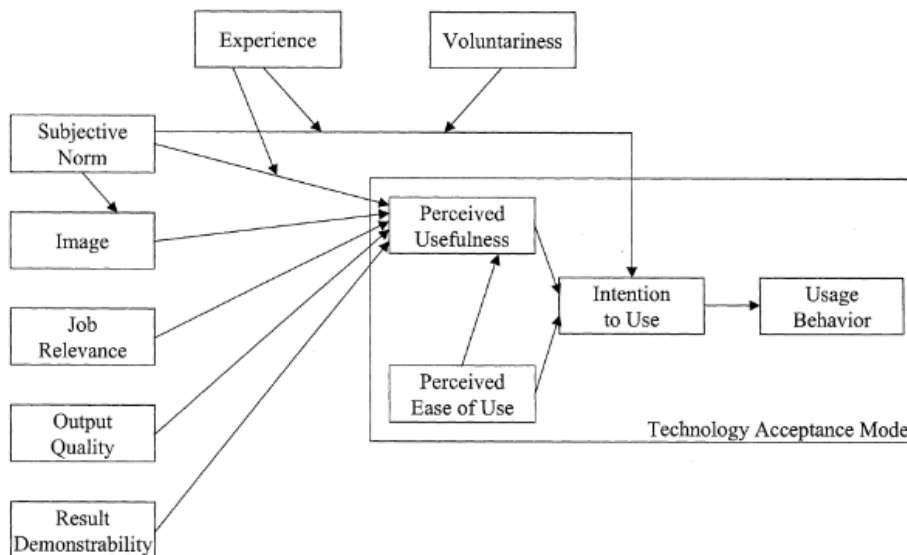


Figure 3: TAM2 by Venkatesh and Davis (2000)

Later in 2003, Venkatesh et al. (2003) aimed towards combining eight prominent models into one unified model that integrates elements across all of these models. The proposed unified model consisted of the theory of reasoned action, the TAM, the motivational model, the theory of planned behavior, a combined model of the TAM and theory of planned behavior, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory (Tang & Chen,

2011). The combined model was introduced as “The unified theory of acceptance and use of technology” (Venkatesh et al., 2003). This will be shortened to UTAUT for ease of use.

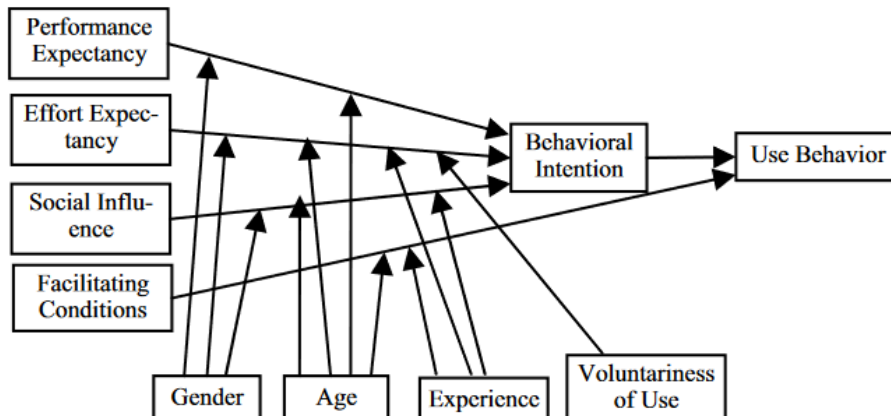


Figure 4: (the UTAUT by Venkatesh et al., 2003)

The most recent iteration of the TAM is TAM3. Venkatesh and Bala (2008) found that from an organizational point of view, the way managers handle informed decisions regarding interventions acceptance of IT utilization is a more important issue. They found that there is little literature about the roles of interventions in aiding managerial decision-making (Venkatesh and Bala, 2008). To address this research gap Venkatesh and Bala (2008) focused on testing determinants of perceived ease of use and perceived usefulness. Furthermore, Venkatesh and Bala (2008), processed these determinants of individual-level IT adoption into a proposed model (eventually TAM3). Because the research aims to suggest a model specific to a manufacturing company within the lifting market, a model will be proposed using the original TAM model of Davis (1985).

4.2.1 Top-Management Leadership styles on perceived usefulness

There are different kinds of leaderships, which have been widely researched. According to Northouse (2010) in Tortorella and Fogliatto (2017), there has not been introduced a universally agreed explanation of the term “Leadership”. According to Tortorella and Fogliatto (2017), across cultures, there are distinct differences in views, values, visions, and methods that influence success and set the strategies to determine a team’s success. However, Robbins and Judge (2011) state that these theories have a shared vision of a leader’s ability to lead a team toward a shared goal. Leadership styles, described in Avolio's (2011) division, according to Tortorella and Fogliatto (2017): laissez-faire, transactional, and transformational. Laissez-faire makes use of a hands-off approach, transactional leadership uses a system of rewards and sanctions, and transformational leadership aims to inspire and motivate the team through a shared vision. According to Van Eeden et al, (2008), the most effective leaders make use of all of these leadership styles. However, according to Seyal (2015), transformational leadership styles make for a higher level of IT integration and implementation, organizational change, and innovation in comparison to transactional leadership styles. Seyal (2015), states that this is due to the fundamentals of the transformational leadership style because employees tend to trust their leader sooner if he engages in transformational leadership styles.

The Situational Leadership (SL) model, proposed by Hersey and Blanchard (1969), and expanded by Tortorella and Fogliatto (2017), presents a revolutionary framework for comprehending leadership styles. The model advocates for a dynamic approach, whereby leaders must adapt their style to suit the situation, task, or individual's competence and commitment level. The model identifies two key dimensions of leadership style, relationship

behavior, and task behavior, each with high or low levels, culminating in four categories of leadership style: S1 (directing), S2 (explaining), S3 (encouraging), and S4 (observing).

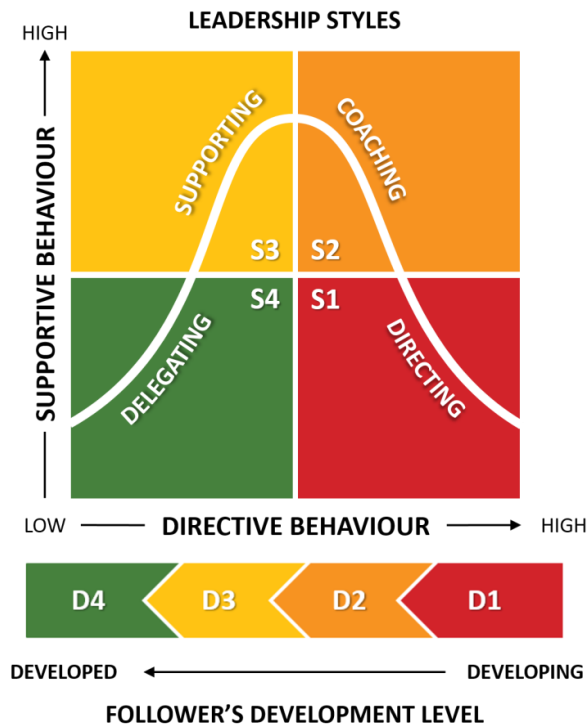


Figure 5: Situational Leadership model by Hersey and Blanchard (1969),

According to the SL model, an individual's "performance readiness level" underpins their leadership effectiveness, ranging from a lack of both ability and commitment (D1) to being both competent and committed (D4). So, a leader's style must match an individual's readiness level to optimize effectiveness. Despite the SL model's clarity, evaluating an individual's readiness for a specific leadership style remains a daunting task, as noted by Graeff (1997) and Thompson and Glaso (2015).

Fiedler's contingency theory offers a complementing perspective on the SL model, asserting that effective leadership is a function of the interplay between a leader's style, their personality, and their working environment, as highlighted by Yukl (2006) and Thompson and Vecchio (2009). The theory acknowledges situational aspects that influence a leader's capacity to guide their followers, as underscored by Tortorella and Fogliatto (2017).

Taking this information into consideration, we can say that the required leadership changes the environment of the business. This can change from project to industry, the leader's personality, and the staff. The ability to change to a more transformational leadership style in accordance with the ERP-utilization will be further researched.

4.2.2 Training and Support on perceived usefulness

Training and Support are essential factors in introducing a new technology Venkatesh et al. (2003). Venkatesh et al. (2003) state that facilitating conditions, like training and support, exerts a direct influence on user behavior, thereby impacting the implementation of new technologies like ERP systems. Bradford and Florin (2003) emphasized the importance of training as a facilitative condition in the context of ERP systems specifically. They emphasized that training is essential not just for familiarizing users with the system but also for explaining how it fits into the wider business process, hence increasing perceived usefulness and the

ERP utilization in the lifting industry

Tim Limmen

S2716798

likelihood of adoption. However, as discussed previously, Venkatesh et al. (2003) only use a small sample size, and leave room for improving the TAM model for specific industries. Therefore it can be stated that the research of Venkatesh et al. (2003) is not fully generalizable.

Venkatesh et al. (2003), also found that facilitating conditions have a direct effect on user behavior. Venkatesh et al. (2003) did their research using 4 companies for a longitudinal study. The companies Venkatesh et al. (2003) researched were in the Entertainment, Telecomm Services, Banking, and Public Administration industries. Dynamic manufacturing industries were not represented in Venkatesh et al. (2003) study, because only Product Development, Sales, Business Account Management, and Accounting departments were present.

Taking this information into consideration means that Training and Support could be one of the possible factors for effective ERP utilization between companies in the lifting industry. The ways Venkatesh et al. (2003) gather their results can be used to accumulate data from companies in other markets. We can use the items stated in Venkatesh et al. (2003) to measure the Facilitating Conditions construct. Venkatesh et al. (2003) used the following items for measuring the Facilitating Conditions:

- Guidance was available to me in the selection of the system.
- Specialized instruction concerning the system was available to me.
- A specific person (or group) is available for assistance with system difficulties.

Taking the past research into consideration allows for measuring sufficient training and support of the ERP utilization. The level of training will therefore be researched further as a variable for the research in this specific field.

4.2.3 Performance Expectancy

The degree to which an individual believes that using a system will help him attain gains in job performance is defined as performance expectancy (Venkatesh et al., 2003). In order to measure performance expectancy, Venkatesh et al. (2003) state took known constructs from past research and used them to measure performance expectancy. The variables her took are usefulness & extrinsic motivation (Davis, 1989), usefulness & job fit (Thompson et al., 1991), usefulness & relative advantage (Davis et al., 1989; Moore & Benbasat, 1991; Plouffe et al., 2001), usefulness & outcome expectations (Compeau & Higgins, 1995; Davis et al, 1989), and job-fit & outcome expectations (Compeau & Higgins, 1995) as constructs to measure performance expectancy. Venkatesh et al. (2003) combined these constructs in Tables 1 & 2.

As mentioned before, Venkatesh et al. (2003) do not represent all industries in their research We can however use their metrics to measure performance expectancy during this case study to compare the results.

ERP utilization in the lifting industry

Tim Limmen

S2716798

Construct	Definition	Items
Relative Advantage (Moore and Benbasat 1991)	The degree to which using an innovation is perceived as being better than using its precursor.	<ol style="list-style-type: none"> Using the system enables me to accomplish tasks more quickly. Using the system improves the quality of the work I do. Using the system makes it easier to do my job. Using the system enhances my effectiveness on the job. Using the system increases my productivity.
Outcome Expectations (Compeau and Higgins 1995b; Compeau et al. 1999)	Outcome expectations relate to the consequences of the behavior. Based on empirical evidence, they were separated into performance expectations (job-related) and personal expectations (individual goals). For pragmatic reasons, four of the highest loading items from the performance expectations and three of the highest loading items from the personal expectations were chosen from Compeau and Higgins (1995b) and Compeau et al. (1999) for inclusion in the current research. However, our factor analysis showed the two dimensions to load on a single factor.	<p>If I use the system...</p> <ol style="list-style-type: none"> I will increase my effectiveness on the job. I will spend less time on routine job tasks. I will increase the quality of output of my job. I will increase the quantity of output for the same amount of effort. My coworkers will perceive me as competent. I will increase my chances of obtaining a promotion. I will increase my chances of getting a raise.

