



The success of digital transformation

*Organisation member involvement in digital transformation in
logistical processes*

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Preface

In front of you, I present my master thesis ‘The success to digital transformation: Organisation member involvement in digital transformation in logistical processes.’. Throughout my bachelor I developed an interest in processes and improvement. Therefore, I decided to do a master in Organisational Design and Development at the Radboud University in Nijmegen. This thesis is the end of an era of learning and studying in a school like setting. I hope to keep studying and learning the rest of my life and career.

The last two years have been an exciting, but also unusual academic journey. Because of Covid-19 the last 1,5 years were not as I imagined they would be. Instead of sitting in the library and having life discussions with my peers, this entire thesis is written in a small bedroom in my home. However, besides all the unexpected events I am grateful to be able to say that I could describe the process as intense, fulfilling, enjoyable and a big learning opportunity. Now I would like to take the opportunity to express my sincere gratitude to everyone who helped me throughout this period of writing my master thesis.

First of all, I would like to thank my supervisor Dr. A. (Arjen) Verhoeff, who helped me to be a better writer and academic. He gave me insights, supported me no matter the time of the day, and guided me during this entire process. I would also like to thank Dr. ir. L.J. Lekkerkerk for his feedback on my proposal and the grading and reading of my final thesis.

Additionally, a thanks to my peers and friends who provided me with feedback, emotional support and validation. Likewise, many thanks to the organisations and participants for sharing their stories and providing me with answers.

Finally, a grateful and loving thanks to my parents and sister for always believing in me. They have supported and encouraged me through all the 24 years I am learning, developing and studying and provided me with a loving home.

I hope you will enjoy reading this thesis.

Dieneke Folmer

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Abstract

Digital transformation is a complex change which closes the gap between the internal and external environment by the means of technology. For many organisations maturing in digital transformations is a serious challenge. For instance, around 66% of ICT projects fail, because of various factors, like the lack of involvement of organisation members. Organisation member involvement is considered a success factor of digital transformation by many researchers. Only limited research has been done on the involvement of organisation members in digital transformations. This study focuses on how organisation member involvement can be understood in digital transformation in logistical processes by applying qualitative and quantitative research methods. The study consists of eight interviews, a document analysis of the three participating organisations and a quantitative study of the members of the three participating organisations. Because of the abductive nature of the research, new indicators and mechanisms emerged from the results. Based on the results of this study it can be concluded that organisation members find it important to be involved in the digital transformation. The involvement may be limited to passive or active involvement. Passive involvement can be seen as information sharing and active involvement can be seen as consulting organisation members but also letting them be a partner in the decision-making process. Whereas passive involvement should be a given in digital transformation, active involvement leads to a better chance of success in the digital transformation. Moreover, the findings indicate a difference in involvement depending on the hierarchical position an organisation member has. For example, managers are more often actively involved, than employees. More mature organisations utilise active involvement to smoothen the digital transformation. Future research could further examine organisation member involvement in digital transformation, by for instance applying factor analysis on the indicators reviewed in this study.

Keywords: Digital transformation, organisation member involvement, digital maturity, organisational change

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Chapter 1 Introduction

1.1 Organisation member involvement in digital transformation

Digital transformation has radically changed the way business processes, products and relationships are delivered (Hartl & Hess, 2017). Digital transformation is the organisation wide change process of enabling digital technologies to streamline the operational structure and activities. The key concepts mentioned in this chapter will be defined more thoroughly in chapter 2.1. An example of one of the organisations that will be examined in this study is an organisation that will be called Reynolds Corp., which is a fictive name to maintain anonymity. For several years now, this organisation is going through a digital transformation. The need for digitising the logistical processes was high because the organisation had to process a growing number of orders in business-to-business (B2B), and business-to-consumer markets(B2C). As the growth in the consumer market increased, the order size became smaller. This means that a warehouse employee had to perform more tasks for the same quantity of products sold. Various attempts had already been made to acquire new digital systems or to new digital systems to work more efficient. An essential element for success in the digital change process has been the involvement of the organisation members at Reynolds Corp. Various groups of organisation members are together involved in a problem, so they have involvement from different departments. Involvement means that an organisation member has influence over the decision-making process and if she/he is informed about changes happening in the organisation. Despite all the failures which can occur in a digital transition, the experience of the Reynolds Corp, illustrates that influence of organisation members matters. It suggests that some sort of interactive mechanism may be unveiled between digital transformation and organisation member involvement.

Organisations will need to further transform the way they are doing business, so they can survive in the competitive landscape (Hartl & Hess, 2017; Porter & Heppelmann, 2014). Key elements of a digitally transformed organisation are business, things, cloud, data and people (Balakrishnan & Das, 2020). Digital transformation may require to install new technology in a logistical process, and may even influence processes throughout the entire organisation. It is crucial for organisations to consider digital transformation, since it allows them to serve their customers as efficiently as possible (Korchagina, Kalinina, Burova, & Ostroskaya, 2020). SAP reported that while 84% of companies worldwide consider digital transformation to be essential for their survival, just 3% have accomplished an organisation-wide digital transformation (Elliott, 2017). These studies show that many organisations are currently digitally transforming or are considering it.

The above implies that digital change is necessary in different aspects of today's business environment. However, there is still a great deal to be understood if digital transformation wants to be successfully implemented (Hodges, 2007; Osmundsen et al., 2018). There are more than enough

examples of digital projects which have failed (Badevi & Shebab, 2016). In fact, about 66% of digital projects do not succeed (Dijk, 2009). According to the literature, this is due to, among others, poor project management, lack of communication, unfamiliarity with scope, technical integration issues and insufficient involvement of organisation members (Balakrishnan & Das, 2020; Dijk, 2009; Stelzer & Mellis, 1998). The latter draws attention: what are necessary conditions for organisation members to think along with a digital transformation? This thesis will focus on the role of organisation member involvement in digital transformation in logistical processes from an organisational change perspective. Organisation members are all the members of an organisation independent of their position within the organisation, for example employees and managers.

Digital transformation often does not occur by accident and is planned (Halpern, Mwesiumo, Suau-Sanchez, Budd, & Bråthen, 2021). This means that organisation member involvement and all the other change activities can be planned and organisations can think of these activities in advance. But apparently this does not usually happen in practice according to the cited literature. Even more so, it is interesting to explore whether a systematic involvement of members in a digital transformation can be identified. As illustrated in the example above, involving organisation members can be vital for organisational change to happen. According to the study of Korchagina et al. (2020) when organisations involve their members in digital transformation, it becomes more feasible to adapt the organisation to the environment and customer demands.

1.2 Problem statement

The academic problem of the study as mentioned above is to understand the ‘why, what, and more specific the how’ of involving organisation in order to succeed in digital transformation. Digital transformation requires a rethinking of the concept of a firm, comprising the wide scope of new business models up to and including the change of organisational processes (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013). In this thesis the latter will be studied: organisational change is the transformation of key elements in an organisation, for example the business model the structure or operational processes. Digital transformation is a form of organisational change, since it transforms an organisation’s processes by means of digital technology.

As has been stated before organisation member involvement is essential in digital transformation which is likewise shown in a study of Stelzer & Mellis (1998). The study shows that relative importance of support and commitment of managers towards digital transformation has a positive impact of 91% on digital transformations. Staff involvement has a positive impact of 84% on digital transformation. These two factors were ranked highest in the list of factors positively affecting digital transformation (Stelzer & Mellis, 1998). The studies show that not involving the various kind of organisation members, or wrongly involving them, can have a negative effect on the digital

transformation process (Osmundsen, Iden, & Bygstad, 2018). The negative effect, which stems from the failure of digital transformation, may result in organisation members resisting other changes or projects in the future (Petrikina, et al., 2017). It is therefore essential that involvement can be understood.

Organisations need to keep improving their processes, because organisations must be able to adapt to their environment (Warner & Wäger, 2019). Digital transformation contributes to closing the gap between the internal and external environment of organisations. For example, it is important for organisations to attain competitive advantages or compete because of globalisation (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013). Organisations will eventually suffer if their digital transformation does not succeed. Organisation members are considered, a necessary factor of organisational changes, because they are able to influence if change will be integrated (Choi, 2011). This means that it is very important that members are involved, as they are vital to succeed in digital transformation. The problem addressed in this thesis stems from the failure of digital transformations. While digital transformations are essential to gain competitive advantage, most organisations fail to advance in them. Despite the many other factors that are essential for a digital transformation to succeed, the choice has been made to specifically study the involvement of organisation members in digital transformations.

1.3 Research objective and research question

The problem described in this thesis is when organisations do not involve members of the organisation, the chances of the digital transformation succeeding are reduced (Heravi, Coffey, & Trigunarsyah, 2014). The aim of the study is to explore involvement of organisation members in digital transformations by utilising qualitative and quantitative research methodology to obtain data from various organisation members of three different organisations. The research question is: *“How can organisation members involvement be understood in the digital transformation in logistical processes?”*. The question will be narrowed down focussing on organisational change with subtopics like, digital transformation, organisation member involvement and digital maturity. The thesis has been written from an organisational change perspective.

1.4 Practical and theoretical relevance

The importance of the problem mentioned in 1.3 is reflected by the amount of times organisational member involvement is referred to as a success factor for digital transformation in various studies (Bordeleau, 2020; Osmundsen et al., 2018; Stelzer & Mellis, 1998). It is necessary that digital transformation lasts in an organisation for it to benefit (Kohnke, 2017). Consequently, it is crucial to understand organisation member involvement in digital transformations. In organisational change

literature organisation member involvement is mentioned, but this is not directly connected to digital transformation. According to Osmundsen et al. (2018) future research should focus more on employees and management in digital transformation, since it is significant for practice and research, but follow up research could not yet be found. To the best of my knowledge no literature can be found which connects the two concepts together. The theoretical relevance of this thesis is connecting the two concepts of organisation member involvement and digital transformation.

This study is relevant for practitioners since they may extract lessons to translate the insights into their own context. It may show consultants, managers or employees who are dealing with digital transformation how organisation members should be involved to fluently digitally mature and what organisation members find important about involvement (Balakrishnan & Das, 2020).

1.5 Scope of the study

This study focuses on digital transformation as a part of organisational change in logistical processes. Throughout this thesis logistical processes refers to the processes which may occur within a warehouse. More specific for this study, the logistical process entails all the processes in the warehouse, for instance the order process but also the return procedure. This study is going to be executed in the technical wholesale industry in the Netherlands. The three organisations are similar in the products they sell. This choice has been made, because digital transformation has an influence on the entire organisation, but specific processes had to be chosen to narrow the study down.

The choice for this specific area has been made, because operational processes are often first to be digitalised in an organisation (Balakrishnan & Das, 2020). The logistical processes in these organisations are an example of the operational process. Also, after IT & communication itself, manufacturing or the wholesale industry are the largest groups which has been studied regarding digital transformations (Kutnjak, Pihiri, & Furjan, 2019). The steps in a logistical order process are physically visible and thus easier to examine. Logistical processes have likewise been chosen, because when the first part of digitalisation of processes in an organisation is successful, the stakeholders of other processes might be more eager to participate in the possible subsequent changes (Weick, 1984).

The other focus of the study is organisation member involvement. As has been stated before, organisation members are all the members of the organisation independent of their position. This means that an organisation member can be a manager or employee. Managers and employees are both studied, however there might be differences in how they get involved. Managers and employees might have different roles related to digital transformation. For this study, external people hired by the organisation will also be viewed as employees. The study will show how the different roles can be understood in involvement.

1.6 Outline of the thesis

The thesis is structured as follows; In chapter two the literature is reviewed related to digital transformation, organisation member involvement and their interaction. The methodology and the chosen data process is outlined in the third chapter. The fourth chapter presents the results from the data collection and analyses. In the fifth chapter the conclusions regarding the research question will be presented. Furthermore, the chapter provides interpretations and discussion of the results and the theoretical- and practical reflections are given. Also, the limitations of this study and the suggestions for future research will be discussed.

Chapter 2 Theoretical foundation

This chapter provides the theoretical foundation to answer the research question, how organisation member involvement can be understood in digital transformation. In 2.1 the relevant concepts will be defined and explained. In 2.2 will review literature on digital transformation. Furthermore, in 2.3 the theory of organisation member involvement will be explained. In 2.4 the concepts described in the previous paragraphs will be integrated and the interaction will be described. Finally, 2.5 will summarize the literature and 2.6 will show the theoretical foundation for systemic framework applied in the methodology.

2.1 Introduction of concepts and definitions

The concepts used in this thesis are defined, starting with organisation change. Organisational change is the perspective from which digital transformation and organisation member involvement are viewed. This concept has been defined many times, for example: *“Change, we argue, is the rewearing of actors’ web of beliefs and habits of action to accommodate new experiences obtained through interactions”* (Tsoukas & Chia, 2002, p. 567). This shows that change happens because organisation members interact with each other. Another example is: *“Every action taken by organisation members either reproduces existing organisational properties or it alters them. Through sustained adjustments in organizing practices -- however unintentional and unacknowledged -- social changes can be enacted. Change is thus inherent in everyday human action.”* (Orlikowski, 1996, p. 70). Orlikowski shows that only the organisation members can create changes in an organisation. However, organisational change is often not purely just the interaction between organisation members, organisational change is often planned or thought out to reach a specific goal. *“Change management is the process of continually renewing an organisation's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers.”* (Moran & Brightman, 2000, p. 66). This shows that for an organisational change to happen certain key aspects of the organisation needs to be altered to improve the fit with the internal and external environment. Therefore, the following definition applies to this thesis: Organisational change is a process of transforming an organisation’s key elements such as, direction, structure, habits, capabilities or processes to improve the fit with the internal and external environment. This definition describes that organisational change can appear in many different forms or parts of an organisation. Organisational change and organisation member involvement ought to be differentiated from each other, however, this is nearly impossible since they are so interrelated. In this study organisational change is related to the process of change and organisation member involvement is related to the decision-making process and information sharing.