Table 1: Performance Expectancy Constructs by Venkatesh et al. (2003)

Construct	Definition	Items
Perceived Usefulness (Davis 1989; Davis et al. 1989)	The degree to which a person believes that using a particular system would enhance his or her job performance.	<ol style="list-style-type: none"> Using the system in my job would enable me to accomplish tasks more quickly. Using the system would improve my job performance. Using the system in my job would increase my productivity. Using the system would enhance my effectiveness on the job. Using the system would make it easier to do my job. I would find the system useful in my job.
Extrinsic Motivation (Davis et al. 1992)	The perception that users will want to perform an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions	Extrinsic motivation is operationalized using the same items as perceived usefulness from TAM (items 1 through 6 above).
Job-fit (Thompson et al. 1991)	How the capabilities of a system enhance an individual's job performance.	<ol style="list-style-type: none"> Use of the system will have no effect on the performance of my job (reverse scored). Use of the system can decrease the time needed for my important job responsibilities. Use of the system can significantly increase the quality of output on my job. Use of the system can increase the effectiveness of performing job tasks. Use can increase the quantity of output for the same amount of effort. Considering all tasks, the general extent to which use of the system could assist on the job. (different scale used for this item).

Table 2: Performance expectancy construct by Venkatesh et al. (2003)

ERP utilization in the lifting industry

Tim Limmen

S2716798

With this information we can investigate the Performance Expectancy of the user of a new ERP system and the level of trust and actual use of the system.

4.2.4 Limitations of the Technology Acceptance Model

The field of technology adoption has been significantly impacted by the Technology Acceptance Model (TAM). Tam has provided valuable insights into how users adopt and utilize new technologies. Nevertheless, it's important to acknowledge that TAM has some limitations, in line with any model.

Richard P. Bagozzi (2007) presents some level of criticism of the Technology Acceptance Model (TAM) in "The Legacy of the TAM and a Proposal for a Paradigm Shift." The article raises multiple issues regarding the TAM. Bagozzi (2007) first problem with TAM is its overemphasis on relying solely on behavioral intention and actual system use as the primary dependent variables. This singular focus fails to account for the complex decision-making process that underlies technology adoption. Users follow a multi-dimensional path before deciding whether to utilize technology, going beyond just their intention to use it or actually using it. This narrow viewpoint might limit our comprehension of the technology acceptance process. TAM's potential oversimplification of human behavior is a concern of Bagozzi (2007), as it disregards important factors that influence technology adoption beyond perceived usefulness and ease of use. The model fails to consider the impact of emotions, personal values, and social influences, which are known to heavily influence a user's technology attitudes. TAM's over-reliance on cognitive evaluations limits its ability to capture the multiplicity and intricacy of human behavior. Considering the constantly evolving relationship between users and technology, TAM has been criticized for its static nature - failing to account for changes over time. Users' attitudes, perceptions, and usage patterns are bound to undergo fluctuations as they gain experience with technology. However, the current formulation of TAM overlooks these dynamic shifts.

Bagozzi (2007) observes that TAM oversimplifies the concept of technology use and fails to distinguish between various levels, patterns, and types of use which can differ profoundly in terms of antecedents and outcomes. This one-dimensional approach lacks the nuance to yield valuable insights and risks overlooking important factors that affect distinct types of usage. As a result, it treats all forms of usage as interchangeable, which is a fallacy. Finally, the model's conceptualization of technology use appears outdated and inadequate. Bagozzi (2007) suggests the "decision-making," perspective in reaction to the current restrictions - a paradigm that concentrates on goal setting and striving in technology adoption. According to Bagozzi (2007), this understanding offers a more detailed perception that takes into account the conscious decision-making steps made by users before adopting a technology. Bagozzi (2007) decision-making perspective is an alternative to TAM, which has limitations despite its considerable contributions to our comprehension of technology adoption. The shortcomings recognition is necessary to permit more in-depth, exhaustive theories, and in turn, progress our perception in this significant realm. To conclude, acknowledging the weaknesses of TAM opens up a pathway for a more resilient comprehension of technology adoption and the possibility of introducing new variables in the process.

4.3 PERCEIVED REPUTATION

With the rapid development in digitalization, companies try to establish a trust relationship with their customers. Jarvenpaa et al. (2006) showed in their research that a vendors reputation can influence a customer's perception of the actual usefulness of the online platform, leading to an increased customer's trust. Furthermore, Jarvenpaa et al. (2006) shows that store size also has a positive effect on customer trust. Jarvenpaa et al. (2006) proposed the model below as the result in his research.

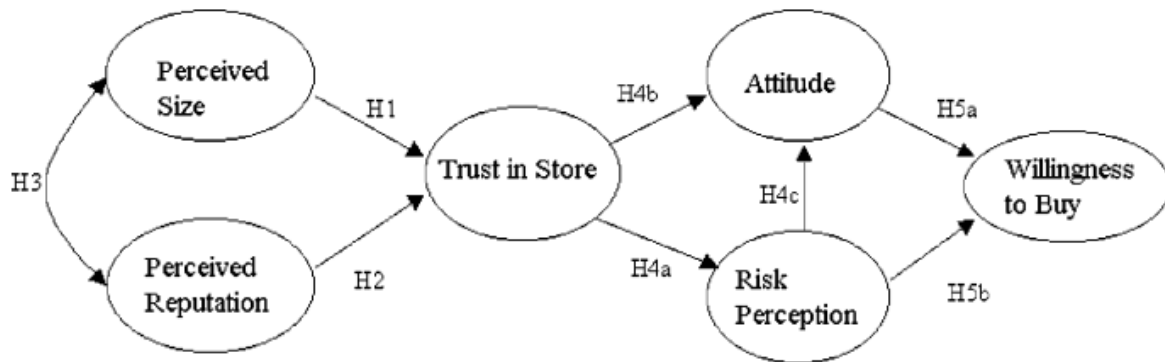


Figure 6: Research model of consumer trust in an Internet-based store by Jarvenpaa et al. (2006)

The insights from Jarvenpaa et al. (2006) research could provide new insights when applied to the context of ERP utilization within manufacturing companies in the lifting industry. For example, when an employee knows about the ERP vendor it could lead to more trust in the system. Since ERP vendors generally do not have stores but operate only, the actual store size variable in the research of Jarvenpaa et al. (2006) might not apply. Therefore, the Perceived Reputation variable will be researched.

4.4 SYSTEM ANXIETY

Pekdemir and Kir (2019) researched the effect of system anxiety on perceived ease of use and perceived usefulness. Their research findings show a medium effect size from system anxiety on perceived ease of use. The effect size of system anxiety on perceived usefulness however, was relatively small. Taking the information of Pekdemir and Kir (2019) into consideration makes it possible for system anxiety to be an important external variable for ERP utilization for manufacturing companies in the lifting industry. One key reason why system anxiety is a possible factor in ERP implementation within the lifting industry is the magnitude of the organizational and operational changes involved. ERP implementation projects often entail the restructuring of business processes, redefining roles and responsibilities, and training employees on the new system Van der Molen and Oosterwijk (2022). In the lifting industry, where precise coordination and adherence to safety protocols are crucial, employees may experience heightened anxiety due to concerns about their ability to adapt to the new system and perform their tasks accurately and safely. Moreover, the lifting industry typically relies on skilled and experienced workers who may have years of familiarity with existing systems and processes. Introducing an ERP system can disrupt their established routines, leading to feelings of uncertainty and apprehension. Employees may worry about their competence in using the new technology or fear the loss of their expertise in the transition process. Such concerns can significantly contribute to system anxiety and hinder the acceptance and utilization of the ERP system. Considering the specific challenges and demands of the lifting industry, addressing system anxiety could be crucial for successful ERP implementation. Therefore System Anxiety will be used as a variable.

4.5 SYSTEM SCALABILITY

In order to understand why a digital system is important to use could be the growth of the company one works for. Eryadi and Hidayanto (2020), show in their research that reliability, flexibility, and scalability are first-rank priorities when implementing Business intelligence in a company with an ERP system environment. As a company continues to grow, the complexity of the data and its volumes increase as well. Therefore, Eryadi and Hidayanto (2020) deemed system scalability as a crucial factor for implementing such systems. If the system is scalable and therefore future-proof, the system will probably be accepted more easily. With a scalable BI system, organizations can ensure that their digital infrastructure keeps pace with their growth. As the company expands its operations, adds new departments or subsidiaries, or enters new markets, a scalable system can effortlessly adapt to these changes. It provides the flexibility to incorporate additional data sources, accommodate a growing number of users, and meet the evolving information needs of the expanding organization. Moreover, the growth of a company often involves increased complexity in its operations. A scalable digital system allows for the integration of diverse processes and data streams, providing a holistic view of the organization's performance (Eryadi & Hidayanto, 2020). This comprehensive perspective enables effective monitoring, analysis, and optimization of business processes across departments and functions, promoting efficiency and synergies.

4.6 THEORETICAL OVERVIEW

Taking a look at the theoretical background behind these variables we see that ERP systems are a technology that digitalizes various processes within a company. These ERP systems try to make these processes more efficient, improve collaboration within a company, and grant more insights into the company processes. To determine which factors are important for the implementation of such a system the Technology Acceptance Model is used as a starting point. This model, created by Fred Davis (1985), distinguishes Perceived Usefulness, Perceived Ease of Use, and Attitude Towards Using to be variables for actually using a system. The model shows the potential for external variables to have an influence on these variables, making the model suitable for future research. However since its introduction in 1985 the TAM model has received some criticism as well. Researches like Bagozzi (2007) state that the TAM model focusses too much on behavioral intention when introducing a new system. Even though, after the research of Davis (1985), many researches decided to further specify this model for certain industries, introducing these potential external variables to be of importance to other industries as well. Top-Management Leadership styles, Training and Support, Performance Expectancy, Perceived Reputation, System Anxiety and System Scalability are such variables that suggest to be important factors in system adoption in other industries or with specific systems.

5. METHODS

5.1 RESEARCH STRATEGY: MIXED METHODS APPROACH

This research investigates the Alise Group. It consists of 5 companies that operate in the lifting industry. This industry focuses on lifting heavy industrial objects and components, both on and offshore. Each of these companies has a different role in the lifting industry. While they all manufacture lifting equipment, they differ in the load capacity and type of lifting equipment. Some of the companies manufacture steel lifting equipment, while other manufacture equipment made from yarns (*Koster-IT*, 2022). The companies of the Alise group also engage in different activities, this ranges from only manufacture equipment to also inspecting them (*BSB Hoorn B.V.*, 2021). Another difference between the companies is their location, while three of the companies are located in De Goorn, North-Holland. These are Enduro Softslings B.V. (*Enduro Softslings*, 2022), BSB Hoorn B.V. (*BSB Hoorn B.V.*, 2021) and Koster Industrial Textiles B.V. (*Koster-IT*, 2022). Additionally the company Erca-Tex B.V. is located in Tolbert, Frisia (*Erca-trading.nl*, 2016) and BVG Hijsmaterialen B.V. is located in Dordrecht, South-Holland (*Hijsmaterialen.nl | BVG Hijsmaterialen B.V.*, 2023). The role in the industry also differs somewhat between the companies. Three of the companies of the Alise Group mostly work with so-called dealer networks for which they distribute their manufactured equipment. The other two of these companies are a dealer themselves, meaning they both manufacture and sell their products directly to end users.

These companies are in a varying state of effective ERP utilization. To gain in-depth insights into what factors make ERP implementation successful the case study methodology has been selected. As can be seen in the Chapter Theoretical Framework, these variables have either been tested previously in other industries or have been deemed relevant in previous studies. Since top-management leadership style is a variable that will be researched the Multi leadership Questionnaire will be used. This method has 45 statements that can be answered using the Likert scale. The questionnaire will be sent in advance as a preparation for the semi-structured interview that will follow as part of the case study. This method allows us to research the different top management leadership styles within the organization of the Alise Group. Since IT adoption, in general, has been little researched in the lifting industry, a smaller qualitative approach is most appropriate. When more of these qualitative findings are published a more quantitative study would be appropriate for this industry to test the proposed findings to the masses.

Furthermore, case studies will be used as well. A case study is a qualitative form of research (Yin, 2018). Instead of looking at a large data set, only a few cases are investigated (Yin, 2018). According to Eisenhardt (1989), a case study can be used to build a theory. Research should start with a research question, then a case should be selected within the field or industry the research question is aiming to answer. When the selected case is clear the researcher should define the data collection methods and describe the measurements it is aiming to take. Then when collecting data, a partial analysis using field notes can take place before starting the full data analysis with for example Cross-case pattern research. These results can then be processed to form a proposition before comparing it to the existing literature. A case study is chosen in this instance because the proposed variables are already known to be relevant due to past research. This research aims to investigate the relevance of these variables specific to the lifting manufacturing industry and provide a modified TAM model specific to this industry. Therefore, doing qualitative research on the variables will not grant any new results, instead

ERP utilization in the lifting industry

Tim Limmen

S2716798

gathering in-depth results using people in the industry will allow us to suggest an improvement to the existing TAM model for the industry.

Following this approach, selection bias can arise when the sample is not fully representative of the larger population. There are many manufacturing companies in the lifting industry. Therefore, we cannot state that the chosen sample of the Alise Group fully represents this entire industry. Taking that into consideration means that this research will be hard to generalize for the entire market/industry. Furthermore, there is also the potential issue that the sample does not fully represent the companies of the Alise Group itself since only a proportion of the company was interviewed. This can be a limiting factor in generalizing the research for every company in the Alise Group. Moreover, this study focuses on the implementation success of ERP systems. While this does contribute to the technology adoption field, it might not be fully generalizable toward the implementation of other technologies and industries. Even though it is difficult to tackle the generalizable limitation of the study due to the specific characteristics of a qualitative study, we can make it more generalizable for the whole Alise Group by interviewing various employees among the different companies of the Alise Group.

5.2 CASE SELECTION

According to Yin (2018), there are 2 types of case studies. These include a singular case study and multiple case studies. While single case studies are useful for an in-depth analysis of a case, they can be somewhat difficult to generalize (Yin, 2018). Because the research question aims to say something about manufacturing companies in the lifting industry as a whole, they have been chosen for multiple case studies. As stated in the introduction the Alise Group is a company group. Most companies in this group focus on manufacturing for the lifting industry. The production environment is very dynamic because most sales are project-based and therefore unique. What differentiates the companies is the lifting capacity of the lifting gear they produce. Important to the research question is that these 5 companies have varying degrees of ERP utilization and adoption status. Making the results very comparable. The scope of this research, therefore, falls within these 5 companies of the Alise Group. Ranging from low-to-high capacity lifting gear the companies are BVG Hijsmiddelen B.V., BSB Hoorn B.V., Erca-Tex B.V., Koster Industrial Textiles B.V., and Enduro Softslings B.V.

5.3 DATA COLLECTION

To answer the research question properly existing literature will be analyzed first. Then, a selection of the staff from each company will be interviewed. Here there will be focused questions regarding the full utilization of ERP systems. By doing so, we will aim to use the TAM model as described in the "Theoretical Framework". Furthermore, archives, observation, and artifacts will also be used to collect data from the companies (Yin, 2018). To measure leadership with as little bias as possible, we must interview the employees themselves. The data will be gathered separately for each of the companies. From each of the companies in the Alise Group, 3 employees will be interviewed. Because of the number of daughter companies in the Alise Group, this leads to a total of 15 interviews. When looking at prior research Guest et al. (2006), 12 interviews suffice for a qualitative study. Interviewing the same number of employees per company (3) will therefore suffice for this qualitative study.

The to-be-interviewed employees would be e-mailed before the research. This will be used to plan an appointment for the interview. This e-mail will contain information about the process of the interview, the confidentiality, and secrecy of the answers given, the goal of the interview. The interviews will be held in person if the coronavirus regulations do not become

harsher. The interviews will be semi-structured. This allows them to follow a structure but will also enable the interviewed employees to be asked deeper into the meaning behind their statements. The leadership aspect will be measured using the Multifactor Leadership Questionnaire (MLQ). This questionnaire has 45 questions in it that identify and measure the leadership style of a leader (Bass & Avolio, 2011b). The correspondent answers these 45 points, which draws a clear image of the leadership style. The rest of the possible factors will be used following the constructs drawn upon in past literature as mentioned in the Theoretical Framework.

Using interviews in a qualitative study often comes with social desirability bias. This bias refers to answering interview questions in a way to be viewed more favorably, specifically when sensitive topics are discussed. In this research of course the results were anonymized, but social desirability bias could still occur. Meaning employees can answer the way they are supposed to answer. However, the employees know that they are interviewed, meaning that they can also respond in a way that will benefit them the most in terms of confronting their leader. In a high-volume manufacturing company, managing time to take these interviews can also be a bias. When the employees are somehow rushed in this interview, they could provide less meaningful answers. As mentioned before the companies of the Alise Group are operating in a very dynamic environment. Meaning time is of the essence for the companies. Therefore, it could be that due to a busy schedule, some participants may try to hurry the interview process. Apart from anonymizing the interviews, there were also held multiple interviews over the companies of the Alise Group. This approach minimizes the effect of the social desirability aspect because multiple interviewees talk about the same reoccurring themes and are also highlighted in the research of Nederhof (1985) as a way to deal with social desirability bias.

5.3.1 Data Triangulation

Taking the above information into consideration, can use data triangulation to ensure the validity and reliability of this research. Which includes, gathering information, archival research, and observation. This leads to the following attributes:

1. Interviews: A total of 19 people will be interviewed with semi-structured interviews as well as the Multi leadership questionnaire, going for a mixed method approach.
2. Archival Research: By viewing additional documents about the use and implementation of ERP systems, like plans, project reports, and communication lines, we can better understand the way of communication during these ERP implementation projects.
3. Observation: By observing the workplace and seeing the actual ERP system in action we can gather more insight and knowledge about how the actual ERP system is used and utilized in day-to-day operations. The company will be monitored for this case study for a period of 6 months in 2023. During this time period day-to-day operations are monitored in correspondence with the research topic. Having 6 months to monitor the organizations of the Alise Group further allows for monitoring the implementation progress among the companies as well.

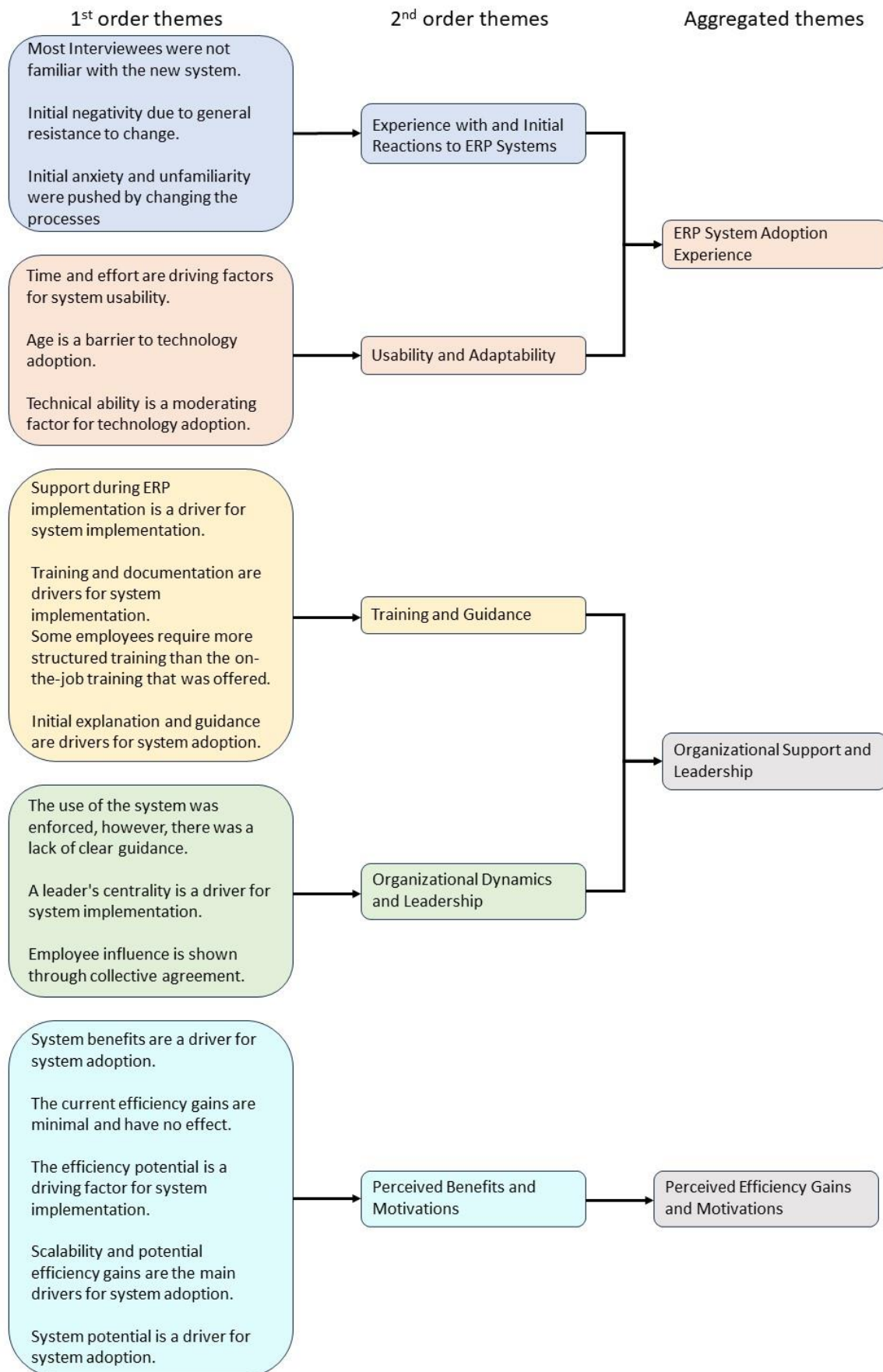
Furthermore, during qualitative research developing saturation is important. Saturation refers to the point at which there are no new insights or themes to be observed in the collected data (Saunders et al., 2018). In our case, with a total of 19 interviews among the Alise Group daughter companies, we will reach this point of saturation if the interviews do not offer new insights or themes related to the research purpose. If for a reason the collected data might not be usable due to lack of quality, additional interviews will be held. By doing so we will make sure a saturation for this research will be reached.