Osmundsen et al. (2018) reviewed that digital transformation is generally defined as an organisational change enabled by digital technology, which transforms how business operates. Another example is:

“Digital transformation refers to the process of transforming the business into digital business in which allied technologies transform all business model components, including value proposition and value delivery, in a meaningful and integrated manner.” (Balakrishnan & Das, 2020, p. 531). This definition shows that digital transformation transforms a business to a digital business. Digital technology is very important in digital transformation, as you can see in the following definition: *“Use of new digital technologies, such as social media, mobile, analytics or embedded devices, in order to enable major business improvements like enhancing customer experience, streamlining operations or creating new business models”* (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2014, p. 2). However, other researchers show with their definition of digital transformation that this requires a fundamentally change of all separate parts of an organisation: *“Digital transformation frequently involves transformations of key business operations and affects products and processes, as well as organisational structures, as companies need to establish management practices to govern these complex transformations”* (Reis, Amorim, Melão, & Matos, 2018, p. 411). As well as in the following definition: *“Becoming a digital organisation requires fundamental changes regarding how organisations operate and do business”* (Kohnke, 2017, p. 83). To bring all these components together, the following definition applies in this thesis: digital transformation refers to the organisational change process through the use of digital technologies with the result of an improved, streamlined and effective processes. This definition has been chosen, because it shows that digital transformation is a form of organisational change, while utilising digital technology.

Organisation member involvement is the second key concept in this thesis. Organisation member involvement can be divided into two separate elements, organisation members and involvement. The term organisation members is not explicitly defined by literature. Organisation members can be seen as a subset of the category stakeholders. Stakeholders are single, independent actors according to Freeman (1984). Stakeholders can be divided in internal stakeholders (e.g., an employee or manager) and external stakeholders (e.g., suppliers, consumers, or governments) (Freeman, 1984). This thesis focusses on the internal stakeholder part of Freeman’s stakeholder model. Internal stakeholders will be called organisation members in this thesis. Organisation members are all the members of an organisation independent of their position within the organisation. Organisation members are, for instance, managers and employees. While external members (e.g., customers, suppliers and governments) could also influence digital transformation, the choice has been made to study internal members, as they have the most influence on digital transformation (Stelzer & Mellis, 1998). Involvement can be defined as the following: *“The exercise, by organisation members of influence over how their work is organised and carried out”* (Fenton-O’Creevy, 2001, p. 25). According to Morgan & Zeffane (2003) the key elements of involvement are the distribution of power and the scope of decision making. Involvement can also refer to the level of participation of organisation members in the decision-making process (Amah & Ahiauzu, 2013). For the purpose of this thesis the following

definition applies: Involvement refers to the exercise by organisation members regarding their influence on the decision-making process and how informed they are. This definition fits the research question the best. In paragraph 2.3, involvement will be explained more explicitly.

Digital maturity will be utilised in the methodology for determining the stages of the three organisations who will participate in this study. A maturity framework outlines specific paths for the way in which organisations address their transformation (Berghaus & Back, 2016). Maturity is used to indicate the readiness or progress of an organisation in its digital transformation (Lahrmann, Marx, Winter, & Wortmann, 2011). Digital maturity can be seen as: *“How organisations systematically prepare to adapt consistently to ongoing digital change.”* (Kane, Palmer, Nguyen-Phillips, Kiron, & Buckley, 2017, p. 5). *“Maturity models are a tool that mainly enable an assessment of the status quo and indicate a potential, anticipated or typical development path to the desired target state.”* (Berghaus & Back, 2016, p. 3). The definition which applies to this thesis is: digital maturity models are therefore a systematic framework with predefined dimensions to provide the status quo of the digital transformation process. Digital maturity will be applied as a systematic framework to determine the maturity stages of the organisations participating in this study.

As illustrated in the previous chapter, logistical processes are the processes in and around a warehouse. In this thesis logistical processes in the warehouse are utilised to study digital transformation. A warehouse is defined as a facility in the supply chain for storing products and collecting orders, so that transportation costs are reduced (Bartholdi & Hackman, 2011). The processes in a warehouse are the focus point within the organisations in this study.

2.2 Review of organisational theory on digital transformation

Digital transformation is a form of organisational change. The structural changes which need to be implemented to digitally transform refer to different and new structure placements necessary in the operational process (Matt, Hess, & Benlian, 2015). For example, in the logistical processes it might be necessary to have a new lay-out enabled by technology to create smoother and efficient processes. To be able to adapt to the environment, companies are more willing to incorporate innovative digital solutions in warehouse management (Ramaa, Subramanya, & Rangaswamy, 2012).

A change can already be considered a digital transformation if digital technology is utilised to enable the change to happen (Hanelt, Bohnsack, Marz, & Antunes Marante, 2020). For example, digital transformation can be illustrated by members who will use tablets to pick orders instead of paper. However, it must be pointed out that the use of digital technologies should be the main factor of the change, for it to be considered digital transformation. Watching the covid-19 pandemic, it is clear that digital technologies are crucial in today's society. When shops cannot open physically for instance, the

internet will be used to gather necessities. This will lead to more online orders and therefore a strain on the current order processes. Digital transformation may help to solve this problem of inefficiency.

The literature does not state uniformly and generically what is meant by a complete digital transformation. In practice, it is therefore necessary to determine what the organisation in question understands by a partial or complete digital transformation. This will be shown in paragraph 2.6. According to Bordeleau (2020) there are 19 conditions for digital transformation's success or failure. These conditions are, among others, anticipation of the changes, choices regarding changes, clearness of the goals, criticality of the goals, information system capabilities, leadership of management, level of structure in changes, range of affected users, rate of change, scale of the changes, scope of the decisions and transparency between actors. Another study states that in order to achieve digital transformation a wide range of capabilities need to be developed. Organisation members need to rethink how they structure their work efficiently for instance (Reis et al., 2018). Having a digital vision, the skills to work with the new technology, structure in the change which is happening, a decentralised work structure or a technology budget for example, will also contribute to digital transformation (Gill & VanBoskirk, 2016). As can be seen there are a myriad of factors contributing to the success or failure of digital transformation.

All organisations should include three fundamental stages of digital transformation: 1. Evaluating the current status quo, 2. defining the strategy, and 3. implementing it (Zaoui & Souissi, 2020). These fundamental stages can help an organisation in making a plan for digital transformation. Later in this chapter, the digital maturity framework will be discussed which relates to this. Empirical evidence shows that the approach depends on the context of an organisation and that there is no one-fits-all approach to digital transformation (Berghaus & Back, 2017).

As previously mentioned, there are various conditions for digital transformation. These can be reframed into indicators. Conditions can be seen as factors that have to be present in the environment to enable successful digital transformation. Indicators are measurement tools that can be utilised to give an indication of the progress of digital transformation. First, technology, this includes the budget and requirements to acquire new technology and the implementation of this technology to enable change (Hanelt et al., 2020). Second, digital vision, this indicator is focused on the goals of the digital transformation and how clear these goals are for the organisation members (Gill & VanBoskirk, 2016). Third, capabilities, this indicator focusses on the skills and knowledge that are necessary to adjust to the organisational changes (Bordeleau, 2020). This study will look at both the available skills and knowledge and the possible development of these skills and knowledge. These indicators have been chosen, because they are mentioned in various studies regarding digital transformation.

2.3 Review of organisational theory on organisation member involvement

As is illustrated in the previous paragraphs, organisation members are essential for digital transformation. Staff involvement and management support towards digital transformation, for example, are positively affecting digital transformation, as reviewed in the introduction (Stelzer & Mellis, 1998). In this paragraph several studies are mentioned which show factors related to involvement. Involving members can also be seen as the equivalent of participation of members, which exists of four elements – information, power, knowledge and rewards (Lawler III, 1994). There are eight rungs on the ladder of citizen participation: manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control (Arnstein, 1969). These different rungs all have different amount of organisation member power. For example, the rung manipulation indicates that organisation members do not involve organisation members at all, while the rung citizen control indicates that every organisation member actively participates and gets involved. A summarised version of the participation ladder of Arnstein (1969) can be: informing, consulting, involving or collaborating (Osmundsen et al., 2018).

Not every organisation involves their members in the same way. Some organisations do not involve their organisation members at all, while at other organisations involvement is a standard practice. However, it is essential, that members are involved as they need to have the motivation to let go of their old habits and adopt new ones (Achterbergh & Vriens, 2019). Organisations can be seen as a social system with a culture in which members do or do not involve each other (Brown & Cregan, 2008). Organisation member involvement is reciprocal. Employees can get involved by managers, but employees or managers can also try to get involved on their own. For this study a distinction will be made between organisation members who have decision making power regarding digital transformation (managers) and organisation members who do not have that (employees). This will be done, because the organisation members with decision making power need to involve the other organisation members for digital transformation to be successful. A distinction between managers and employees has been made, because it is not known yet if there are other distinctions which can be made. The actual division might result from the study.

It is important to plan a digital transformation and involve organisation members in a timely manner. The members will then have more time to adjust and reflect on the organisational change and come to terms with the implications if they are involved early on (Brown & Cregan, 2008). Another important issue is that organisations member need to be involved in the decision-making process, because they will better understand the change which will result in a better-quality decision and more effort from the organisation members to change (Wagner III, Leana, Locke, & Schweiger, 1997). A reason for managers to share information with employees is that they could understand the need for the change to

happen. If an organisation normally does not involve its members, it should consider fundamentally changing the way decisions are made (Brown & Cregan, 2008). Involvement can positively influence organisation members, as they get the feeling that their involvement leaves an impact.

In the study of Balakrishnan & Das (2020) members were engaged through passive involvement, such as online content, newsletters, or company-wide events. It is likewise critical that members should be included and try to include themselves in discussions, so they better understand the need for the digital transformation (O'Rourke, Higuchi, & Hogg, 2016). Gouillart (2014) acknowledged five processes, which encourage organisation member participation; sense of community, having a platform to discuss, interactions between members, experience-based participating and economic value (Gouillart, 2014). Organisation member involvement leads to better organisational performance, which increases the efficiency of workers, which ultimately leads to a higher productivity and therefore enables change to happen (Vandenberg, Richardson, & Eastman, 1999).

As is illustrated above, there are various aspects of involving organisation members. These can be summarised in three indicators. First, decision making, this indicator is about how much decision-making power the organisation members have in the change process. It is also about how many decision-making power members are getting from other organisation members (Wagner III et al., 1997). Second, information sharing, this indicator is about how many information is shared between the different organisation members and what kind of information (Brown & Cregan, 2008). So, not only from the managers towards the employees, but also vice versa. Lastly, participation, this indicator is about how do organisation members participate when getting involved (O'Rourke et al., 2016). Or how much do managers want employees to participate. These three indicators have been chosen, because they all play an important role in organisation member involvement. These indicators are also all directly or indirectly mentioned in the different rungs of the participation ladder of Arnstein (1969).

2.4 Interaction between digital transformation and organisation member involvement

The different key elements in this thesis are digital transformation and organisation member involvement. As has been stated before, the concepts are difficult to completely separate from each other as organisation members are necessary for a digital transformation to be conducted. Interaction can be understood as the reciprocal effect that people, processes or organisation et cetera, can have on each other. So, there is an interrelationship.

A change in interaction patterns can be explained by the framework of Schein (1987). The framework of Schein, who build upon Lewin, has three stages; unfreezing current behaviour, change to new behaviour and refreezing the new behaviour (Schein, 1987). Organisation members display different kind of behaviour and for organisations to be changed, behaviour needs to be adapted. In involvement

in digital transformation, the first stage of unfreezing current behaviour applies. For instance, organisation members need to make a shift in their thinking, their knowledge, and their daily routines (Nelson & Winter, 1982). An example of this could be the following: At Reynolds Corp. the logistics manager was expected to restructure his working activities overnight. The reason for the change was not shared with the logistics manager. He was suddenly not allowed to do his job the way he had done it for years. He eventually left the organisation, because he was not able to change his routines. This shows that changing daily routines can be very difficult for organisation members. Involvement, however, can help with understanding the need for change and unfreezing behaviour. There is a difference between emergent and planned change (Weick & Quinn, 1999). Whereas emergent change happens gradually and spontaneously, planned change is well thought-out before it is implemented. Digital transformation can be considered a planned change, because acquiring digital technologies requires to think about the best fit. The word digital transformation already inclines that something needs to be changed or transformed. Therefore, digital transformation is considered as a part of organisational change (Chanias, Myers, & Hess, 2019).