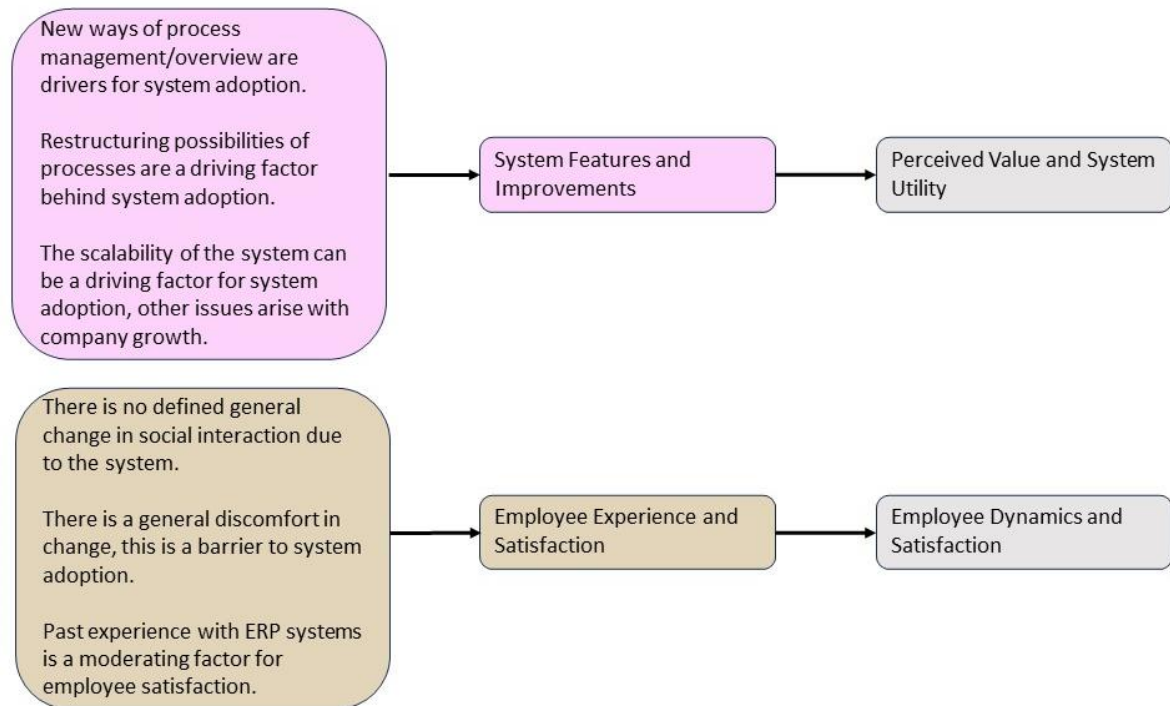
5.4 DATA ANALYSIS

First of all, in order to develop a theory from the gathered data, the interviews have to be transcribed (Gioia et al., 2013). These transcriptions will help to form the so-called 1st, 2nd and aggregated themes, but also to properly understand these themes by using specific quotes from the interviews (Corley & Gioia, 2004). From transcriptions, specific overlapping responses are captured and coded. These codes are also called 1st order themes, when comparing these 1st order codes select the ones that overlap and create a 2nd order theme to observe certain patterns in the responses (Corley & Gioia, 2004). These 2nd order themes will allow for analyzing specific patterns in the gathered interviews by systematically comparing the previously created first-order themes. They are therefore a broader categorization of the created first-order themes (Gioia et al., 2013). Building upon these insights second-order themes are then further captured in aggregated themes to see the consensus regarding the responses (Corley & Gioia, 2004). These aggregated themes show the general dimensions from the interview results and give comprehensive insights into the participant's answers and position in the discussed variables (Gioia et al., 2013). These aggregated themes provide therefore a comprehensive understanding of how the interviewees in general think about the discussed themes. These results can furthermore be investigated more in-depth when using the gathered data from the Multi Leadership Questionnaire. Allowing us to compare the discussed leadership styles together with the observed aggregated themes. In general, the Gioia method allows the development of these 1st, 2nd, and aggregated themes by using quotes from the interview data (Gioia et al., 2013). Properly transcribing the interviews is therefore of key importance. When answering the research questions we can then look at the Aggregated Themes to answer them, even the second-order themes can be used to give a more in-depth answer to the created aggregated themes. When giving a specific situation as an example we can furthermore also use the first order codes or even the citations.

6. RESULTS

As stated before in this study a total of 19 interviews were conducted from each of the companies of the Alise Group in order to gather the data necessary to answer the previously stated research question. One of the variables researched is leadership, in order to measure this variable the Multi Leadership Questionnaire. Since this questionnaire this results are complementary to the results gathered in the interviews. Furthermore, documentation of the implementation in Appendix 9.1 regarding the implementation of the ERP system has been investigated. This approach results in a mixed method approach in order to answer the research question. As shown previously in the chapter Industry, the lifting industry is characterized by its dynamic environment. This environment comes with project based highly customizable products, which shows the need for adaptability in organizations associated with this industry. This chapter shows the results for 3 aspects, the processed Multi Leadership Questionnaire, the processed themes from the 19 conducted interviews, and a formed model using these aggregated themes and questionnaire results. These results are based on the companies operating in the lifting industry in which the companies of the Alise Group are used as a case for to gather information. Using these results we were able to form first, second, and aggregated themes, which will be shown below. These themes will be further highlighted in the results below.





Tabel 3: Aggregated Themes

The adoption of an ERP system is difficult on its own and multifaceted. Therefore, the interviewees had a range of experiences, with both similarities but also differences in their responses. When looking at the data 2 second order themes can be formed, supporting this aggregated theme, these are "Experience with and Initial Reactions to ERP systems" and "Usability and Adaptability". Among all interviewees, there was no one with experience with the introduced ERP system. While there was 1 interviewee who had some experience, it was not the exact same as the introduced system. One of the translated quotes that encompasses this exact statement was "I didn't know anything about how ERP systems worked or how they will change our processes". While none of the interviewees stated that they were afraid to work with the system, they did mention anxiety was a common factor in the somewhat negative reactions to the introduced ERP system. They also mentioned that while the employees who had some anxiety of the new system did not necessarily fear the usefulness of the system itself or the ease of use of the system, but rather their disability to work with the technology. This is further shown by quotes like "They are generally more afraid of a new technology in general rather than its functionalities or actual use. Since their day-to-day operations might change because of this".

One of the notable differences between the interviewees was the need for training. Specifically, the learning curve associated with implementing the ERP system differed between the employees. In general time and effort are driving factors for making the system usable. The interviewees stated that this was bidirectional. If you put in time and effort you get a better understanding of the system, but you also make the system more usable by providing input on things that can be changed within the system. Since training in general was absent for

most of the employees, there was insufficient data gathered that supported a direct effect of training on Actual System Use. However, those who did receive training & support noted that by having training and support available, they perceived the system to be easier to use and more useful in general. The first-order theme "Age is a barrier to technology adoption" is a somewhat reoccurring statement within the responses. This response did not come forward in interviewees from companies that had relatively young employees. Nevertheless, it was noticed multiple times in companies that had a bigger range in the age of employees. Furthermore, the interview results also suggest that the older employees were more resistant to change in general since the term "*I do this work already for an {x} amount of years*" was used. In general time and effort were mentioned as drivers for learning and adapting to the system. However, the interviews showed that this was often not enough for older employees of the companies. This was due to both their IT ability and their past experiences with digital transformations.

In this research, one of the variables investigated is leadership. In addition to the MLQ the semi-structured interview also provided insights into the importance of leadership during the implementation of the ERP system within the companies of the Alise Group. The role of these leaders of the Alise Group was multifaceted. The interviews showed that all leaders were involved to some degree in the ERP system adoption process. This is not surprising since ERP systems tackle the processes within the company itself (Bartram, 2023). However, the interviews showed that both leaders of Company A and Company D could have taken a more central role in the adoption process. When looking at the first-order themes we can see this reflected in the quotes "*A leader centrality is a driver for system implementation*" and "*The use of the system was enforced, however, there was a lack of guidance*". Some interviewees stated that they did not feel the importance and central guidance to the adoption of this new system. Furthermore, the MLQ indicated that the leaders of the Alise Group scored differently, even though, they do not fundamentally differ in their leadership style.

As discussed in the Theoretical Framework, training can be an important driver for digital transformations in companies. This was mentioned multiple times during the interviews, quotes like "*A well-structured training would help me better understand the usefulness of the system*" further show the importance of training during the implementation of technology. This is further projected in the first-order theme "Training and documentation are drivers for system adoption". Furthermore, the interviews showed that both general training sessions and dedicated instructors were missing in all of the ERP implementations of the companies in the Alise Group. While some interviewees stated that training was not necessary, most of the interviewees showed that using the system without knowing the functionalities led to some discomfort. Additionally, interviewees of Company D stated that after the release of the system, continuous support was missing. This ensured that system problems were not resolved. As a result, employees did not always feel taken seriously, decreasing their perception of the system as well.

As an aspect of the leadership styles of the top leaders during this system implementation, the MLQ is used which measures various scales. The first scale is the Idealized Influence attributes which are a scale for transformational leadership and are primarily about the ability of the leader to be a role model or frontman for their employees. When looking at Appendix 4, we can see a varying degree of Idealized attributes among the leaders of the Alise Group. However, all the scores are relatively high (above 8, average), showing that all the leaders of the companies of the Alise Group possess qualities that make them both respected and

deemed trustworthy. The Idealized Behaviors Scale focuses on the ability of a leader to act as a role model for his/her employees. The difference with the Idealized Influence attributes lies in the skills versus interactions. While the Idealized Influence attributes focus more on the skills and qualities of the leader, the Idealized Influence behaviors focus more on the actual actions and behaviors practiced by the top manager. Scoring a high percentage on this scale shows that a leader is a visionary and motivates their employees through a common vision by being a role model for the company. When looking at the scores in Appendix 4, one can see that the leaders all score relatively high in this regard. This shows that all leaders of all companies possess skills that they practice in order to be role models and that this is also present in their interactions with the employees. The standard deviation for the Idealized attributes is 1,524, meaning that while every leader possesses this attribute there is a difference in the degree to which they use it, as can be seen in Appendix 4. The leader of Company E used this the most with a score of 16 for this attribute.

When looking at the MLQ an important aspect is the Inspirational Motivation scale. This scale is mainly about inspiring employees through a vision for the future. Managers who score high on this scale can motivate their employees with optimism and gather a general commitment among his/her team to strive for these shared goals and visions. When looking at the leaders of the Alise Group, one can see that most of the leaders score relatively high on this scale. Taking the Industry chapter into consideration means that the top managers can gather shared commitment for a common goal in a dynamic environment, which is noteworthy in itself. While the Inspirational Motivation trait is about inspiring employees through a common goal, Intellectual Stimulation measures a different scale. Its main focus is to measure a leader's ability to inspire the employee's creativity and stimulate their innovation. Not all leaders of the Alise Group score high in this regard. Leader E especially excels in stimulating the company's employees. However, employees of both Company C and Company D do not feel noticeably intellectually stimulated by their leaders.

The MLQ has an Individual Consideration scale. This scale is straightforward but can be difficult to achieve especially in larger organizations. Its main focus is to measure the leader's ability to consider his/her employees as an individual rather than as a group. When a leader fully utilizes these skills, he/she can recognize the strengths, weaknesses, and desires among their employees, fostering the development of their skills. The leader of Company E mostly excels in this scale. While there are not any 'bad' scores among the leaders, employees of Company B do not feel noticeably considered as individuals. The MLQ Questionnaire also introduces scales for Transactional Leadership. Among these scales is Contingent Reward. This scale measures the degree to which a leader recognizes both effort and good performance and provides rewards when this behavior is shown. Using this approach leaders often state their expectancies of employees. When looking at the companies of the Alise Group, one can see that only the leaders of companies C and D noticeably use this approach.

Management by Exception is another scale measured in the MLQ. Active Management by Exception shows a leader actively monitors the performance of the firm's employees and intervenes only when special scenarios or deviations of standards occur. The Passive Management by Exception scale focuses on another version of Management by Exception. These types of leaders do not actively monitor the company's performance but only intervene when problems become severe. This version of Management by Exception is therefore more reactive. When looking at the results in Appendix 4, one can see that the leaders of all companies of the Alise Group are not showing any noticeable behavior in favor of either Active

or Passive Management by Exception. The Laissez-Faire scale shows a leader's custom to be disengaged from his/her leadership role altogether. Laissez-faire leaders generally do not provide feedback and are therefore seen as the most passive leadership style. Laissez-faire leaders have a relationship based on trust and reliance with their employees. When looking at Appendix 3, one can see that none of the leaders of the Alise group show any significant behavior associated with this scale. Within the Management by Exception (passive) scale is also a relatively big standard deviation of 1,18. The leader of company A is the most prominent on this scale with a score of 9, while the leader of company D scores quite low in this scale with a 3,5.

Introducing an ERP system into an organization can bring forward a mix of both motivational and anxiety factors (Pekdemir & Kir, 2019). This was not different for the employees of the Alise Group, since most of the interviewees were unfamiliar with ERP systems before the introduction. This can be seen in their statement *"I didn't know any ERP systems or how they could change our processes"*. Since they had no experience, for some it was quite difficult to know what was expected of them. Furthermore, since some of them were not aware of what an ERP system was, they did not know why it was useful and how easy it was for them to work with. However, according to the condoned interviews, most of the employees were in general able to see the importance of the ERP system. During the interviews, it became evident that the scalability of the system could be a driving factor for system adoption as it shows the importance of the future of the company. This is shown by quotes like *"Absolutely, I don't think it has any limitations"*. Additionally, the interviews showed that efficiency potential is a motivational factor for adopting the system. This is interesting because the interviews showed that in general since adopting the system, there were not any efficiency gains. This is shown by quotes like *"I think we are still in the very beginning, the big difference and gains are still to come"*. These responses are therefore represented by the first-order theme "The efficiency potential is a driving factor for system implementation".