A study of Choi (2011) suggests that only through organisation members, organisations can successfully change and act upon it. Organisation members can therefore be considered, an essential factor in digital transformation. Managers should not underestimate the central role the organisation members play in the transformation process (Choi, 2011; Tetenbaum, 1998). The involvement of organisation members are considered a primary antecedent to successfully implementing digital transformation (Predişcan & Roiban, 2015). Digital transformation benefits are unlikely to be obtained without the involvement and acceptance of organisation members. After all, organisation members can bring conflicting interests which increases the level of uncertainty in digital transformation, therefore they must be properly involved (Conforto, Amaral, da Silva, Di Felippo, & Kamikawachi, 2016).

As is illustrated above, organisation members play an important role in digital transformation. The various organisation members struggle with digital transformation as they can also influence each other. When the framework of Schein (1987) is observed, it can be seen that involvement can also play a different role in the various stages of freezing/unfreezing. In the unfreezing stage members need to let go of their old habits and routines. Organisation members might need to let go daily routines like printing orders or checking every order by hand. In the change stage organisation members need to integrate and adopt the new habits into their daily work routines. In the freezing stage organisation members accept their new routines, they now automatically will take a tablet to scan the orders, for example. The interaction between the two concepts are the continuously interplay of organisation members needing to be involved by the elements of digital transformation, and vice versa. Digital transformation needs organisation members, but organisation members also need digital transformation.

The examples above illustrate four different indicators: change process, communication, platform and transparency. These indicators are also supported by various studies (Bordeleau, 2020; Gill & VanBoskirk, 2016; Reis et al., 2018). First, change process, this indicator considers the velocity and the scale of change in the organisation. For some organisation members the impact will be less, than for others. Second, communication, how do the various organisation members communicate with each other and what do they exactly communicate. Furthermore, platform can be seen as if organisation members have a place in which they can share opinions or can share advice during the digital transformation. Organisation members might need an offline or online place in which they can share their visions. Digital transformation demands organisation members to think and reveal their opinions about requirements for new technologies for example. Lastly, transparency, this indicator focusses on the openness of communication from all organisational members. At what moment do managers for example inform the organisation members about the digital changes happening. These indicators show the interaction of digital transformation and organisation member involvement.

2.5 Summary of the indicators

The various indicators are summarized in table 2.3. There might be more indicators which are not known yet; however, the research has been structured in a way that it allows abductive indicators to be found.

Table 2.3 Summarization of the elements

2.2 Elements of digital transformation	2.4 Elements of interaction	2.3 Elements of organisation member involvement
<p><i>Technology:</i> new technologies need to be acquired or current technologies need to be improved to enable the digital transformation to happen. Requirements for these new or improved technologies need to be established so that the technology can efficiently be utilised in the organisation.</p> <p><i>Digital vision:</i> a vision or a goal is necessary for organisation members to understand why the digital transformation is happening. A vision also helps in forming a strategy for digital transformation and making choices.</p> <p><i>Capabilities:</i> organisation members need to have the knowledge to work with the new or improved technologies, this can be done by training to improve the digital skills.</p>	<p><i>Change process:</i> the changes happening in a digital transformation can have a certain amount of impact on organisation members. This means that while some parts of a digital transformation have no impact at all, other parts of digital transformation have a severe impact on the daily routines of the organisation members.</p> <p><i>Communication:</i> is the digital vision shared in a timely manner, for example. So that organisation members understand the need for the changes happening.</p> <p><i>Platform:</i> organisation members need an online or offline place where they can share ideas.</p> <p><i>Transparency:</i> the openness of an organisation regarding the digital transformation or their culture which allows transparency.</p>	<p><i>Decision making:</i> organisation members can have a certain amount of decision-making power. Managers for example will probably have more decision-making power than employees.</p> <p><i>Information sharing:</i> in some organisation's organisation members will have not any information whatsoever, and therefore do not feel involved regarding the changes happening. While in other organisations all the organisation members have information and therefore understand the need for the changes happening better.</p> <p><i>Participation:</i> organisation members can participate in various ways. For example, managers can be collaborating together, while employees are only consulted.</p>

These indicators will be utilised to study organisation member involvement in the various stages of digital transformation. This study acknowledges that there might be a difference in involvement between managers and employees, but the study will show if this is the case.

2.6 Digital maturity framework

To operationalise the research question, digital maturity will be utilised to assess how involvement can be understood in different stages of digital transformation. A maturity framework outlines specific paths for the way in which organisations address their transformation (Berghaus & Back, 2016).

Maturity is used to indicate the readiness or progress of an organisation in its digital transformation (Lahrman et al, 2011). In this study digital maturity will be utilised as a systematic framework with predefined dimensions to provide the status quo of the digital transformation process (Berghaus & Back, 2016, p. 2; Kane et al., 2017, p. 6).

Digital maturity is an ongoing process of adapting to the desired state, which means that an organisation will never be done with digital transformation, as the digital landscape continuously changes (Kane et al., 2017). It is important to consider digital transformation from an organisation member's perspective, as it should enable achieving digital transformation in the organisation (Kane et al., 2017; Zaoui & Souissi, 2020). The academic community has not elected a consensual model for digital maturity which could be utilised in this thesis (Reis et al., 2018).

The digital maturity model framework 4.0, which is developed by Forrester, is a general, linear, and self-assessment digital maturity framework, which provides the essential criteria for this study and had been reviewed by Teichert (2019). The criteria exists of practical applicability in all sort of organisations and this study. Another framework which could have been chosen is from Berghaus and Black (2016), however this framework did not specify how the maturity stages came to be. The digital maturity framework 4.0 has four dimensions; culture, technology, organisations and insights (Gill & VanBoskirk, 2016). The framework has been tested to a broad global sample, has been evaluated and will therefore be used in this study (Teichert, 2019). After executing the self-assessment, the organisations will be categorised in four segments – Sceptics, Adopter, Collaborators and Differentiators – which will tell the organisation in which stage of digital transformation they currently are (Gill & VanBoskirk, 2016). In the manufacturing industry only 8% can be seen as a differentiator, while the majority of the organisations (87%) are in the adopters or collaborators stage (Gill & VanBoskirk, 2016). Sceptics are organisations who are exploring the possibility of a digital transformation. Adopters are already investing in new skills and infrastructure and are starting to prioritize the customers. Collaborators are breaking down the current structure in the organisations and use their maturity as a competitive advantage. Differentiators blend the virtual and physical worlds together. They lead the organisations by data and are predecessors in their field.

Chapter 3 Methodology

The methods used for answering the research question; *“How can organisation member involvement be understood in digital transformation within logistical processes?”*, are described in this chapter. In 3.1 the research design and the most important decisions regarding the study are being presented. 3.2 points out how data will be collected and which sample sizes will be drafted. Furthermore, 3.3 describes the research process and how the data will be analysed. In 3.4 the assessment criteria for qualitative research will be discussed. Finally, 3.5 will describe the intentions regarding to research ethics.

3.1 Research design

The above literature review did not provide insight into the methods by which organisation member involvement in digital transformation can be understood. The nature of the study is abductive. Based on the theory as reviewed in chapter two, this thesis aims to better understand the theory through this study. Following the abductive research, the data collection, context, sample size and data analysis process have been chosen. This thesis followed an interpretivist philosophy perspective (Myers, 2009). This perspective has been chosen, because the research question requires to understand what organisation members think about organisation member involvement in digital transformation and what meaning they assign towards this topic (Myers, 2009).

For this study qualitative and quantitative research methods have been applied. The research question states that organisation member involvement needs to be understood. Since there is no current theory available, qualitative research can give some insight of the participants' thoughts and opinions. In comparison to quantitative research, qualitative research can ask for opinions of participants more extensively and can follow up on the questions (Vennix, 2019). An interpretivist approach allows the researcher to search for subjectivity and details, which is harder to obtain with quantitative research methods (Ven, 2007). However, quantitative methods have been utilised to get a broader understanding after the qualitative research methods have been conducted. Data has therefore been collected on a broader scale. Triangulation is the use of multiple sources and has been applied in this study to obtain different angles (Myers, 2009). The qualitative data is leading in this study.

The qualitative methods consists of a form, interviews and document analysis. The quantitative study consists of a survey focussed on involvement. The interviewees had to fill in a form to understand their current feeling about involvement and to categorise the digital maturity of their organisation. The interviews were semi-structured, so abduction could be applied if necessary. A document analysis has been done to understand the organisations from a different angle. The survey was sent to all the organisation members of the three different organisations to get a confirmation about the involvement.

3.2 Data collection

As illustrated in chapter two a number of publications have already been analysed for this study. Based on the indicators from chapter two an initial codebook has been made which are shown in [appendix 1](#). Before the participants has their interview, they were all asked to fill in a form, showing their initial thoughts about involvement and the digital maturity of the organisation. This can be found in [appendix 2](#). The interview script can be found in [appendix 3](#). These questions have been tested with peers so it was known if the questions asked, what they were meant to ask. As has been stated in 3.1, the interviews were semi-structured, which means that a set of questions were already determined, while also allowing the participants to explain issues they think is important (Bleijenbergh, 2015; Longhurst, 2003). This is relevant, as the interpretivist perspective requires the researcher to get to the bottom of what the participants mean and how they make sense (Symon & Cassell, 2012).

The interviews have been conducted in different organisations with their core activities in the technical wholesale industry in the Netherlands. The choice for the technical wholesale industry was convenient, since the researcher conducting the research has easy access because of work contacts. This industry is known for having a lot of male organisations members, which is also shown in the sample. The names of the organisations who participate are fiction, to maintain anonymity. Eight organisation members from the various organisations participated in the one-on-one interviews. The characteristics of the participants can be found in table 3.1. The interviewees have been chosen based on their experience with digital transformation and involvement (Longhurst, 2003). The only criterion was that they should have some direct or indirect experience with digital transformation in the logistical processes. The unit of analysis is therefore organisation members connected to digital transformations in the logistical processes (Sedgwick, 2014). The unit of observations are the different organisations which participate in this study (Sedgwick, 2014).

[Table 3.1 Participants interviews](#)

Participant number	Organisation	Role	Direct/indirect logistics
Participant 1	Reynolds Corp	Employee	Direct
Participant 2	Reynolds Corp	Manager	Direct
Participant 3	Reynolds Corp	Employee	Indirect
Participant 4	Sermon BV	Manager	Indirect
Participant 5	Sermon BV	Manager	Indirect
Participant 6	Sermon BV	Employee	Direct
Participant 7	Platzman Inc.	Manager	Indirect
Participant 8	Platzman Inc.	Employee	Direct

During the proposal phase three organisations were planning to participate, however one of the organisations couldn't participate anymore at the last minute, due to major internal problems. Therefore, after trying to find a similar organisation, which couldn't be found in such a short notice,

another smaller organisation was found that was eager to participate. Before the interviews, the eight interviewees were asked to fill out the form of the digital maturity 4.0 framework, which would indicate in which digital maturity stage their organisation currently is (Gill & VanBoskirk, 2016). In table 3.2 the different organisations and their digital maturity are shown.

Table 3.2 digital maturity

Organisation	Expected digital maturity	Actual digital maturity	Size organisation
Reynolds Corp	Adopters	Adopters (Mean score: 41)	50-100 members
Sermon BV	Collaborators	Collaborators (Mean score: 55)	25-50 members
Platzman Inc.	Skeptics	Adopters (Mean score: 52)	0-9 members

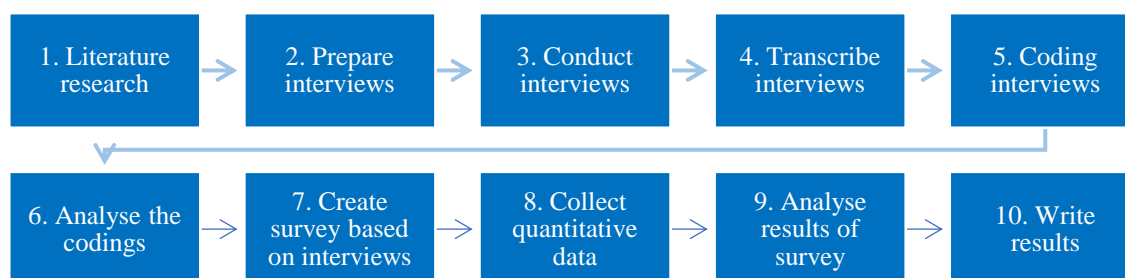
In the second part, a document analysis has been conducted. These documents were provided by the interviewees during the interviews. However, not one organisation had clear documents about a digital vision or involvement.

After the document analysis and the interviews and the subsequent coding, a survey was created based on the interviews. The survey has been sent to the organisation members of the three organisations participating. The answers of the respondents were anonymous and the respondents could choose to stop at any given point in time. The population for the survey was not large, only a population of 90 people in total could be asked to fill in the survey. According to Vennix (2019), the response rate is about 30% for a survey. The actual participants for the survey were 46, so 51%. The study is by default very male dominated (82,6%), since the branch consists of mostly men. The quantitative research should be seen as a conforming perspective brought forward by the interviews.

3.3 Data analysis

The research process has been visually captured in the figure below.