Another way adopting a system can change the processes within a company is communication. Since it digitalizes multiple processes of a company, new online communication ways become available to employees (Bartram, 2023). However, when looking at the interview responses, we can see that the ways of communication have not changed since adopting the system. Taking this into consideration, communication has become somewhat more efficient by answering the most simple questions without leaving one's workspace. This is shown by interview responses like *"{system} is often the first place I look when I have questions. Furthermore, if I can't find it in {system} I will go to colleagues"*. Combining these insights shows the importance of the possibility to scale with the growth of the company, efficiency potential, and new communication methods. These can be seen as drivers for using the system. After the implementation, only the scalability is seen as a successfully utilized aspect of the implementation because efficiency gains and communication methods are yet to be implemented successfully according to some of the interviews. These items are collected in the aggregated theme Perceived Efficiency Gains and Motivations which combines the employee's motivation for potential future possibilities and their motivations by new ways of working.

As mentioned before, the interviewees state there is still a lot of untouched potential in the recently implemented ERP systems. The newly implemented system has a way of communicating on specific orders, introducing the ability to minimize actual communication errors. These functions remain somewhat unused due to a difference in system knowledge among employees as well and the current paper use is still active in some processes. The implementation of the ERP system also introduces a new way of tracking work orders in manufacturing departments. While in theory this should provide new insights, most of the

companies do not fully utilize this feature, since they continue to do their work using paper order tracking. However, the newly adopted system does offer new ways of overview the company processes, which can be seen as a driver for the adoption, this is further shown in the second-order theme "System Features and Improvements" but also in its first-order themes "New ways of process management/overview are drivers for system adoption" and "Restructuring possibilities of processes is a driving factor behind system adoption". These are formed by interview responses like *"That certain things are put in the system. Then people are not disturbed by questions like, Where does this stand, and what do I have to do. This is all part of the system now"*. This shows that even if the actual processes themselves have not really changed that much, the extra precise information gathered helps streamline it.

During the interviews another aspect of employee system satisfaction became evident. Interviewees who had either previously worked with another ERP system or had gone through another digital transformation recently stated that adoption was easier for them. This is shown by the quote *"I am used to working with different software like {system} and {system}"*. While only a few of the interviewees were familiar with other ERP systems. This was still an important quote because all of them seem to have less trouble using the newly adopted system. Hence the first-order theme "Past experience with ERP systems is a moderating factor for employee satisfaction." Therefore, the interviewees showed that the new system was generally seen as an improvement in their workflow, however, this was moderated by past experiences with digital transformations. Additionally, during the interviews, it became evident that users with a higher IT ability showed an easier transition towards the new system than users with a lower IT ability. Despite their perceived "user-friendliness" and "usefulness" of the system. The aggregated theme of Employee Dynamics and Satisfaction therefore encompasses these elements.

7. CONCLUSION

Taking the results into consideration the following propositions have been formed, which have been processed into a model in the Conclusion chapter:

Proposition 1: When a leader takes a central role during the ERP adoption, their employees have a more positive attitude towards the system.

Explanation: This shows a different approach from the previous literature discussed, where transformational leadership styles are stated as the most effective style for influencing employee's attitudes towards the new system (Bass & Avolio, 1994). However, this research suggests that the centrality of the leader is more important than the actual leadership style when it comes to implementing a new system. This result therefore contradicts previous literature.

Proposition 2: Employees' resistance to change is a barrier to his/her attitude on actually using the system.

- **Explanation:** The natural "resistance to change" among employees is in line with the past literature which shows it as a barrier. However, this research suggests that it is a barrier directly to Attitude Towards Using, while previous literature shows it to be a barrier to Perceived Usefulness and Perceived Ease of Use. It therefore contradicts the previous literature for this industry. However, an updated TAM model proposed by Kamal et al. (2020) shows resistance to change to be a barrier to Attitude Towards Using as well.

Proposition 3: The more employees that have the ability to recognize the ERP system's new communication methods, efficiency gains, and overall system scalability, the sooner they perceive the system as useful.

- **Explanation:** The employee's recognition of the new functionalities and efficiency gains of the system as a driver of Perceived Usefulness shows additional insights into the original TAM Model. The possible potential gains of using the system are part of these variables and consist of the employee's ability to see future gains by implementing the system now.

Proposition 4: The more employees perceive the ERP system's features as valuable and utilitarian, the higher they rate its overall usefulness.

- **Explanation:** The Employee's understanding of the system as a utility for the organization is shown to be a significant driver for perceived usefulness. This grants additional insights to the original TAM model by differentiating between immediate improvements of the business by implementing the system and potential future improvements of the business. This variable suggests a new insight into the Tam model which was not tackled in previous research.

Proposition 5a: The more comprehensive training sessions employees get, the sooner they perceive the new system as useful and easy to use.

Proposition 5b: System documentation makes the system more useful and easier to use for employees.

Proposition 5c: Personal Guidance makes the system more useful to the employees and makes them perceive the system as easier to use.

- **Explanation:** The results show a very clear need among employees for 3 different branches of support and training, while the need for support and training is not new by itself and has been addressed in revisions of the Tam Model by for example Orruño et al. (2011). However, there was no actual distinction between these types of training needs in a proposed TAM revision.

Proposition 6: Strong manager enforcement and encouragement increase the actual use of the ERP system among employees.

- **Explanation:** Previous literature regarding the TAM Model does not specifically mention Manager Enforcement as an external variable specifically for Actual System use. The results in this research therefore show that if a leader forces their employees to use the system, they will use the system more often, making Manager Enforcement a driver for Actual System Use.

Proposition 7: Employees who have a higher IT ability and have an approving attitude towards using the system find themselves using the system more.

- **Explanation:** The Technology Acceptance Model does not show IT ability to be a factor in the actual adoption of a technology. However its revisions do, the research of Park and Park (2020) show and its revisions show various subfactors of IT's ability to be both a barrier and driver for perceived Usefulness and Perceived Ease of Use. These results show IT Ability to be a moderating factor between attitude towards using and

Actual System use rather than having an effect on Perceived Usefulness and Perceived Ease of Use. This result therefore contradicts past literature somewhat.

8. DISCUSSION

8.1 TAM-MODEL - MANUFACTURING FIRMS IN THE LIFTING INDUSTRY

In order to give meaning to the gathered results in this research, a model is proposed. The results from both the MLQ and the Aggregate Dimensions show interesting external variables that are deemed important by the employees of the Alise Group. Most of these variables are elaborated in the previous sub-chapters of the result chapter, however we will shortly go over them.

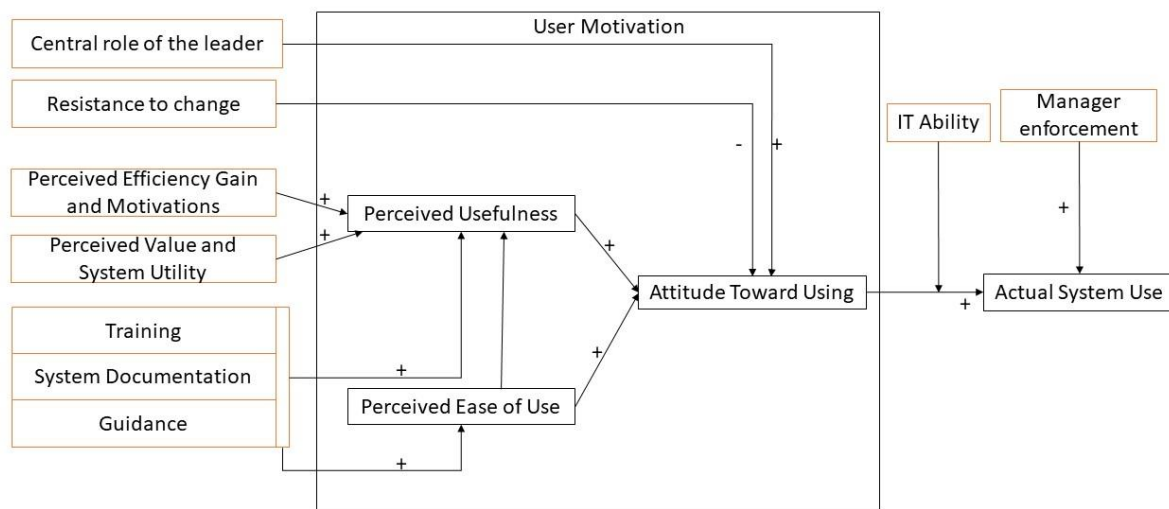


Figure 7: Tam Model - Manufacturing Firms in the Lifting Industry

The actual role of the leader was investigated using both the interviews and the MLQ. Among the interview results, some of the interviewees stated that they wished for a more central role during the system adoption process from their manager. While this was not represented by every interviewee, this is still a motivational factor. Since an advocate for the system could lead to a successful implementation. These leaders are the frontman in day-to-day operations, that why they are also expected to be the frontman in the introduction of a new system that influences these day-to-day operations. When looking at the transformational scores gathered by the MLQ we see that the leaders are all perceived as transformational leaders, especially when looking at the Idealized Influence attributes. This shows that having this general esteem of a leader is important for this system integration as well. Furthermore, when looking at the Contingent Reward scale we see that every leader exhibits some of this scale in their behavior. This scale focuses on clear expectations and rewards for employee performance, when a leader is not taking a central role during the adoption this part of their behavior is not present in the implementation. This means that the employees have no clue what is actually expected from them by their leader, nor what the rewards are. Then the question arises among the employees, "Why am I doing this", "What is expected from me" and "What do I gain from it". The aspect of having a manager who advocates for the to-be-adopted system is therefore included in the proposed TAM model. This combines well with past literature as well, Tortorella

and Fogliatto (2017) already described the different leadership styles as well as the strength of situational leadership. When looking at the results of both the MLQ and the interviews we see that the leaders in general have a lot in common, however, the response to their style during the implementation process is not the same across the companies. This could mean that they take on another role during the implementation process which can be categorized as another situation, henceforth the Situational Leadership discussed by Tortorella and Fogliatto (2017). These results therefore give more depth to the already discussed Situational Leadership theme by Tortorella and Fogliatto (2017).

The introduction of a new system, or rather any system that encompasses changes to the day-to-day operations of employees, tends to be resisted by employees. This is further shown by the interview results where most of the interviewees stated that there was initial resistance to the introduced system. Some of these interviewees even stated this was mainly due to overall resistance to change. What is interesting is that none of the interviewees stated that they were resistant to the change, they did notice resistance to change among their colleagues. When looking at the industry in which the companies operate, one can see that the environment is very dynamic by itself. This means that sometimes employees are asked to be dynamic as well. In other words, they are busy just with their regular tasks and the employees realize this. The overall Resistance to Change is therefore in general a barrier to Attitude Towards using the System, tackling this and providing clear directions can therefore prove essential to tackle this barrier. For this reason Resistance to Change is proposed as a barrier to one's attitude towards using the introduced system. This result is somewhat different from the research of Pekdemir and Kir (2019). In their research System Anxiety has a barrier effect of both Perceived Ease of Use and Perceived Usefulness. While in this research it affects Attitude Toward Using. When looking at the data from the interviews it became evident that while employees do see the system as useful and do not categorize the system as "probably hard to use" there is no relation discovered between these variables. Instead, System Anxiety is suggested to be a direct barrier to Attitude Towards Using. This is suggested because interviewees stated that they understood that the system was useful to the company and it could make their work easier, some employees were deemed just not good with change in general and that was reflected in their will to start using the system.

The interviews showed that Perceived Efficiency Gains and Motivations are a driver for the Perceived Usefulness of the system. This is shown by interview responses regarding the potential of the already implemented system. The majority of the interviews even stated that while not all of the functions were properly in use yet, they were excited to fully utilize this system to streamline their processes and day-to-day activities. Furthermore, the scalability of the introduced functionalities and their benefits showed to be a driver for the employees. Multiple interviewees stated that seeing the business being able to grow using this system gives them a perception of the usefulness of the system. Additionally, they also stated that if the company kept on growing, it eventually had to use these functionalities to keep up. Perceived Efficiency Gains and Motivations are therefore important drivers of perceived usefulness. When looking at past literature we see that Eryadi and Hidayanto (2020) already stated that reliability, scalability, and flexibility are first-rank priorities when it comes to implementing technology. This research adds to their findings by combining it with the TAM model which showed a positive relation with Perceived Usefulness, further deepening the understanding of this variable.