Figure 3.3 Research process



The literature research has been conducted in chapter 2. The forms were utilised as an initial insight to understand the interviewees perspective and to guide the interviews. Since semi-structured interviews have been utilised, a set of questions needed to be prepared, interviews had to be conducted and afterwards transcribed (Bleijenbergh, 2015). During the data analysis, template analysis was applied to code the different interviews. Template analysis is a way of coding the transcribed texts, in which

flexibility is important (Symon & Cassell, 2012). The advantages of template analysis, in comparison to for example grounded theory, is that it allows the researcher to have a priori codes, flexibility and the coding can be structured with a template (King & Carroll, 2012). These three advantages grant this research some structure, while also searching for the thoughts and meanings of the participants. This is important in the interpretivist perspective (Myers, 2009). Template analysis gives the researcher the opportunity to not solely look at the text from a bottom-up or top-down perspective, but to be in the middle of the text (Myers, 2009). Since there is some literature known about the different concepts separately, grounded theory is not an option. Contrary to grounded theory, template analysis enables certain themes to be defined on a deductive basis (King & Carroll, 2012). For interpretivism, template analysis is a solid fit, since it gives the flexibility in the coding structure and it allows to have some themes in advance while also searching for new ones (Myers, 2009). Excel has been used to code the different transcribed interviews. Other specific software, like Atlas.ti, were considered, however it would take the researcher too much time to learn how to use the program. An initial codebook has been made before the interviews took place, based on that the questions were prepared.

After the interviews and coding the data, the definitive codebook has been made, which can be found in [appendix 4](#). The data has also been made to a summarized version in the form of a code tree, which can be found in [appendix 5](#). As can be seen, the definitive codebook differs a little bit from the initial codebook. This has been largely due to subjects not being important, according to the participants or they didn't know anything about it. Also new subjects came to rise, like for example that organisation members themselves play a role in if or how they get involved depending on their position in the company or their own personal characteristics. After the interviews a document analysis has been conducted. Unfortunately, there were not many documents to be analysed.

After the template analysis and document analysis, the quantitative data has been collected and analysed. The survey can be found in [appendix 6](#). The codebook of the survey in SPSS can be found in [appendix 7](#). The results of the survey can be found in [appendix 8](#). In the end, 51 respondents participated, from which 46 entries could be used. A missing data analysis can be done to see if the data has a pattern or if the missing data is at random (Field, 2018). To do a missing data analysis would be pointless, since the incomplete entries were deleted. After the missing data analysis, the quality of the data had to be examined. Because of central limit theorem, it could be assumed that the data is normally distributed (Field, 2018). However, the researcher preferred to test the normality with skewness and kurtosis, which show if the distribution deviates from the expected pattern (Hair, Black, Babin, & Anderson, 2019). Two variables were excluded from the survey; gender and the size of the organisation. Gender has been excluded on further analysis, besides the frequencies, based on the sample size and the skewness/kurtosis. The size of the organisation has been excluded, because it came apparent that the questions' answers were not reliable. These two are shown in the result part of the frequencies, but have not been used for further testing.

Since the sample size is very small, not much testing could be done. The frequencies of the variables show what the respondents answer per variable (Field, 2018). For example, the mean of the feeling of involvement has been calculated. This shows what the respondents feel towards this subject. After the frequencies cross tabs and chi square have been conducted to understand the differences between two different groups (Baarda, van Dijkum, & de Goede, 2014). For this analysis some variables were recoded, so it became a 2x2 cross tab. For example, the variable hierarchy was recoded so it could be revealed if there is a difference between employees and managers/executives on if they feel involved or how they are involved. A possible hierarchy mechanism has been reported in the interviews and have therefore been tested with the survey. The researcher is aware that the results do not have much statistical power and external validity as the sample is small, but wants to show the conclusions that could be made with these tests. The results are however, very relevant for this study.

3.4 Quality of Study

For the qualitative study the four criteria of qualitative research from Guba and Lincoln (1989) have been applied; transferability, credibility, dependability and confirmability (Symon & Cassell, 2012). Transferability: By applying qualitative interpretative research methods the researcher tried to get an in-depth view of the opinions of the participants so the results can be as detailed as possible. This gives practioners or other researchers a way to extract their own lessons out of it. Dependability: The researcher have kept personal memos in which she described the thought process when working on the study. Therefore, she was able to re-evaluate her thought process and was able to judge why certain decisions were made. Confirmability: As is described in the previous paragraphs first a set of questions was prepared, afterwards the digital maturity was determined with a self-assessment for the participants and eventually the interviews have taken place and data was analysed. The transcribed interviews were sent to the interviewees for an affirmation check. Credibility: The researcher have sent the transcribed interview to the participant to check if what has been written down is what they meant to say. Besides this, the researcher has done peer debriefing with other peers who work on the same kind of topic and will evaluate each other's work. The researcher has tried not to influence the interviewees. The researcher made clear questions and a codebook as a procedure to code the interviews. The data has been continuously reflected to understand if the right conclusions were made. The data is consistent through all of the sources utilised to come to the conclusions made in chapter 5. The consistency makes the more credible (Vennix, 2019).

For the quantitative part of the study two whole different assessment criteria are of importance. Reliability and validity are a way to ensure that measurement error is kept to a minimum (Field, 2018). Validity shows if what has been set out to measure, has been measured (Hair, Black, Babin, & Anderson, 2019). Reliability means that the study can be performed multiple times, even across different samples, and still gives the same results (Hair, Black, Babin, & Anderson, 2019). The content

validity can be ensured, because the survey has been tested multiple times to peers (Vennix, 2019). The face validity can likewise be ensured, as the questions gave the same answers gave the same answers as mentioned during the interviews (Vennix, 2019). However, the external validity can't be ensured, since the sample of the survey is too small. A reliability analysis has been utilised to measure the internal consistency. A Cronbach's alpha of .914 shows that the internal consistency is high. The statistical power of the analysis is not high as the sample is too small (Baarda et al., 2014). The researcher is aware of this and has taken this into consideration.

3.5 Research ethics

There is no universal set of ethical duties which could be applied. Therefore, the ethical research virtues from the texts of Symon and Cassell apply here (Symon & Cassell, 2012). Honesty: When the organisations were approached for their willingness to participate, the researcher explained that the data collected would be used for a master thesis and that their data would be anonymously processed. The researcher also explained the process of a master thesis and where the data would be used for. Likewise, before the survey started it was explained what the goal was of the survey and that the participants answers were confidential and anonymous and that the respondents could stop at any given time. Deliberative conversation: The interviews were held physical, because the interviewees preferred so. It has been pointed out in the invitation for the interview and at the beginning of the interview that they can express their opinions openly without judgement or consequences. This has also been pointed out again at the start of every interview. The respondents of the survey could mail the researcher if they wanted to share other aspects as well. Sensitivity in handling participant data: The interviews were recorded, but solely for the purpose of transcribing the interviews. After the transcription, the recordings were deleted and the transcribed interview were sent to the interviewee to get confirmation of the data. The researcher was, besides the participants, the only one who got to see the entire transcribed interview. In the master thesis, interviewees have a number instead of a name and a general description of their position in the company. The researcher is also the only person who was able the answers from the surveys. These three virtues are the most important for this study. Participants were informed of the direction of the questions before the interview, so they could be prepared.

The researcher is employed by one of the participating companies. Agreements were made that the research for the master thesis is in no way related to the activities performed for the organisation. The other organisations were aware of this. Furthermore, the organisation was not entitled to inspect the master thesis or to alter any of its aspects. The researcher was aware of its possible bias regarding the organisation, but have ensured to avoid it as much as possible by discussing with peers and asking them for feedback.

Chapter 4 Results

In this chapter both the qualitative and the quantitative results are presented. This means that both the results of the interviews, document analysis and survey as input are integrated in the analysis. In 4.1 the process of obtaining the results is being discussed. Furthermore, 4.2 discusses the results related to the digital transformation. In 4.3 the results of organisation member involvement and its indicators are being presented. Lastly, in 4.4 the interaction of both of the concepts and its results is presented. In the description of the results the qualitative data is guiding and the quantitative data is supporting

4.1 Accounting for data acquisition

First, a form, which can be found in appendix 2, was sent to the eight interviewees. The form provided the researcher with insight on how involved the interviewees currently are. The form also calculated the digital maturity stage of the organisation itself, depending on the answers of the interviewees. The digital maturity stages of the organisations can be found in table 4.1. The interviewees were equally divided in managers and employees and in direct and indirectly related to logistical processes. Indirectly related to the logistical processes means that their job relies or interacts with the logistical processes. After the form had been send back to the researcher, the researcher could use the information to prepare for the interview.

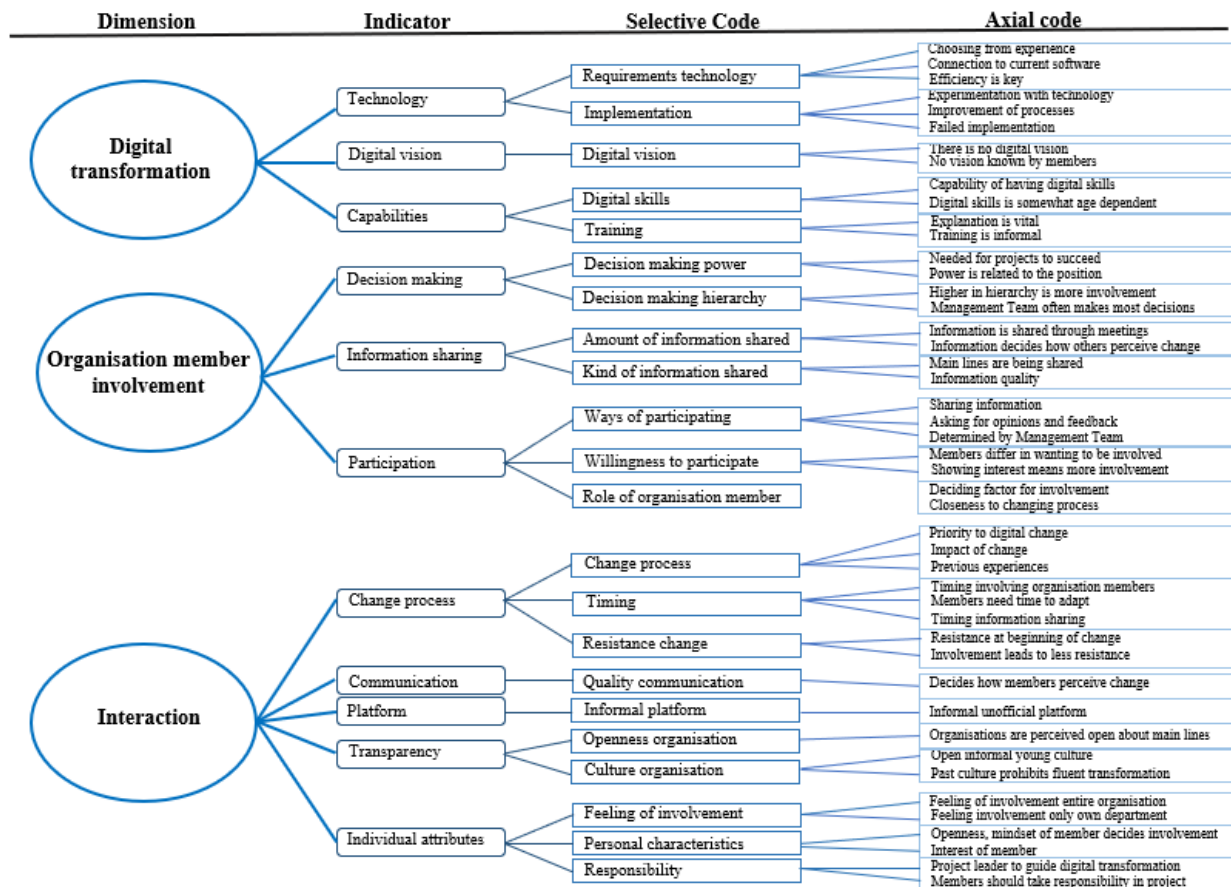
All the interviewees stated in the form, that they wanted to be involved in the digital transformation. The most common answer on the question how the interviewees wanted to be involved, was being an active partner in the digital transformation. The interviewees were all interested in involvement in digital transformation, which was important for the quality of the interviewees. If the interviewees would not be interested, it could be assumed that they probably would not have given reliable or adequate information.

Table 4.1 Digital maturity of participating organisations

Organisation	Digital maturity stage
Reynolds Corp	Adopters (Mean score: 41)
Sermon BV	Collaborators (Mean score: 55)
Platzman Inc.	Adopters (Mean score: 52)

The interviews took place after the form had been send to the researcher. The interviews were semi-structured and all the interviewees gave their consent for the interview to be recorded. After the interviews, they were transcribed and coded according to template analysis. The final codebook can be found in appendix 4. The final codebook differs a little bit from the initial codebook, because some aspects appeared to be of no importance. In addition, some topics emerged during the interviews that together formed a new indicator. The qualitative data was also made into a data structure which can be seen in figure 4.2. The enlarged form of this data structure can be found in appendix 5.

Figure 4.2 data structure



During the interviews, the interviewees were asked if they could send documents related to digital transformation or organisation member involvement towards the researcher. Unfortunately, not many documents were available on the subject within the organisations.

Lastly, a survey was sent to the members of the three participating organisations. To obtain quantitative data, all organisation members were encouraged to fill in the survey. From the population of 90, a sample of 46 (51%) respondents has been collected. While the data appears to be reliable, the sample size is too small to make fully factual statements. However, the quantitative data will be utilised to get a broader perspective of the involvement of organisation members and as an addition to the qualitative data. The internal consistency of the involvement questions have been measured in order to find out if the data was reliable. The involvement questions as a whole have a reliability of Cronbach's $\alpha = .914$, which makes it very internal consistent. The study is male-dominated (83%), as is the branche in which the data has been collected. According to the results of the survey, the organisation members can be divided into 67% employees and 33% managers. All the quantitative results can be found in appendix 8.