More broadly, the unused functions of an ERP system can also provide general improvements to the workflow. Among the Alise Group companies, the introduced ERP system has yet to

change most of the work processes. However, the system utilizes new communication ways, collaboration between companies, process overview, and process management. This oversight enables employees to see what inventory is in stock and in which location it lies. Simple improvements like this make their work more enjoyable and contribute to some degree in the overview on the work floor. It also enables them to see which of the inventory products needs to be bought to keep the production running. Insights into the order flow further enable them to show both the lead time but also the occupation of the manufacturing environment. On the sales side of the system, new things like price agreements with their customers are a lot more visible and easy to process, leading to fewer phone calls. Furthermore, the time tracking functionalities show the mean manufacturing time for products but also record the additional time made by its employees. This general insight grants value to the business itself by granting insights both on the sales order level and general periodic overviews. Thinking about such utilities within the system drives the interviewee's perceived usefulness.

When implementing a new system, a degree of training can help the employees understand the functionalities of the system, as well as find their way in how to do their day-to-day tasks. The interviews showed that the interviewees experienced this training very differently. Some of the interviewees stated that they had insufficient training before using the system. They either missed general training sessions, a personal training approach, or even documentation on how to use the system within their company. While this was recorded in multiple interviews some interviewees stated that this lack of training hindered them from finding out the actual usefulness of the system as well as the easiest ways to get their work done. They stated that they preferred to find it out themselves as opposed to training sessions and personal guidance. However, both these approaches can be seen as forms of training because even the employees who like to figure it out themselves could be given time to train with the system. Appendix 1 shows interestingly enough that training was not part of the implementation phases of the newly introduced system. Meaning that the implementation team decided not to focus on this aspect of the implementation and trusted the employee's skills to figure it out themselves or come up with questions afterward. This means that for the less patient users, the system can be perceived as both not useful due to not understanding its functionalities as well as not easy to use because they do not know the standard procedures of doing their day-to-day tasks within this system. Therefore, these external variables are clustered and are drivers of both perceived usefulness and perceived ease of use. Venkatesh et al. (2003) have variable facilitation conditions in their research, these also consist of training and support. In their research these variables exert a direct influence on user behavior, thereby impacting the implementation of new technologies like ERP systems. This research differs in that regard because it does not suggest this relation, instead, it suggests a positive relation between Perceived Ease of Use and Perceived usefulness. This is also reflected in the interview data, in which interviewees mention that the system is easy to use on itself already and that not a lot of training is needed in that regard. Instead, they deem it necessary to investigate the actual features of the system and perceive how these functions will prove useful to them and how easily they will be able to work with the system.

The variable IT ability is separate in the proposed Tam Model. This is done with a reason. During the interviews, it became evident that most of the interviewees had a positive attitude toward the system. However, they did not fully use all of the system functionalities as well. Some of them even used their coworkers to do things for them in the system. This suggests that IT ability is a moderating variable between actually using the system and their attitude toward the system. Investigating deeper showed that the IT ability even differed between the companies of the Alise Group. The implementation of the new system was even delayed for a year at one of the companies. While the actual reasons for postponing this implementation were not researched on their own, the disability of employees to grasp how to use the system

ERP utilization in the lifting industry

Tim Limmen

S2716798

might be a factor. However, what became evident during this research is that the employees in general did not have difficulty with a new ERP system on itself, but rather with the IT environment. Opening the platform, logging in and opening orders were initially simply too hard for them. Therefore, the external variable IT ability can be seen as a moderating variable between attitude towards using and actual system use. This somewhat contradicts the research of Davies (1985) where IT ability was not shown to be a factor. However, the proposed model suggests IT ability to have a moderating effect on the relationship between Attitude Towards Using and Actual System Use. Since some people showed a willingness to use the system but did not know how to handle even basic computer tasks.

The MLQ results showed the difference between the company leaders in Contingent Reward, which emphasizes the clear expectations and the reward behavioral patterns of the leaders. When looking at the gathered interview results, it became evident that the employees of company A & D could have taken a more central role. During the implementation, the leaders did therefore not really push the implementation of the to-be-introduced system. Sometimes this led to the employees taking a "Why should I do this" approach, meaning they did not try to actually use the system at all. If the leaders had taken a standing more in line with their natural Contingent Reward behavioral pattern, they could have enforced the system more. Showing the employees the behavior that was familiar to them from their leader in day-to-day operations. Therefore, the enforcement of the leader is a driver of actual system usage. The combinations of these variables allow for proposing an altered TAM model specifically for companies that manufacture for the lifting industry and suggest a total answer to the research question: *What are essential adoption factors on the of ERP-utilization for manufacturing firms within the lifting industry?*

8.2 THEORETICAL IMPLICATIONS

This research provides a unique insights into a little researched industry. The lifting industry is a highly dynamic environment, meaning that if you want to thrive as a manufacturing company in such an environment you have to be highly dynamic yourself (Van der Molen & Oosterwijk, 2022). This shows in the order lead times and product offering, exploring new product possibilities every day in order to facilitate your customers. Technology adoption in such a highly dynamic environment with dynamic processes is therefore a highly interesting research field, in which the TAM model and its later iterations do not touch upon. In order to investigate such an environment, a mixed methods approach, encompassing semi-structured interviews, the Multi Leadership Questionnaire and implementation documentation are an essential methodological basis for researching the technology acceptance. When looking at the results chapter, one can see that the proposed model builds further upon the original TAM model proposed by Davis (1985). In this model, Davies (1985) already identified the importance of Perceived Usefulness and Perceived Ease of Use with their driving relation to Attitude Towards Using. Which has a direct driving relation to the element of Actually Using The System. Davies (1985) shows that external variables can have a relationship between Perceived Usefulness and Perceived Ease of Use. However, these proposed variables are not shown in Davies (1985) since it was not made specific for this industry. The proposed model in this research shows some of the variables that act as external variables in the streamline on which Davies (1985) originally showed its model. The model also suggests the variable IT ability to have a moderating effect on the relationship between Attitude Towards Using and Actual System Use. It further shows that Manager enforcement has a direct driving relationship with Actual System Use, which was also not touched upon in Davies (1985).

This research further contributes some contextual findings within the technology adoption field by combining the known Multi Leadership Questionnaire (MLQ) with the semi-structured interview results. In which the behavioral patterns of the leaders of the discussed companies are used as a way of finding why there is a certain attitude towards the system. It shows that all leaders scored high on the Transformational leadership scales. In general, this means that these leaders possess skills for inspiring and motivating employees (Bass & Avolio, 2011b). During the adoption process, however, not all the leaders used these skills. This further underscores the importance of leadership during these system adoption projects. However, it also showed that the Contingent Reward scale was present to some degree in all of the leaders. Eventhough, none of the leaders had a central role in the implementation process. This means that the behavioral patterns based on clear expectations and rewards were not used during the implementation. This proved to be difficult for some of the interviewees who wished for a more central role of their leader in the implementation since the absence of this behavioral pattern can lead towards a "why should I do this" attitude.

The variable resistance to change has been researched many times by different researchers. Our research showed that anxiety about change can be an important factor for system adoption since it came forward in almost all the interviews. This aligns with the research of Pekdemir and Kir (2019), however, Pekdemir and Kir did not research the anxiety to change directly with the TAM variable Attitude Toward Using. This research suggests system anxiety to be a direct barrier to Attitude Toward Using.

Perceived Efficiency Gains and Motivations and Perceived Value and System Utility are other variables suggested by this research. While these variables were also introduced in the extension of the TAM model by Venkatesh et al. (2003) it did not describe the motivational aspect of the untouched potential/functionality of the system. Furthermore, this research suggests IT Ability as an external variable with a moderating effect on the relationship between Attitude Toward Using the system and the Actual use of the system. In past research by

ERP utilization in the lifting industry

Tim Limmen

S2716798

Venkatesh et al. (2003) the variable "Experience" does not have a direct moderating effect on a relationship towards Usage behavior". This suggests that in some environments IT ability can be a separate moderating variable towards adopting systems. Training and Support are essential factors in introducing a new technology Venkatesh et al. (2003). Venkatesh et al. (2003) state that facilitating conditions, like training and support, exert a direct influence on user behavior, thereby impacting the implementation of new technologies like ERP systems. However, Venkatesh et al. (2003) found Facilitating Conditions to have only a direct relation to Use behaviour, rather than Perceived usefulness or Perceived Ease of Use. This study differs in this regard and could provide a unique insight specific to dynamic manufacturing environments.

Taking all information into consideration, this research adds insights to various research fields. The most prominent one is the Technology Acceptance field. This is one of the first research available specifically aimed towards manufacturing companies in the Lifting Industry, allowing for a comparison to previous general research. Furthermore, this research also grants insights into Organizational Behaviour aspects. It suggests what decisions were made by the managers or support employees and what their effect was on the implementation success. By showing the factors to Alise Group themselves, they could possibly get even more out of their ERP system and try to use these factors for other technology adaptation projects as well. Furthermore, the stalled ERP adoption projects of some of the companies of Alise Group might find what they need in order to implement the system successfully. Additionally, it also suggests new insights into change management in general, suggesting what factors are important for a manufacturing firm in the lifting industry.

This proposed model can be tested for manufacturing companies within the lifting industry, on which a more quantitative study on a larger sample would possibly alter the results, but make them more generalizable. Furthermore, the proposed model can also be tested in other industries that are highly dynamic such as the public sector and their technology implementation. The public domain can be a highly dynamic structure since it has to deal with the changes in society, rural administration, and the opinion within their own administration.

8.3 PRACTICAL IMPLICATIONS

Beyond the theoretical implications, this research has unique practical implications to manufacturing firms in the lifting industry. An interesting result of this research is the relation of Manager Enforcement on Actual System Use. Because all of the companies of the Alise Group are all SME's their leaders have an important role in day-to-day operations. First of all, it shows that because the leader is important in these day-to-day operations, they are also expected to enforce the actual system that is to be adopted. Therefore, if a company in this industry is looking to implement a system, it is essential that the leader enforces the system in order for the employees to actually use the system, especially when there is limited amount of training done as in this case. The other variable regarding the role of the leaders is the centrality of the leader during the implementation. Companies in this industry can take advantage of this by both advocating for the system but also being present at central meetings about the system, listening to their employees about the adopting system, and reflecting their wishes and concerns towards the implementation team within the company.

The interviews also report a clear message when it comes to change, all of the companies had some degree of resistance to the change towards the new system. In order to create a mandate for the implementation of a system, this should be tackled as much as possible on these adoption projects. Happily, this model proposes a way of driving the attitude towards using by making the leader take a more central role within this change. The results of this study also suggest a general lack of training, guidance, and system documentation. The variables Training, System Documentation, and Guidance are grouped within the proposed model. This is for a reason. First of all, when looking at Appendix 1, we can see that training is not even present in the implementation phases of the ERP system. Meaning there is only a little attention to training. Combining this with the interviews shows that there is a demand for getting to know the system, which is summarized in 3 variables for this model. First, some employees want to get the chance to train in general, even without personal guidance in this training. They aim to figure the functionalities out themselves but still require the allocation of time. Then there are the people who want to train but with some sort of personal guidance that teaches them the principle of how to use the system. Both of these groups also have additional notes about the documentation of the system. Since training is not solely done in the implementation phase of the system, but also when a new colleague enters the company. System documentation is therefore essential during the implementation phase to read what are the standard procedures in the system, but also afterward on which its function is mainly about functionalities the employees forgot about. The companies are therefore advised to improve this part of their implementation processes since it is not even tackled in the available project planning in Appendix 1.