Figure 4.3 Reliability analysis

Reliability analysis	Cronbach's alpha	N of items
Main questions involvement	.914	7

4.2 Digital transformation

In this paragraph the results of the three indicators corresponding with digital transformation will be discussed. The three indicators are: technology, digital vision, and capabilities. The results will be written in the present tense as it emphasises the relevance.

Technology

This first indicator entails the new or improved technology which will enable the digital transformation to happen. The technology has to be chosen and implemented in an organisation. Multiple interviews show that there needs to be a fit between the new technology and the current technology in the organisation. It requires knowledge to know which technology fits the current ones. The organisations consequently often rely on externals who work at an organisation which provides the technology, according to the interviewees. To obtain the requirements for the new or improved technology, the interviewees think that they should be involved in this process, because they have to work with the technology: *“I think it is important that I am involved in choosing new software or technology if I need to work with it.”* – participant 1, employee. The reason for the participating organisations to obtain new technology is to work more efficient and effective or to gain competitive advantages. The new or improved technology has to be implemented in the organisation. While some of the interviewees state that their organisation has some sort of process for implementing technology, most of them say the organisation does not have that. It became apparent, from the document analysis, that at least one organisation does attempt to evaluate during the implementation, indicating some kind of process: *“Based on the progress, we will draw up the final planning and activity list.”* – document Reynolds Corp. As (Hanelt et al., 2020) points out, technology leads to the development of the organisation. It is therefore essential, as the interviewees indicate, that the requirements of the technology represent the needs of the organisation and that it is implemented well.

Digital vision

The second indicator is digital vision, this entails the vision which organisations have about their future digitalisation. The indicator is likewise about sharing this vision with the organisation members of the organisation. None of the organisations have a digital vision or the interviewees are not aware of the digital visions existence in the organisation, according to the interviewees: *“I have no knowledge of a digital vision, might be at the board but not with me.”* – participant 3, employee. When the researcher asked if the organisation had something related to a digital vision, she was referred to the websites of the organisations where nothing could be found on this subject. However, it is vital to have a shared digital vision among the organisation members: *“One of the most important things in the digital transformation is to have all the noses in the same direction.”* – participant 2, manager. This is likewise indicated by Achterbergh & Vriens (2019) as they show that a shared vision is important in letting go of old habits. Gill & vanBoskirk (2016) indicate that having a digital vision is one of the first steps in digital maturity. So, while, it is indicated by several studies that digital vision is important, the participating organisations do not have this.

Capabilities

The third indicator is capabilities. This indicator entails the training that organisation members receive to be able to work with the new or improved technology and the digital skills the organisation members already have. In all the interviews, it became apparent that the training is done in an informal matter. This means that organisation members explain new technologies or improvements to each other while they are working. The interviewees indicate that clearly explaining this information is vital for them to be able to work with the technology: *“I have just been sitting next to his side and we extended the information every day, so I could learn everything to be able to do my job.”* – participant 8, employee. A couple of the interviewees state that the age of an organisation member can be determining for their ability to learn new technology or their digital skills. For example, the interviewees who work in an organisation with a higher average age, reported more often that they were less confident in the digital skills of the other organisation members in the organisation. While in the organisations with a younger average age, this is the opposite: *“We just hired an older person and where we just need two times to get something, he needs like 10-20 times before he understands how the software works.”* – participant 5, manager. Bordeleau (2020) discusses that the digital skills of the organisation members and training can be either a dimension of success or failure, as they are essential, but are rarely considered in a digital transformation.

The survey has asked whether the respondents were interested in the digital transformation happening in their organisation. More than 3 out of 4 (76,1%) respondents stated that they were really interested in the digital transformation. But the respondents also stated that there are problems with digital transformation, like not having a budget or not having the knowledge to make solid choices regarding technology. The interviewees agree with each other that requirements, implementation, training and digital skills are important for a digital transformation. But while the literature explicitly states that a digital vision is very important, this could not be found in the participating organisations. This means for the research question that the involvement should be understood in the entire process of digital transformation, from thinking about the requirements for technology to explaining how the technology works to other organisation members. Thus, it is not just involving organisation members in the digital transformation process itself, it is also about lateral aspects like training or the requirements of technology.

4.3 Organisation member involvement

In this paragraph the results of the three indicators corresponding with organisation member involvement will be discussed. The three indicators are: decision making, information sharing and participation.

Decision making

The first indicator, decision making, includes who is involved in decision making and who has the power to make decisions. The interviewees all state that the ultimate decisions are made by the management. In some cases, employees could contribute by explaining their opinion, but they do not have the power to make decisions related to digital transformation: *“We listen very well to what people think. If a change happens with the order process, than the people of the order process are involved. But eventually management makes every decision.”* – participant 4, manager. It seems obvious that the managers would have more decision-making power as it is in their job description, nonetheless the literature reports that employees making decisions contributes to the change process (Choi, 2011). All the interviewees remark a certain kind of hierarchy in the decision-making power. They often claim that the position of the organisation member in the hierarchy of the organisation, determines how and when an organisation member gets to be involved. For instance, members at the bottom of the hierarchical ladder may express their concerns or opinion, but not all the time management will listen: *“Because I am higher on the ladder than for example somebody else from my team, they are more eager to listen to me. And I think that it should not be a difference in what kind of position you have.”* – participant 1, employee. The interviewees all state that there is some sort of hierarchy in the decision making, even when the employees are heard. The importance of decision-making is likewise shown in the results of the survey. Most of the respondents want to be actively involved and want to think along with the digital transformation and be a proper partner. There is no difference between how employees and managers want to be involved in the digital transformation.

Information sharing

The second indicator is information sharing. Information sharing includes sharing the kind and amount of information about the digital transformation with organisation members. Information sharing is often done by management or the members in charge of the digital transformation. The interviewees remark when more information is being shared in the organisation, the members also feel more involved. Even by doing a monthly presentation about what is going on the organisation can help the organisation members by understanding what is happening in the organisation: *“What you often see is that when there is a management meeting immediately all the teams are coming together so they can share that information with each other.”* – participant 6, employee. How often this information is shared and what kind of information is shared can influence the organisation members in their feeling towards the digital transformation. As Achterbergh & Vriens (2019) explain, it is necessary to have a common understanding why a change needs to happen. By sharing information this can be easily achieved. From the document analysis it appeared that at least one organisation has meetings to share this information: *“Schedule a weekly meeting on Thursday from 13:00 to 14:30 (1,5 hours meeting).”* – document Reynolds corp. The meetings are likewise mentioned by the interviewees from the other organisations, yet these are more informal. In the survey it is also shown that information sharing is important. All of the respondents of the survey want to be at least informed about the digital

transformation happening, none of the respondents choose not to be involved. In the open question of the survey respondents can fill in what the biggest problem in the organisation's digital transformation is, in which information not being shared or not communicating are often mentioned. This information also became apparent in the study of Brown & Cregan (2008), as they remark that when organisations share information in a timely manner, the employees can feel at ease with the changes happening.

Participation

The last indicator, participation, entails how organisation members are involved or if they are willing to participate in the digital transformation. According to multiple interviewees, even sharing information with other organisation members can be seen as a way of involvement or participation. The interviewees likewise point out that information sharing should be a given for an organisation. The interviewees indicate that the organisation members closes to the changing process are more involved than the other organisation members: *"The members who work closely to the process that is going to change just know better than the management what the process entails and what are certain problems for example."* - Participant 4, manager. Most of the interviewees mention that asking for opinions, sharing information or being a partner in the change are the most frequent utilised ways of participation for the organisation members. However, the organisation members of Reynolds corp. state that even sharing information is often not done and most of the participation is being done by the managers: *"A manager needed to be reminded by other managers that he needed to involve his team members in the changes, while he is here for quite a while."* – participant 3, employee. According to the interviewees not everybody wants to be involved and the involvement of the organisation members rely on their willingness to participate and the role that an organisation member portrays. Some interviewees said that because of their own interest in the changes happening and their willingness to participate, made them more involved in the digital transformation: *"I feel involved, because my manager asks for my opinion, but I also try to be interested in what is happening in the organisation."* – participant 8, employee. The interviews show that participation is important and can be divided between active and passive involvement as has also been done in other studies (Balakrishnan & Das, 2020; Brown & Cregan, 2008). Wherein passive involvement, like information sharing, is the first necessary step, active involvement, like asking for opinions and making decisions together, is the second step according to the interviewees. As O'Rourke et al. (2016) remark, the importance of including a variety of organisation members in the change process must not be underestimated. The survey results show that all of the respondents want to be at least passive involved. Most of the respondents (80,4%) indicate that they want to be actively involved in the digital transformation. The willingness of the organisation members should therefore be not underestimated. While most of the respondents wants to be actively involved, a large group at the moment is only passive involved 47,8% in which 19,6% is not involved at all. As the interviewees state in their forms, they find it important that they are involved in the digital transformation, almost 100% of the respondents state that they find

involvement important, both managers and employees. However, only 50% of the respondents indicate that they actually feel involved in the digital transformation.

Information sharing and decision making were already claimed as essential aspects in involvement according to Brown & Cregan (2008). However, their study likewise reports that it is not known if all the organisation members really want to participate. For the purposes of this study's research question, the above information confirms that all organisation members do want to be involved in the digital transformation and can thus be considered to be the base for the conclusion. What is important is that a difference should be made between passive and active involvement in digital transformations.

4.4 Interaction of the concepts

In this paragraph the results of the indicators of the interaction between digital transformation and organisation member involvement are discussed. Besides the already known indicators: change process, communication, platform and transparency, another indicator emerges from the results: individual attributes.

Change process

The first indicator is the change process. The change process entails the velocity and scale of the change. When asked about these two aspects, the interviewees brought up other aspects of the change process and found it hard to say something specifically about the velocity and scale of the change. For example, the timing of a change or its subsequent changes are of importance to the interviewees. The interviewees also stated that they found some changes necessary to improve the way of working or to adapt to the environment: *“At a certain point you cannot escape the fact that you need to have new technology or that you need to change something, because of the growth of the organisation.”* – participant 7, manager. Time is very important to the interviewees, time to progress the change, time to make the changes happening and communicating in time. When asked for problems regarding digital transformation the third participant (employee) states: *“Organisation members are not included in the process. I think that is the flaw, plus time must be made available for the change to take place in a controlled way. It is not a quick fix.”*. Another aspect that comes up is the resistance of organisation members. According to the interviewees, sometimes resistance appears because the organisation members themselves have to change their old habits and this can be quite a challenge for them. So, although this has not been discussed in the literature review in chapter 2, these aspects are known in organisational change literature.

Communication

The second indicator is communication. Communications includes quality of the communication as it is important for organisation members to understand what is being communicated. In the interviews communication is often mixed within information sharing or participation, which shows that communication is almost impossible to view as a separate indicator. However, the quality of

communication is very important and thus treated as a separate indicator. Communication between the departments of an organisation is likewise an influencing factor on digital transformation. As if there is no communication, the other organisation members do not get the opportunity to understand what is happening in the organisation: *“Because of corona I do not get much communication with other departments. I also do not have any meetings with other departments, and do not know what they are doing.”* – participant 2, manager. The importance of communication in a change is shown by multiple researchers (Choi, 2011; Reis et al., 2018).

Platform

The third indicator, platform, entails an offline or online place in which organisation members can share their opinions or give feedback. However, since the participating organisations are quite small an official online/offline platform could not be found. The interviewees do indicate that there are informal/offline platforms in the organisations in which organisation members can speak up to share their opinion: *“We do not have a platform. The employees just come to us and tell what they think and 9 out of 10 it will be fixed.”* – participant 5, manager. An official platform might be more essential in larger organisations as there are more organisation members to facilitate (Gouillart, 2014).

Transparency

The fourth indicator is transparency. Transparency can be seen as the openness of the organisation or its culture which allows transparency to happen. The organisational cultures were very different for the participating organisations. Where two organisations are young, informal and very open towards each other, the other organisation is older, more hierarchy and formal. The interviewees of the older organisation did not always find their organisation transparent, but as they state it becomes more transparent over time by introducing monthly presentations for the entire company. The interviewees from the other organisations stated that they have a culture in which sharing information is seen as more normal: *“Yeah I think we are quite transparent, not in everything immediately, like finances for example, but most of the topics are shared.”* – Participant 7, manager. The organisational culture can be deciding on how organisation members are involved or how the process is taking place. When the organisation values the aspects of digital transformation like: collaboration, innovation and involvement, one can imagine that a digital transformation is more easily achieved: *“The core values are collaboration, involvement, service, pleasure and innovation.”* – document Sermon BV. The digital transformation is different per organisation as the culture and the context is different per organisation (Morgan & Zeffane, 2003). Therefore, creating a transparent culture might ease the digital transformation.

Individual attributes

The last indicator, individual attributes, is added, because all the interviewees referred to involvement in digital transformation being depended on the organisation members themselves. For example, not every organisation member has the same experience and knowledge and therefore this can be a

depending factor if the organisation member is actively involved or not. The other factors which were mentioned by the interviewees are their interest in the digital transformation or their mindset:

“Because of their mindset they are not involved. I am a person i want to know everything. But some really do not care, they do not have that interest.” – participant 6, employee. The interest or the mind of an organisation member can also be seen as their personal characteristics. The interviewees indicate that the responsibility that organisation members feel for the results of the digital transformation or to take initiatives are likewise a determining factor of involvement. A feeling of responsibility is indeed helpful as Brown & Cregan (2008) report that a feeling of responsibility helps in making decisions. This may indicate that organisation members with a higher degree of responsibility are more likely to be involved in the digital transformation. *“It is change management, one person is very open minded for change and takes initiatives and the other might think I have always done it this way and this is correct, there is no need for change. That differs per member.”* – Participant 2. The survey shows that only 50% of the respondents feel responsible for either the results of the digital transformation or taking initiatives. All the respondents of the survey state that they are at least somewhat interested in the digital transformation in their organisation. The study from Choi (2011) is the only one who mentions personal traits; however, she sees them as a state as the experience of organisation members change. This could be the case in this study as well, but that would require further testing.

The interaction between digital transformation and organisation member involvement is mostly visible in the context factors of this study, like transparency and individual attributes. The individual attributes of an organisation member influences the involvement of the organisation member ,according to the interviewees. The transparency of the organisation can likewise influence the involvement of organisation members. This means for the research question that before organisation member involvement in digital transformation can be understood, the contextual factors, like individual attributes and transparency, should be taken into account.

The frequency results of the survey regarding involvement can be found in table 4.4. It shows that most of the members find involvement important and are likewise interested in the digital transformation.

[*Table 4.4 Summary results survey*](#)

Variable	Mean	Mode	Median
Interest change	3.22	4	3
Initiatives change	2.59	2	2.50
Results of change	2.52	2	2.50
Importance involvm.	3.09	3	3
Feel of involvement	2.48	3	2.50
How involved now	2.78	2	3
How involved future	3.57	4	4

4.5 Interactive mechanisms

Between organisation member involvement and digital transformation a few abductive mechanisms which contribute to the involvement of organisation members in digital transformation appeared in the data analysis. There are most likely more mechanisms, but these are the ones described in this study: hierarchy and active involvement.

Hierarchy

Hierarchy is something which is often brought up by the interviewees. For example, that somebody with a higher position has more influence or is more involved in the digital transformation. Hierarchy can determine the organisational culture. Multiple interviewees reported that some organisation members are not interested in the digital transformation and therefore are not involved. However, the results of the survey do not show this. There is no difference between employees and managers in their interest in the digital transformation. Interest and its interaction with hierarchy are found to not be significant when searching for a difference between the two groups. There are however differences in how involved organisation members feel and are, according to the results of the survey. Managers feel more involved than employees in a digital transformation ($\chi^2=8,013$; $df=1$; $p<.01$). Whereas all the managers feel involved, only a small group of employees feel involved. All the significant results of the chi-square can be found in table 4.5. Managers are also more involved than employees in the digital transformation ($\chi^2=6,907$; $df=1$; $p<.01$). While managers are almost all actively involved, regardless of their knowledge and experience, most of the employees are passive involved, if they are even involved at all. Of the 31 employees of the survey, 9 state they are not involved at all. The hierarchical role of the organisation member therefore plays a role in how involved they are and consequently how involved they feel. In the literature no indication of hierarchy as a mechanism could be found in involvement. The literature is almost always about employees and not managers. Another aspect which has been brought up by the interviewees and later tested in the survey, is that not everybody feels the responsibility for the results or to take initiatives, which could hinder the involvement of that organisation member. Managers do indeed feel more responsible for the results of the digital transformation than employees according to the survey ($\chi^2=8,013$; $df=1$; $p<.01$). Managers likewise take more initiatives than employees ($\chi^2=8,013$; $df=1$; $p<.01$). As can be seen in the interviews, when an organisation does not have a hierarchical culture, the organisation members are more eager to take initiatives. It can be seen as a culture, because the hierarchy determines the habits and the values of the organisation members (Cameron & Quinn, 2006). Therefore, a hierarchical culture may hinder the organisation members in talking to “higher” organisation members, which hinders them in taking initiatives or feeling responsible for the results of the digital transformation.

Active involvement

Another mechanism which contributes to the involvement of organisation members in digital transformation is active involvement. In 4.2 it is shown that passive involvement is important, as it gives a foundation for organisation members to understand what is happening. The difference between

active and passive involvement is also underlined by several studies (Balakrishnan & Das, 2020; Brown & Cregan, 2008). The interviewees likewise state that information sharing is very important. Information sharing makes organisation members more involved in the digital transformation as they have more knowledge, according to the interviewees. However, the difference between passive involvement and active involvement is that active involvement contributes to a better feeling of involvement and consequently an easier digital transformation. As is shown in the survey all the organisation members want to be active involved. There is a small difference, in that a small group of the employee respondents only want to be passively involved. However, the largest group, both employees and managers, want to be actively involved ($\chi^2=5,414$; $df=1$; $p<.05$). According to the survey most of the respondents want to be involved by getting actively involved, giving their opinions and plays a significant role in the digital transformation. Active involvement helps organisation members understand the changes and also makes them feel responsible for the digital transformation. Active involvement is not just decision-making it is about involving the organisation members so they can be heard and express their opinions. If they are part of the decision-making process this is even better. The interviewees who are actively involved, claim that they also work harder and feel more responsibility towards the digital transformation. Brown & Cregan (2008) stated that a lot of studies assumed that employees wanted to be actively involved. This study shows that it is not just assumed, but also the case in the three participating organisations for all of their organisation members. Active involvement could lead to a smoother digital transformation, because both managers and employees feel involved and feel responsible towards the digital transformation.

There might be of course other factors which influence the involvement and the digital transformation, like organisation size, organisational culture and age of the respondents. But this could not be tested.

Table 4.5 Chi-square summary

Cross tabs	Chi-square	DF	Significance
Initiatives x hierarchy	8,013	1	,005
Results x hierarchy	8,013	1	,005
Feelinvolvm.. X hierarchy	8,013	1	,005
Nowinvolvm. X hierarchy	6,907	1	,009
Desireinvolvm. X hierarchy	5,414	1	,020

Through data collection, new indicators and mechanisms have emerged. Because of abduction hierarchy and active involvement became to be very vital additions to the study. For the research question this means that involvement can be understood by recognising the mechanisms which may play a role in an organisation, before involvement itself can be acknowledged.

Chapter 5 Conclusion and discussion

In this chapter the conclusions of the results are made and discussed. In 5.1 the conclusions from the various results are being made. A discussion of the results from a theoretical perspective can be found in 5.2. In 5.3 the limitations of this study are presented. Furthermore, in 5.4 suggestions for future research are being made. Lastly, 5.5 addresses practical implications and eventually in 5.6 the reflection of the researcher is showed.

5.1 Conclusion

This study answers the question of how organisation member involvement can be understood in digital transformation in logistical processes. To answer the research question, a literature review and subsequently a qualitative (interviews and document analysis) and quantitative analysis (survey) on the obtained data have been conducted. The literature review revealed organisation members to be a critical success factor for digital transformation.

Digital transformation is a change process enabled by technology. Organisation member involvement is often called a key success factor for digital transformation (Bordeleau, 2020; Reis et al., 2018). The involvement of organisation members is important in the entire process, according to the interviewees. If the right requirements for the technology are not clear, there is a possibility that the organisation members will not be able to work with the technology. Another important aspect of digital transformation is the capabilities of the organisation members to work with the new or improved technology. Bordeleau (2020) shows that training the digital skills of organisation members is essential for the new technology to be implemented. In the participating organisations, no official formal training could be found. The interviewees state that the members often informally explain it to each other. This still shows that digital skills are needed, despite not being official and formal. A great variety of studies shows the importance of a (digital) vision (Achterbergh & Vriens, 2019; Bordeleau, 2020; Osmundsen et al., 2018). In the participating organisations no indication of a digital vision was found and no documentation could be provided. This could mean that digital vision is not as necessary as is stated, but the organisations size might influence this. While it is important in a change for organisation members to understand why and how it is happening, smaller organisations might pursue this differently than larger organisations.

This study extends the research of Brown & Cregan (2008) by showing that active involvement is preferred over passive involvement by most of the employees and all the managers. In the research of Brown & Cregan (2008), it is concluded that when organisation members are involved and information is being shared that organisation members are less eager to resist at the beginning of a change. As is showed in this study, organisation member do indeed prefer active involvement. The organisations members of the participating organisations view passive involvement as a given for

digital transformation. In the results of the survey not one respondent preferred to not be involved in the digital transformation. While Brown & Cregan (2008) assume that not every involvement mechanism is successful because of employee support, the results of the survey show that every respondent is interested in the digital transformation. This means that lack of organisation member support is not present in this study.

In addition to the above conclusions about what was expected to be found, the data also revealed an unsuspected mechanism of active involvement. Active involvement can be viewed as being a partner in the digital transformation. This means that the organisation member can express their opinions or make decisions. Information sharing can be seen as passive involvement (Balakrishnan & Das, 2020). Information sharing is a given for the organisation members of the participating organisations. Not every organisation shares information, as is shown in the interviews. This might evolve in organisation members resisting the change or not feeling involved. Whereas Arnstein (1969) categorised information sharing and consulting organisation members on the same scale, this has not been found in this study where active involvement also consists of consulting organisation members, according to the interviewees. All organisation members find it important to be involved and want to be actively involved as is stated in the results of the survey. They want to be a part of the digital transformation and at least express their opinions, according to the survey. In the interviews it became apparent that there is a difference in how organisation members were involved depending on their hierarchical position within the organisation. The survey's results indicate a difference between the managers and the employees. While managers feel involved and are often actively involved, employees do not feel as involved and are more passively involved. A part of the employees is not even involved at all. The study shows that there is a hierarchical influence on how organisation members are involved. It is likely that because of their position, managers are the first ones to be involved. However, employees, and especially the ones closest to the changing process, should not be forgotten. As the interviewees report, every organisation member has experience, knowledge and opinions which matter for a digital transformation. Active involvement is therefore vital for both managers and employees.

While in the literature review it is stated that involvement is reciprocal, this might not be the case when hierarchy plays a solid role in an organisation. Hierarchy can cause employees and possibly even managers to not feel allowed to take initiatives or express their opinions. This makes it seem as if the employees are not interested in the digital transformation, which makes them less likely to be included in the process. This has been acknowledged by the interviewees. While hierarchy as a term is not mentioned in the involvement literature, they do acknowledge the difference between employees and managers (Choi, 2011; Kohnke, 2017). Kohnke (2017) describes that management plays an important part in the digital transformation as they have a model position. Employees should follow the managers in changing their habits, but this is not a matter which occurs autonomously.

This study acknowledges the contextual factors which can influence the involvement and the digital transformation. The culture and the transparency of an organisation can be determining for how involved the organisation members feel, according to the interviewees. This could mean that a more traditional, hierarchical organisation should take more steps in involving organisation members, than an organisation which is already accustomed to this. In the literature it is shown that not every organisation is the same and the approach for digital transformation is different for every organisation (Berghaus & Back, 2017). This study underlines the work of Berghaus & Back (2017) as the study shows that not every organisation with the same size has the same approach of involvement.

The digital maturity of the organisations are respectively adopters and collaborators. As can be noticed in the interviews of the participating organisations, the higher the score on digital maturity the more use of active involvement. A high digital maturity requires intense active involvement as in the differentiator stage technology and business are one and the digital skills of the organisation members are vital (Gill & VanBoskirk, 2016). It could be concluded that active involvement is essential if an organisation wants to digitally mature.

The research question can be answered by acknowledging the difference between active and passive involvement. Passive involvement is a given and should always be a part of the digital transformation. Active involvement of both managers and employees improves the sense of belonging and utilises the potentials of all organisational members. The use of active involvement will facilitate a smoother digital transformation. This means for the unfreeze/freeze stages of Schein (1987) that when organisations want to unfreeze the habits of the organisation members, they should first start with sharing information about why the changes are necessary. To actually change the habits, active involvement is required for both employees and managers. To conclude, this study demonstrates how organisation member involvement can be understood by recognising that active involvement of both employees and managers smoothens the digital transformation and contextual factors should be taken into account.

5.2 Discussion

Despite many researchers stressing the importance of organisation members in the success of digital transformation, not much research has been done on this topic. This study contributes to the crossings of the two concepts, by showing that indeed involvement is important in digital transformation and that active involvement reveals to be the biggest chance of succeeding in digital transformation. So while Bordeleau (2020) indeed shows the different success factors of digital transformation, the involvement of organisation members are more important than she portrays them to be. This study has a number of dilemmas, contradictions, influenced factors and new aspects that are highlighted in the discussion.

An example of a contradiction is the need for a digital vision. While several studies and the organisational change literature recognise the importance of a digital vision to align organisation members, not a single participating organisation has a clearly defined digital vision (Achterbergh & Vriens, 2019; Bordeleau, 2020; Gill & VanBoskirk, 2016). Achterbergh & Vriens (2019) state that in the first phase of unfreezing a digital vision is necessary to create a sense of urgency, so organisation members understand why they need to let go of their old habits and move to new ones. The participating organisations are not in the first stage of digital maturity. So, while it has been remarked in the literature, the participating organisations do not have an explicit digital vision. The importance of a digital vision could rely on the size of the organisation, but this is not known.