Companies that are planning to implement an ERP system would further benefit by envisioning the possibilities of the new system. They would also do well to communicate this vision with their employees. This is suggested because during the interviews it became evident that the employees got motivated by both the untouched potential of the system and its potential future projects, as well as the system functionalities of which their day-to-day operations will qualitatively improve. This allows also for better communication and clearer collaboration by knowing information about a company's products, price agreements but also inventory levels. These variables can therefore be of importance for perceiving the system as useful among employees. IT ability was another evident factor coming forth from the interviews, in which some employees mentioned that some of their colleagues struggled with general IT aspects surrounding the system. Companies would therefore do well to assess this beforehand since

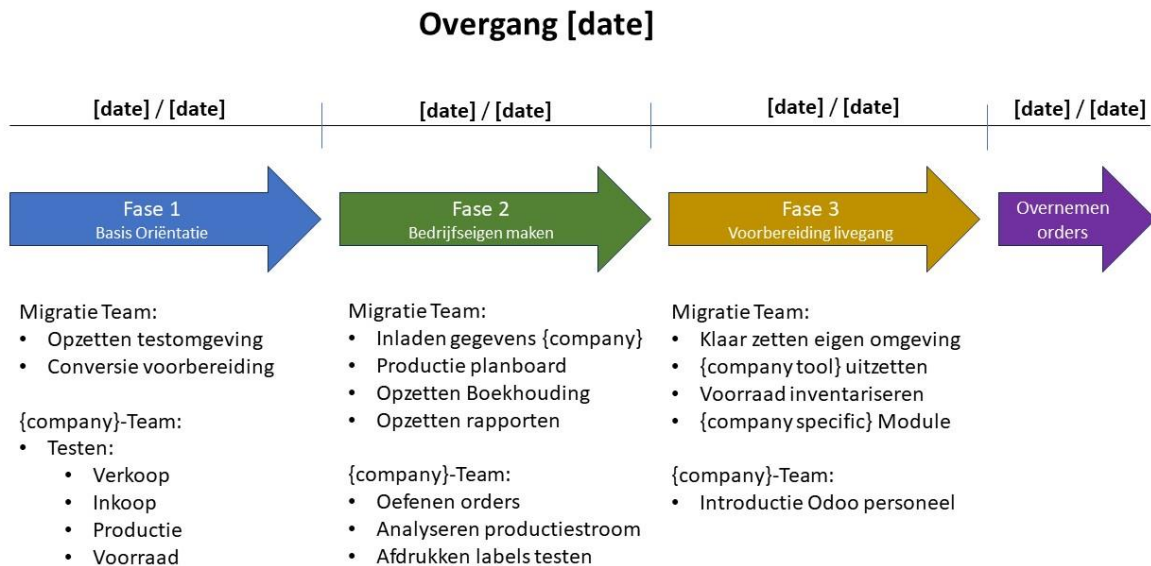
it could affect the relation between their attitude towards using the system and actually using the system. This might not be present in every company, but knowing the IT proficiency of one's employees can be important when one wants to if it is even viable to start the implementation process at that time. Taking these practical aspects into consideration suggests that a company could be more successful implementing an ERP system, leading to a well-tested system, a well-trained staff, a central leader, and an IT-proficient organization that takes full benefit of the adopted system.

8.4 LIMITATIONS AND FUTURE RESEARCH AVENUES

Taking the biases and limitations of this study into consideration, suggestions for future research can be made as well. In order to give the results of this research more meaning, a larger sample size could be investigated in a quantitative study. Doing so will test the proposed model for more companies that manufacture for the lifting industry, possibly forming a broader tested framework for implementing technologies in this field. Furthermore, there is a possibility for another qualitative subject for this research field. Since only a handful of variables are investigated in this thesis, it might be appropriate to research other variables that influence the implementation success of ERP systems. The variables highlighted in this research might also be applicable in other domains such as the public domain. The public domain is a highly dynamic environment since it has to play into actual problems in society and political decisions made by the government (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023). Therefore, it would be very interesting to see the proposed model tested in this domain.

9. APPENDICES

9.1 APPENDIX 1 – DOCUMENTED SYSTEM ADOPTION PHASES OF THE ALISE GROUP.



9.2 APPENDIX 2 - SEMI-STRUCTURED INTERVIEW GUIDE

Bedankt dat ik je mag interviewen. Vind je het goed als ik dit interview opneem? Je hebt een korte mail van mij ontvangen met het doel van het onderzoek en een vragenlijst over de bedrijfsleider binnen je bedrijf. Ik wil je melden dat alle verzamelde informatie geanonimiseerd wordt, hierdoor zijn de resultaten van dit interview nooit rechtstreeks naar jou te herleiden. Mocht je na dit interview willen dat je gegevens verwijderd worden kun je contact met mij opnemen. Dan worden je gegevens verwijderd.

Je werkt sinds enige tijd met {new system}. Kun je iets vertellen over je huidige werk en op welke manier je met dit systeem te maken hebt?

9.2.1 Potentiële vragen:

Anxiety:

- Welke invloed heeft angst of bezorgdheid gehad op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem binnen de verkoop- en productieafdelingen?
- Welke specifieke aspecten van het ERP-systeem veroorzaken mogelijk angst of bezorgdheid bij medewerkers in termen van bruikbaarheid en gebruiksgemak?
- Welke maatregelen kunnen worden genomen om eventuele angstgevoelens te verminderen en de ervaren bruikbaarheid en gebruiksgemak te verbeteren?

Vendor reputation:

- Wat was de invloed van de reputatie van de ERP-leverancier op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem binnen de verkoop- en productieafdelingen?
- Welke aspecten van de reputatie van de ERP-leverancier zijn belangrijk voor medewerkers bij het beoordelen van de bruikbaarheid en gebruiksgemak van het ERP-systeem?
- Heeft de reputatie van de leverancier invloed gehad op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem?

Socio-technical congruence:

- Hoe heeft de mate van sociale en technische afstemming tussen de verkoop- en productieafdelingen invloed gehad op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem?
- Kun je specifieke voorbeelden geven waarin de sociale en technische afstemming tussen de afdelingen heeft bijgedragen aan de bruikbaarheid en gebruiksgemak van het ERP-systeem?
- Welke eventuele uitdagingen of belemmeringen in termen van sociale en technische afstemming die de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem hebben beïnvloed?

Top Management leadership:

- Wat was de invloed van het leiderschap van het topmanagement op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem binnen de verkoop- en productieafdelingen?

- Welke specifieke maatregelen of acties van het topmanagement hebben bijgedragen aan de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem?
- Hoe heeft de betrokkenheid en communicatie van het topmanagement bijgedragen aan de perceptie van medewerkers over de bruikbaarheid en gebruiksgemak van het ERP-systeem?

Attitude towards using:

- Hoe heeft de attitude (houding) van medewerkers ten opzichte van het gebruik van het ERP-systeem invloed gehad op de ervaren bruikbaarheid en gebruiksgemak?
- Welke factoren hebben bijgedragen aan een positieve of negatieve attitude ten opzichte van het gebruik van het ERP-systeem en daarmee aan de ervaren bruikbaarheid en gebruiksgemak?
- Welke specifieke aspecten van het ERP-systeem zijn er die de houding van medewerkers hebben beïnvloed en daarmee de ervaren bruikbaarheid en gebruiksgemak hebben beïnvloed?

Performance efficacy:

- Hoe hebben medewerkers hun eigen vermogen beoordeeld om het ERP-systeem met succes te gebruiken en ermee te werken in termen van prestatie-efficiëntie?
- Welke specifieke vaardigheden, kennis of training hebben bijgedragen aan het gevoel van bekwaamheid en prestatie-efficiëntie bij het gebruik van het ERP-systeem?
- Welke invloed heeft de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem invloed gehad op de prestatie-efficiëntie van medewerkers?

Vendor reputation (herhaling voor volledigheid):

- Welke invloed heeft de reputatie van de ERP-leverancier invloed gehad op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem binnen de verkoop- en productieafdelingen?
- Hoe heeft de reputatie van de leverancier de perceptie van medewerkers over de bruikbaarheid en gebruiksgemak van het ERP-systeem beïnvloed?

Scalability and performance:

- Welke invloed heeft de schaalbaarheid en prestatie van het ERP-systeem invloed gehad op de ervaren bruikbaarheid en gebruiksgemak binnen de verkoop- en productieafdelingen?
- Kun je specifieke voorbeelden geven waarin de schaalbaarheid en prestatie van het ERP-systeem een positieve of negatieve invloed hebben gehad op de werkzaamheden in de verkoop- en productieafdelingen?
- In welke situaties is de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem als ontoereikend werden ervaren en daardoor de prestatie-efficiëntie hebben beïnvloed?

Training:

- Welke training is er beschikbaar gesteld aan medewerkers in de verkoop- en productieafdelingen om hen te ondersteunen bij het gebruik van het ERP-systeem?
- Wat heeft beschikbare training bijgedragen aan het begrip, de vaardigheden en de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem?

- Welke specifieke trainingsbehoeften of aanbevelingen die medewerkers hebben geïdentificeerd om de ervaren bruikbaarheid en gebruiksgemak te verbeteren?

Change management support:

- Hoe heeft de ondersteuning op het gebied van verandermanagement bijgedragen aan de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem binnen de verkoop- en productieafdelingen?
- Kun je specifieke voorbeelden geven van maatregelen, communicatie of begeleiding die zijn genomen om medewerkers te ondersteunen tijdens de overgang naar het gebruik van het ERP-systeem?
- Welke eventuele uitdagingen zijn er geweest bij het implementeren van veranderingen en hoe zijn deze aangepakt om de ervaren bruikbaarheid en gebruiksgemak te verbeteren?
- Welke andere variabelen of factoren die je kunt identificeren die van invloed zijn geweest op de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem zijn er binnen de verkoop- en productieafdelingen?
- Welke verbeteringen of aanpassingen zou je voorstellen om de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem te verbeteren in de verkoop- en productieafdelingen?
- Hoe zou je over het algemeen de tevredenheid van medewerkers beoordelen met betrekking tot de ervaren bruikbaarheid en gebruiksgemak van het ERP-systeem in de verkoop- en productieafdelingen?

ERP utilization in the lifting industry
 Tim Limmen
 S2716798

9.3 APPENDIX 3 – MLQ RESULTS PERCENTAGES FROM MAXIMUM SCORE

Characteristic	Scale Name	Manager Company A	Manager Company B	Manager Company C	Manager Company D	Manager Company E
Transformational	Idealized attributes or Idealized influence attributes	66,25%	82,81%	76,56%	71,88%	100,00%
Transformational	Idealized behaviors or Idealized influence behaviors	71,25%	82,81%	75,00%	75,00%	87,50%
Transformational	Inspirational Motivation	71,25%	75,00%	90,63%	90,63%	87,50%
Transformational	Intellectual Stimulation	63,75%	67,19%	53,13%	59,38%	71,88%
Transformational	Individual Consideration	72,50%	59,38%	76,56%	64,06%	84,38%
Transactional	Contingent Reward	57,50%	43,75%	68,75%	67,19%	53,13%
Transactional	Management by exception (active)	58,75%	45,31%	35,94%	43,75%	43,75%
Passive avoidant	Management by exception (passive)	56,25%	32,81%	48,44%	40,63%	37,50%
Passive avoidant	Laissez-Faire	35,00%	34,38%	50,00%	21,88%	31,25%

ERP utilization in the lifting industry
 Tim Limmen
 S2716798

9.4 APPENDIX 4 – MLQ RESULTS

Characteristic	Scale Name	Manager Company A	Manager Company B	Manager Company C	Manager Company D	Manager Company E	Stdev
Transformational	Idealized attributes or Idealized influence attributes	10,6	13,25	12,25	11,5	16	1,524
Transformational	Idealized behaviors or Idealized influence behaviors	11,4	11,5	12	12	14	0,728
Transformational	Inspirational Motivation	11,4	12	14,5	14,5	14	1,264
Transformational	Intellectual Stimulation	10,2	10,75	8,5	9,5	11,5	0,872
Transformational	Individual Consideration	11,6	9,5	12,25	10,25	13,5	1,236
Transactional	Contingent Reward	9,2	7	11	10,75	8,5	1,268
Transactional	Management by exception (active)	9,4	7,25	5,75	7	7	0,848
Passive avoidant	Management by exception (passive)	9	5,25	7,75	6,5	6	1,18
Passive avoidant	Laissez-Faire	5,6	5,5	8	3,5	5	1,024