Balakrishnan & Das (2020) point out the multiple factors that influence digital transformation. More specific, they mention the importance of passive involvement. This study contributes to the literature by showing that organisation members want to be actively involved in the digital transformation. So while passive involvement has been highlighted by Balakrishnan & Das (2020), in this study it became apparent that active involvement is more important to both employees and managers. Active versus passive involvement was present in the literature review, however it was not expected to be of such a significance in this study and therefore was not part of the initial research design.

Another aspect which was mentioned in the literature review, but appeared to be insignificant for the participating organisations, is a platform. While a platform is necessary, in the literature review more official platforms were discussed (Gouillart, 2014). The participating organisations did mention that they have more informal unofficial platforms, which means that they organise brainstorm sessions or ask for the opinions of the members. In this study official platforms did not appear to be relevant; this could be because of the sizes of the organisations which might were too small to have an official platform.

There could be other possible explanations for the results which have been obtained. An example could be that because of the sizes of the organisations, different aspects are more important for larger organisations than they are for smaller organisations. There might also be contextual factors which play a role in the involvement of organisation members, like organisational culture. For example, it can be assumed that an organisation which is used to continuously improving their organisation, has a more fluent digital transformation and involves organisation members more often. Another possible explanation for the results are the predominantly male sample of the study. There might be a difference between the different genders in how they want to be involved or how involved they are. As Berghaus and Black (2017) state, there is no “one size fits all” method for digital transformation. Often the contextual factors decide the appropriate approach, this can likewise be assumed for the involvement of organisation members in a digital transformation.

Through data collection, new indicators and mechanisms have emerged. These new indicators and mechanisms are important to discuss as they are significant to the study. While the interviewees state that the interest or the positive mindset of a member can influence their involvement in the digital transformation, in almost none of the studies in the literature review personal characteristics were mentioned as an influencing factor for the involvement of the organisation member. For example, if a member shows no interest, feels no responsibility or is more quite, than he would not be as involved as somebody who is the opposite. Choi (2011) does mention personality traits in her study, but sees them more as states as the experiences of the members influence their view on a change. However, this has not been included in this study as the study has not been conducted over a longer period of time and was thought to be of no significance. Personal characteristics appeared to be important to the interviewees and were therefore added to the results and this study.

The major abductive mechanisms that emerged from the results are active involvement, as has been discussed above, and hierarchy. Hierarchy can influence the organisation members in not daring or not feeling allowed to talk to their boss or take initiatives. This ultimately affects how and if the organisation members are involved in the digital transformation. Whereas managers feel involved and are likewise actively involved, employees feel less involved and are in general passively involved. This means that the position of the organisation member has an influence on their feeling of involvement and how they get to be involved in the digital transformation. Most studies only focus on employee involvement, this could be because managers are more involved in change processes. However, this study shows the difference why managers do and employees do not feel involved. Halpern et al. (2020) shows that for an organisation to be ready for change, senior managers should support the changes happening. Gill & vanBoskirk (2016) stress that managers are indeed relevant, however for an organisation to digital mature all organisation members are essential. The organisation members need to grow their digital skills and ability to search for continuous improvement to help the organisation digitally mature. This study shows that both managers and employees should be actively involved to pursue the digital maturity of the organisation.

5.3 Limitations

There are a few limitations to this study. In this study the method of triangulation has been applied. Alas, the document analysis has yielded only a limited insight in the planning aspect of the road into digital maturity. As derived from the literature review, planning is a necessary condition for successful digitalization. The lack of documentation indicates organisations can improve the predictability of their transition into a next maturity phase by a large leap.

Another limitation is the sample size. The sample size has no statistical durability. If the initially intended company had participated in the study, the population and sample size would have been sufficient. At the last minute, the intended company withdrew from the study due to serious internal

problems. The final set of population is too small to gather any statistical significance, and has therefore not much external validity. However, the internal consistency of the questions is high. It is not known if the results can be applied to the other firms in the branche and to other branches.

Organisation member involvement is still important for every digital transformation. If the sample size would have been larger, other aspects could have been tested as well. Another aspect of the sample is that it is male-dominated, which is likewise the case in the branche, however it is not known what this would mean for branches that are not male-dominated. Females could have a different preference in involvement. The data that was available had valuable insights for the study and lessons can be extracted.

Another limitation is that there might be other aspects which could influence organisation member involvement in digital transformation. An aspect might be the size of an organisation. Eventually only small and medium enterprises participated in this study. In larger organisations it can be expected that the process of digital transformation might be more formal. During the data collection, the participants mentioned that the entire process of obtaining technology, training the members and involving the members is very informal. Therefore, other aspects of digital transformations could be more essential for success in larger organisations, than it is in small and medium enterprises. Another aspect which could influence the organisation member involvement might be organisational culture. In the study two main lines of organisational cultures can be found. Whereas one organisation is older, more formal and has more hierarchy, the other two organisations are young, informal and have almost no hierarchy. The participants themselves indicated that this could be due to the many older employees who had already experienced several cultures within the organisation and who therefore feared taking the initiative. Culture, average age and organisation size could influence the organisation member involvement.

5.4 Future research

From this study suggestions for future research have emerged. First, the branche of this study is very specific and very male dominated. This is shown in the results of the demographic variables. While of course lessons can be taken from this research, for future research it is wise to replicate the study in other branches as well, such as more female dominated ones to research whether involvement plays the same role in digital transformation as in this study. This study can contribute to psychological studies about gender and job involvement by exploring the differences between gender in job involvement (Morris, Van Riper, Kyle, Wallen, & Absher, 2018; Rani & Chaturvedula, 2018). The second suggestion for future research is based on the findings that the hierarchical position of an organisation member has influence on his or her involvement. This can be done by conducting multidisciplinary research at the intersection of organisational development and social psychology (Lau, Lee, & Chung, 2019; Wood, 2017). It would be interesting to study if the involvement of

different organisation members with different hierarchical positions would determine the success of a digital transformation. In this study it became apparent that it might be a possibility, as the results show that involvement is different for employees and managers. Another suggestion would be to research active versus passive involvement. In this study it became apparent that organisation members prefer active involvement and passive involvement should be a given. Especially in a complex process like digital transformation, involvement seems inevitable. Future research should specifically focus on active versus passive involvement and the influences of contextual factors. This can be done by researching the conditions of the mindset or corporate culture for active participation (Mrazek, et al., 2018; Nahar & Indratjahyo, 2020). The last suggestion would be to explore the subject with a factor analysis and a large sample. The interesting topic of digital transformation and organisation member could be further researched with quantitative methods to obtain different factors of both these concepts. The factor analysis would determine if the factors found in this study are indeed the factors that are important in a larger sample. If the researcher would have had access to a larger population, this would have been the initial plan. However, this was not possible and therefore the focus in the research shifted to involvement specifically. A future research could do a factor analysis to determine if the founded factors are indeed the factors of digital transformation and organisation member involvement.

5.5 Practical implications

The results and the conclusions of this study lead to a few practical implications. A first and important lesson for organisation members was already in the very heart of the literature review: planning is a necessary condition for successful digital transformation. However, the document analysis pointed towards a rather poorly preparation and planning. For instance, while the literature explicitly states that a digital vision is very important, a vision was hardly noticeable in the case-organisations. A strong advice is to be given to organisation members to improve their ‘homework’ regarding the planning. Which may result in a more predictable transition into a next maturity phase.

In the literature reviews in chapter two it became apparent that organisation members are of importance in digital transformation. However, what not has been shown is how the involvement of organisation members can be understood. An important result of the study shows that almost all of the employees and managers want to be actively involved. Active involvement of both employees and managers can be quite determining for the end result of the digital transformation, as active involvement helps the organisation members understand what is happening and why this is happening. It likewise helps the digital transformation, because there is more knowledge available. Organisation members want to be involved, despite the assumptions some of the organisation members might have.

In the results of the study, it is shown that members with the position of manager or executive are almost always actively involved, while this is almost the opposite with organisation members with the

position of employee. The researcher is aware that not every organisation member can be a part of the “inner circle” of the digital transformation. However, it would be wise to make sure that the “inner circle” is diverse in its knowledge, experience and hierarchical positions. This ensures a proper alternation of qualities, knowledge, experience and talents. While hierarchy can hinder employees in feeling the responsibility to contribute or take initiatives, a strong advice for the employees is to come together and collectively report their opinions and feelings if they feel bounded by hierarchy. The employees could also show their interest in asking questions about the digital transformation.

Sharing information proves to be very important in digital transformations. Because the digital transformation of an organisation can have a major impact on its members, it is important to involve them in this process. Sharing information must be done in a timely manner and on a regular basis. This means that there should be more to it than just "we are working on digital transformation". This can for instance be linked to small brainstorm sessions to involve all of the organisation members. It doesn't require any money, but rather time. Time is something you have to take as an organisation to successfully go through a digital transformation.

Lastly, it would be wise for organisations to be aware how to approach the digital transformation. Not every organisation is the same and has different contextual factors which should be taken into account. However, time, budget, the right technology and being aware of the changes happening are necessary. When learning about digital maturity, it becomes apparent that organisation members are becoming more important in every digital maturity stage, because technology and the daily tasks are interwoven (Gill & VanBoskirk, 2016). The higher the digital maturity, the more active involvement is required from the organisation members. Organisations should therefore actively involve both managers and employees to digitally mature.

The three most important practical implications for organisation members are: first, both managers and employees should be actively involved in the digital transformation. This can be done by asking for opinions or ideas and letting the organisation members be a part of the decision-making process. Furthermore, if employees feel restricted by hierarchy to make efforts to get involved in the digital transformation, they should show their interest and collectively make a report and give their opinions. Lastly, information sharing is one of the easiest ways to get organisation members to be involved. Information sharing should be a given in digital transformation, this can be done by giving regular updates to all the organisation members and meeting regularly with the most affected organisation members.

5.6 Reflection

The aim of the researcher has been to work as thoroughly and as objective as possible. This was quite hard, since the researcher has a work contract with one of the participating organisations and knows

some of the interviewees. Nevertheless, it has given the researcher the opportunity to find other organisations for the study by utilising the organisation member's network. Finding the right literature for the different concepts was a challenge, as digital transformations involving organisation members had not been studied at the time of the literature review. The researcher learned to search for other concepts and synonyms as well, which eventually led to theory that was suitable for this study. The researcher documented her notes and transcribed interviews instantly after the interviews were recorded. This helped the researcher to obtain overview of the study. The researcher utilised triangulation in the study to show what could be found based on qualitative data. Because of abduction, new indicators and mechanisms emerged from the data, which could be explored in the survey as well. The quantitative data strengthened the study with a larger sample size and more perspective. As one organisation had quit the research at the very last minute, it affected the original plan quite a bit. Whereas before, a larger population was available for the surveys (800), now there were significantly less (90). This had a great influence on the chosen quantitative methodologies that could be used. Finding a new organisation was not simple, despite the contacts the researcher has. Many organisations in the industry are at peak activity around the time of conducting the study. In the end, a smaller organisation was found. The researcher wanted to contribute to the academic literature of digital transformation and organisation member involvement. Besides the difficulties in the process, the data and the abductive mechanisms have much value for the study and the literature.

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Appendices

Appendix 1: Initial codebook

Dimension	Indicator	Description	Code	Statement focus
Digital transformation	Technology	The technologies who enable the digital transformation.	<u>Requirements technology</u>	<i>Interviewee refers to requirements that technology needs for it to be acquired.</i>
			<u>Implementation</u>	<i>Interviewee refers to the way or the process of implementing new or improved technology.</i>
	Digital vision	A digital vision in which the organisation explains what their goal is.	<u>Clearness of vision</u>	<i>Interviewee refers to if and how the digital vision is known by the organisation members.</i>
			<u>Shared by organisation</u>	<i>Interviewee refers to if and how the digital vision is shared by the organisation.</i>
	Capabilities	The capabilities of organisation members to work with technology.	<u>Digital skills</u>	<i>Interviewee refers to the skills or lack of skills of the organisation members in the organisation.</i>
			<u>Training</u>	<i>Interviewee refers to the training or education organisation members get when new or improved technology is introduced/implemented.</i>
Organisation member involvement	Decision making	The power of organisation members to make decisions and the division of this.	<u>Decision making power</u>	<i>Interviewee refers to the amount of decision-making power organisation members have.</i>
			<u>Decision making hierarchy</u>	<i>Interviewee refers to the decision-making power different roles have and their differences.</i>
	Information sharing	Information might be shared to let organisation members better understand the change.	<u>Amount of information shared</u>	<i>Interviewees refers to the amount of times information is shared by the organisation and if it helps the organisation members understand the change.</i>
			<u>Kind of information shared</u>	<i>Interviewee refers to the kind of information shared</i>
	Participation	Different ways and amount of participating of organisation members.	<u>Ways of participating</u>	<i>Interviewee refers to different ways that organisation members can participate in a change process.</i>
			<u>Willingness to participate</u>	<i>Interviewee refers to if organisation members are willing to participate</i>
Interaction	Change process	The process of the change happening can have different amounts of impact.	<u>Scale of change</u>	<i>Interviewee refers to how big the changes happening are</i>
			<u>Velocity of change</u>	<i>Interviewee refers to the timeframe in which changes happen and the length of them.</i>
	Communication	The communication happening between the different roles organisation members have and the organisation.	<u>Quality communication</u>	<i>Interviewee refers to the quality of the communication from the organisation or other organisation members.</i>
			<u>Timing of communication</u>	<i>Interviewee refers to the timeframe in which communication is happening.</i>
	Platform	A platform might help the organisation members to share ideas, give feedback or have conversations.	<u>Online platform</u>	<i>Interviewee refers to an online platform in which ideas/feedback/advice is shared.</i>
			<u>Offline platform</u>	<i>Interviewee refers to an offline platform in which ideas/feedback/advice is shared.</i>
	Transparency	The organisation can be open or closed towards the organisation members about the digital transformation.	<u>Openness organisation</u>	<i>Interviewee refers to openness of the organisation and the members about changes happening.</i>
			<u>Culture organisation</u>	<i>Interviewee refers to the culture of the organisation and the habits of the organisation members</i>

Appendix 2: Form digital transformation

Please indicate the applicable answer to the questions below by highlighting it.