10. REFERENCES

- Bradford, M., & Florin, J. (2003). Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems. *International Journal of Accounting Information Systems*, 4(3), 205–225. [https://doi.org/10.1016/s1467-0895\(03\)00026-5](https://doi.org/10.1016/s1467-0895(03)00026-5)
- BSB Hoorn B.V. (2021, September 20). BSB | Hijsmaterieel En Technische Inspecties. <https://www.b-s-b.nl/>
- Buer, S., Strandhagen, J. W., Semini, M., & Strandhagen, J. O. (2020). The digitalization of manufacturing: investigating the impact of production environment and company size. *Journal of Manufacturing Technology Management*, 32(3), 621–645. <https://doi.org/10.1108/jmtm-05-2019-0174>
- Bughin, J., Catlin, T., Hirt, M., & Willmott, P. (2018, January 25). *Why digital strategies fail*. McKinsey & Company. <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/why-digital-strategies-fail#/>
- Chopra, R., Sawant, L., Kodi, D., & Terkar, R. (2022). Utilization of ERP systems in manufacturing industry for productivity improvement. *Materials Today: Proceedings*, 62, 1238–1245. <https://doi.org/10.1016/j.matpr.2022.04.529>
- Compeau, D., & Higgins, C. P. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *Management Information Systems Quarterly*, 19(2), 189. <https://doi.org/10.2307/249688>
- Corley, K. G., & Gioia, D. A. (2004). Identity Ambiguity and Change in the Wake of a Corporate Spin-off. *Administrative Science Quarterly*, 49(2), 173–208. <https://doi.org/10.2307/4131471>
- Davis, F. D. (1985). A technology acceptance model for empirically testing new end-user information systems : theory and results. *Ph. D. Dissertation, Massachusetts Institute Of Technology*.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319. <https://doi.org/10.2307/249008>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982–1003. <https://doi.org/10.1287/mnsc.35.8.982>
- DongPing Tang, & LianJin Chen. (2011). A review of the evolution of research on information Technology Acceptance Model. *2011 International Conference on Business Management and Electronic Information*. <https://doi.org/10.1109/icbmei.2011.5917980>
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy of Management Review*, 14(4), 532–550. <https://doi.org/10.5465/amr.1989.4308385>
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building From Cases: Opportunities And Challenges. *Academy of Management Journal*, 50(1), 25–32. <https://doi.org/10.5465/amj.2007.24160888>
- Enduro Softslings. (2022). *Enduro softslings*. <https://www.softslings.com/>
- Erca-trading.nl. (2016). <https://erca-tex.nl/>
- Eryadi, R. A., & Hidayanto, A. N. (2020). Critical Success Factors for Business Intelligence Implementation in an Enterprise Resource Planning System Environment Using DEMATEL: A Case Study at a Cement Manufacture Company in Indonesia. *Journal of Information Technology Management*, 12(1), 67–85. <https://doi.org/10.22059/jitm.2020.296055.2460>
- Gefen, D., & Ragowsky, A. (2005). A Multi-Level Approach to Measuring the Benefits of an Erp System in Manufacturing Firms. *Information Systems Management*, 22(1), 18–25. <https://doi.org/10.1201/1078/44912.22.1.20051201/85735.3>
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking Qualitative Rigor in Inductive Research. *Organizational Research Methods*, 16(1), 15–31. <https://doi.org/10.1177/1094428112452151>
- Graeff, C. L. (1997). Evolution of situational leadership theory: A critical review. *Leadership Quarterly*, 8(2), 153–170. [https://doi.org/10.1016/s1048-9843\(97\)90014-x](https://doi.org/10.1016/s1048-9843(97)90014-x)
- Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? *Field Methods*, 18(1), 59–82. <https://doi.org/10.1177/1525822x05279903>

ERP utilization in the lifting industry

Tim Limmen

S2716798

- Gupta, M. S. (2020, March 24). *What is Digitization, Digitalization, and Digital Transformation?* ARC Advisory Group. <https://www.arcweb.com/blog/what-digitization-digitalization-digital-transformation>
- Gupta, R. (2021). Industry 4.0 Adaption in Indian Banking Sector—A Review and Agenda for Future Research. *Vision: The Journal of Business Perspective*, 27(1), 24–32. <https://doi.org/10.1177/0972262921996829>
- Haddara, M., & Elragal, A. (2015). The Readiness of ERP Systems for the Factory of the Future. *Procedia Computer Science*, 64, 721–728. <https://doi.org/10.1016/j.procs.2015.08.598>
- Hamid, A. A., Razak, F. Z. A., Bakar, A. A., & Abdullah, W. S. W. (2016). The Effects of Perceived Usefulness and Perceived Ease of Use on Continuance Intention to Use E-Government. *Procedia Economics and Finance*, 35, 644–649. [https://doi.org/10.1016/s2212-5671\(16\)00079-4](https://doi.org/10.1016/s2212-5671(16)00079-4)
- Heavy Lifting*. (2022). Enduro Softslings. <https://www.softslings.com/expertises/heavy-lifting/>
- Hersey, P., & Blanchard, K. H. (1969). *Management of organizational behavior*. <http://apdf276.ecoolbooks.com/management-of-organizational-pdf-8928025.pdf>
- Hijsmaterialen.nl* | *BVG Hijsmaterialen B.V.* (2023). <https://hijsmaterialen.nl/#>
- Holzmann, P., Schwarz, E. J., & Audretsch, D. B. (2018). Understanding the determinants of novel technology adoption among teachers: the case of 3D printing. *Journal of Technology Transfer*, 45(1), 259–275. <https://doi.org/10.1007/s10961-018-9693-1>
- Hylving, L. (2015). *Competing Values in the Era of Digitalization*. <https://doi.org/10.1109/hicss.2015.499>
- Jarvenpaa, S. L., Tractinsky, N., & Saarinen, L. (2006). Consumer Trust in an Internet Store: A Cross-Cultural Validation. *Journal of Computer-Mediated Communication*, 5(2), 0. <https://doi.org/10.1111/j.1083-6101.1999.tb00337.x>
- Kamal, S. A., Shafiq, M., & Kakria, P. (2020). Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). *Technology in Society*, 60, 101212. <https://doi.org/10.1016/j.techsoc.2019.101212>
- Koh, S. L., & Saad, S. M. (2006). Managing uncertainty in ERP-controlled manufacturing environments in SMEs. *International Journal of Production Economics*, 101(1), 109–127. <https://doi.org/10.1016/j.ijpe.2005.05.011>
- Koster-IT*. (2022, January 19). Koster-IT. <https://www.koster-it.nl/>
- Lai, P. T. (2017). The literature review of technology adoption models and theories for the novelty technology. *Journal of Information Systems and Technology Management*, 14(1), 21–38. <https://doi.org/10.4301/s1807-17752017000100002>
- Limmen, T. (2022). *The characterization of a leader - ELROD*.
- Lu, Y. (2017). Industry 4.0: A survey on technologies, applications and open research issues. *Journal of Industrial Information Integration*, 6, 1–10. <https://doi.org/10.1016/j.jii.2017.04.005>
- Lukac, D. (2015). The fourth ICT-based industrial revolution “Industry 4.0” — HMI and the case of CAE/CAD innovation with EPLAN P8. *2015 23rd Telecommunications Forum Telfor (TELFOR)*. <https://doi.org/10.1109/telfor.2015.7377595>
- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2023, August 15). *Wat verwacht de Rijksoverheid van een publiek leider?* Organisatie | Algemene Bestuursdienst. <https://www.algemenebestuursdienst.nl/organisatie/wat-verwacht-de-rijksoverheid-van-een-publiek-leider>
- Mohd.Yusoff, Y., Muhammad, Z., Mohd Zahari, M. S., Pasah, E. S., & Robert, E. (2009). Individual Differences, Perceived Ease of Use, and Perceived Usefulness in the E-Library Usage. *Computer and Information Science*, 2(1). <https://doi.org/10.5539/cis.v2n1p76>
- Moon, Y. B. (2007). Enterprise Resource Planning (ERP): a review of the literature. *International Journal of Management and Enterprise Development*, 4(3), 235. <https://doi.org/10.1504/ijmed.2007.012679>

ERP utilization in the lifting industry

Tim Limmen

S2716798

- Moore, G. C., & Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, 2(3), 192–222. <https://doi.org/10.1287/isre.2.3.192>
- Multifactor Leadership Questionnaire (MLQ) - Tests, Training - Mind Garden*. (n.d.). <https://www.mindgarden.com/16-multifactor-leadership-questionnaire>
- Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology*, 15(3), 263–280. <https://doi.org/10.1002/ejsp.2420150303>
- Northouse, P. G. (2010). *Leadership : Theory and Practice*. <http://cds.cern.ch/record/1630817>
- Oosterwijk (Host), T., & Van Der Molen, S. (2022, November 17). *B2B Marketstrategie in de Offshore Heavy Lifting*.
- Orruño, E., Gagnon, M. P., Asúa, J. M., & Abdeljelil, A. B. (2011). Evaluation of tele dermatology adoption by health-care professionals using a modified Technology Acceptance Model. *Journal of Telemedicine and Telecare*, 17(6), 303–307. <https://doi.org/10.1258/jtt.2011.101101>
- Park, E. S., & Park, M. S. (2020). Factors of the Technology Acceptance Model for Construction IT. *Applied Sciences*, 10(22), 8299. <https://doi.org/10.3390/app10228299>
- Pekdemir, I., & Kir, M. (2019). User anxiety as an external variable of technology acceptance model: A meta-analytic study. *Procedia Computer Science*, 158, 715–724. <https://doi.org/10.1016/j.procs.2019.09.107>
- Plouffe, C. R., Hulland, J. S., & Vandenbosch, M. (2001). Richness versus Parsimony in Modeling Technology Adoption Decisions: Understanding Merchant Adoption of a Smart Card-Based Payment System. *Information Systems Research*, 12, 208–222.
- Projects - Enduro Softslings*. (2022). Enduro Softslings. <https://www.softslings.com/projects/>
- Robbins, S. P., Judge, T., & Campbell, T. (2016). *Organizational Behaviour*.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). Research methods for business students, 8th ed. In *Pearson eBooks*. <http://dspace.uniten.edu.my/handle/123456789/18304>
- Seyal, A. H. (2015). Examining the Role of Transformational Leadership in Technology Adoption: Evidence from Bruneian Technical & Vocational Establishments (TVE). *Journal of Education and Practice*, 6(8), 32–43. <https://files.eric.ed.gov/fulltext/EJ1082744.pdf>
- Shajrawi, A., & Aburub, F. (2022). Impact of ERP usage on service differentiation: role of mediating effect of organizational agility. *Arab Gulf Journal of Scientific Research*. <https://doi.org/10.1108/agjsr-06-2022-0085>
- Sierra, J. L., Vizcaíno, A., Genero, M., & Piattini, M. (2018). A systematic mapping study about socio-technical congruence. *Information & Software Technology*, 94, 111–129. <https://doi.org/10.1016/j.infsof.2017.10.004>
- The world*. (2022). <https://www.nottingham.ac.uk/digitalfutures/digital-futures/the-world.aspx>
- Thompson, G., & Glasø, L. (2018). Situational leadership theory: a test from a leader-follower congruence approach. *Leadership & Organization Development Journal*, 39(5), 574–591. <https://doi.org/10.1108/lodj-01-2018-0050>
- Thompson, R. W., Higgins, C. P., & Howell, J. M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *Management Information Systems Quarterly*, 15(1), 125. <https://doi.org/10.2307/249443>
- Tortorella, G. L., & Fogliatto, F. S. (2017). Implementation of lean manufacturing and situational leadership styles. *Leadership & Organization Development Journal*, 38(7), 946–968. <https://doi.org/10.1108/lodj-07-2016-0165>
- Van der Molen, S., & Oosterwijk, T. (2022). *B2B Merkstrategie in de Offshore Heavy Lifting*.
- Van Eeden, R., Cilliers, F., & Van Deventer, V. (2008). Leadership Styles and Associated Personality Traits: Support for the Conceptualisation of Transactional and Transformational Leadership. *South African Journal of Psychology*, 38(2), 253–267. <https://doi.org/10.1177/008124630803800201>

ERP utilization in the lifting industry

Tim Limmen

S2716798

- Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425. <https://doi.org/10.2307/30036540>
- Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences*, 39(2), 273–315. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods*. Sage Publications, Inc.
- Yukl, G. (2006). *Leadership in Organizations*. <http://www.ulb.tu-darmstadt.de/tocs/216774977.pdf>

UNIVERSITY OF TWENTE
Drienerlolaan 5
7522 NB Enschede

P.O.Box 217
7500 AE Enschede

P +31 (0)53 489 9111

info@utwente.nl
www.utwente.nl