Explanation

Digital transformation is an organisational change using digital technology. Examples are: transferring from a physical to an online shop, which allows orders to be entered automatically or working with a scanning system in the warehouse instead of pen and paper.

Questions

- 1. Is it clear why the organisation is digitally transforming?**
 - a Yes
 - b No
 - c Otherwise;
- 2. What is your relation towards the logistics department?**
 - a I work in a different department, but logistics does play a role in my work.
 - b I am part of the logistics department, but I do not participate in the daily process.
 - c I am part of the logistics department and work in the process.
 - d I am the manager of the logistics department.
 - e Otherwise;
- 3. How important is it to you to be involved in the changes taking place in the organisation?**
 - a Unimportant
 - b Somewhat unimportant
 - c Neutral
 - d Somewhat important
 - e Important
- 4. To what extent are you actually involved (or have been involved) in the digital changes in your organisation?**
 - a I do not want to be involved
 - b I only want to be informed
 - c I would also like to be asked for my knowledge/experience/opinion
 - d I would like to be actively involved and think along about the change
 - e I would like to cooperate and be actively involved in order to bring the change to a satisfactory end.
- 5. How intensively do you want to be involved in the digital changes in your organisation?**
 - a I do not want to be involved
 - b I only want to be informed
 - c I would also like to be asked for my knowledge/experience/opinion
 - d I would like to be actively involved and think along about the change
 - e I would like to cooperate and be actively involved in order to bring the change to a satisfactory end.

See next page →

6. Please indicate your level of disagreement or agreement with the statements below by marking the boxes before the statement (0-3). Please fill in what you think applies to your organisation (there is no right or wrong answer). (Gill & VanBoskirk, 2016)

“How much do you agree with each of the following statements?”

0 = Completely disagree 2 = Somewhat agree
1 = Somewhat disagree 3 = Completely agree

Culture

<input type="checkbox"/>	We believe that our competitive strategy depends on digital
<input type="checkbox"/>	Our board and our C-level executives back our digital strategy
<input type="checkbox"/>	We have the right leaders to execute on our digital strategy day-to-day
<input type="checkbox"/>	We invest in targeted digital education and training at all levels of our organization
<input type="checkbox"/>	We clearly communicate our digital vision both internally and externally
<input type="checkbox"/>	We take measured risks in order to enable innovation
<input type="checkbox"/>	We prioritize overall customer experience over the performance of any individual channel

Organization

<input type="checkbox"/>	Our organization structure prioritizes customer journeys over functional silos
<input type="checkbox"/>	We dedicate appropriate resources to digital strategy, governance, and execution
<input type="checkbox"/>	The staff supporting our critical digital functions are best in class
<input type="checkbox"/>	We have digital skills embedded throughout our organization
<input type="checkbox"/>	Our organization model encourages cross-functional collaboration
<input type="checkbox"/>	We have defined and repeatable processes for managing digital programs
<input type="checkbox"/>	Our vendor partners deliver value that enhances our digital competencies

Technology

<input type="checkbox"/>	Our technology budget is fluid to allow for shifting priorities
<input type="checkbox"/>	Our marketing and technology resources work together to co-create our digital technology road map
<input type="checkbox"/>	We have a flexible, iterative, and collaborative approach to technology development
<input type="checkbox"/>	We leverage modern architectures (APIs, cloud, etc.) to promote speed and flexibility
<input type="checkbox"/>	We measure our technology teams by business outcomes not just system up-time
<input type="checkbox"/>	We use customer experience assets, like personas and journey maps, to steer our technology design
<input type="checkbox"/>	We use digital tools to promote employee innovation, collaboration, and mobility

Insights

<input type="checkbox"/>	We have clear and quantifiable goals for measuring the success of our digital strategy
<input type="checkbox"/>	Every employee understands how her performances ties to corporate digital goals
<input type="checkbox"/>	We use customer-centric metrics like Net Promoter Score or lifetime value to measure success
<input type="checkbox"/>	We measure how channels work together to accomplish a desired outcome
<input type="checkbox"/>	Customer insight actively steers our digital strategy
<input type="checkbox"/>	Customer insights inform digital design and development
<input type="checkbox"/>	We feed lessons learned from digital programs back into our strategy

Appendix 3: Interview script

Proposal script

My name is Dienneke Folmer. I am studying Organisational Design & Development at Radboud University. I'm here today to research organisational members' involvement in digital transformations/changes for my master thesis. Thank you for taking the time to participate in my research. First of all, there are no wrong answers, you can say anything you want. I will record this interview, as it is difficult for me to write everything down directly. Everything you say will be confidential, this means that only I will hear your answers. Do you agree?

Start recording

First, I was wondering if you have any documents about the organisation and could you send them to me? -> If participant indicates not to have those, ask for general documents about vision

*Check whether they have filled in the form beforehand; if necessary, offer the option of filling it in now.

Are you clear about what digital transformations are? -> If participant indicates not to know, explain; Digital transformation is an organisational change using digital technology. Examples are: switching from a physical to an online shop, which means that orders are entered automatically or working with a scanning system in the warehouse instead of pen and paper.

Questions:

General questions;

Who are you and how long have you been with the organisation?

What is your role within the organisation and how do you relate to the logistics process?

What do you think are the top 3 biggest problems with digital changes in this organisation?

1) Digital transformation

Technology

1. To transform digitally, you need updated or new technology. What is the process in choosing this new technology?
2. What is the most important aspect in this?

Digital vision

3. What is the digital vision of the organisation?
4. Is it everyone made aware of this digital vision?
5. How is this done?

Capacities

6. How does the organisation make sure that employees are able to work with the renewed technologies?
7. Do you think that every organisation member is able to work with these technologies?

2) Involvement organisation members

Making decisions

1. Could you describe for me the process of how decisions about digital changes are made?

2. Who is involved in these decisions and who has the most say in them?
3. Do you feel you can make decisions about the digital changes?

Information sharing

4. How does the organisation share information with employees and managers?
5. Is there a difference in the roles of members in the amount of information they receive? What is this difference?

Participation

6. Are organisation members involved in the digital changes?
7. In what ways are they involved? (When will they be involved)
8. Is there a distinction made in the role that an organisation member has?
9. What are the reasons why someone is or is not included in the process?

3)Interaction

Change process

1. How has digital transformation altered the way you do your work?
2. What impact do the digital changes have on organisation members?

Communication

3. How is communication to the different types of organisation members concerning the digital changes being carried out?
4. What is communicated during a digital change?

Platform

5. Is there a platform within the organisation where members can express their opinions or ideas in the form of meetings or an online intranet? What does it look like?
6. Do all members of the organisation have the opportunity to say what they think within the organisation?

Transparency

7. In your opinion, is the organisation transparent about the digital changes taking place and why do you think so?

Additional possible questions:

1. *Do you feel that you are involved?*
2. *How does the organisation encourage employee involvement?*
3. *Why might organisations choose not to involve employees or managers?*
4. *Could you describe for me the ideal process in which organisation members are involved in the digital changes according to your view?*
5. *Is the digital transformation influenced by past experiences and in what way?*

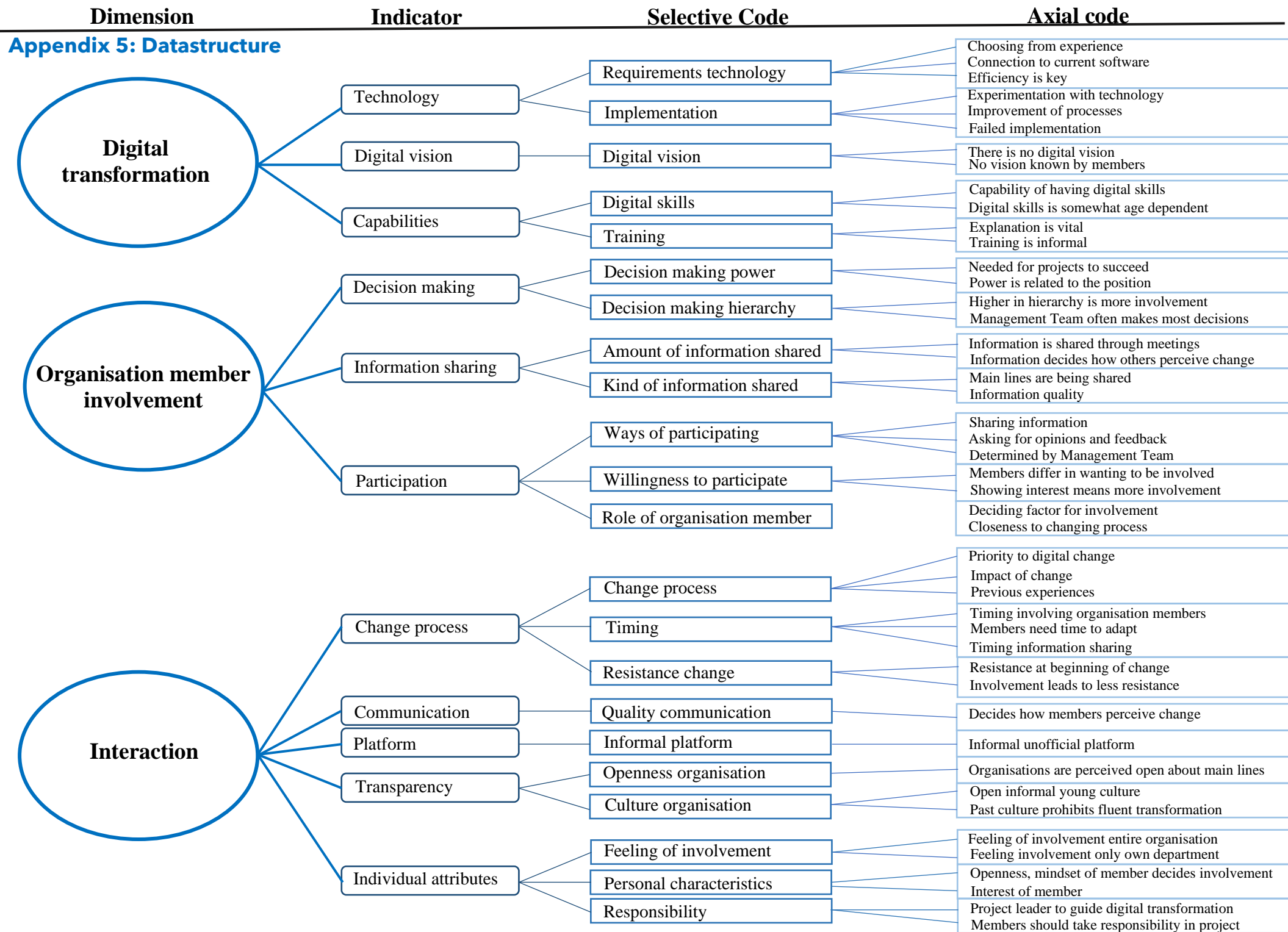
Closing script

Thanks again for taking part in the interview. This was very helpful. I will send you the script, so you can decide if I transcribed the interview in the right way.

Stop recording

Appendix 4: Final codebook

Dimension	Indicator	Description	Code
Digital transformation	Technology	The technologies who enable the digital transformation.	<i>Requirements technology</i>
			<i>Implementation</i>
	Digital vision	A digital vision in which the organisation explains what their goal is.	<i>Digital vision</i>
	Capabilities	The capabilities of organisation members to work with technology.	<i>Digital skills</i>
			<i>Training</i>
Organisation member involvement	Decision making	The power of organisation members to make decisions and the division of this.	<i>Decision making power</i>
			<i>Decision making hierarchy</i>
	Information sharing	Information might be shared to let organisation members better understand the change.	<i>Amount of information shared</i>
			<i>Kind of information shared</i>
	Participation	Different ways and amount of participating of organisation members, the role of the organisation member has an influence	<i>Ways of participating</i>
			<i>Willingness to participate</i>
			<i>Role of organisation member</i>
Interaction	Change process	The process of the change happening can have different amounts of impact, have different timing and sometimes there is also resistance	<i>Change process</i>
			<i>Timing</i>
			<i>Resistance change</i>
	Communication	The communication happening between the different roles organisation members have and the organisation.	<i>Quality communication</i>
	Platform	A platform might help the organisation members to share ideas, give feedback or have conversations.	<i>Informal platform</i>
	Transparency	The organisation can be open or closed towards the organisation members about the digital transformation.	<i>Openness organisation</i>
			<i>Culture organisation</i>
	Individual attributes	The members themselves play a big part in how they get involved, if they are involved this on certain attributes	<i>Feeling of involvement</i>
			<i>Personal characteristics</i>
			<i>Responsibility</i>



Appendix 5: Datastructure

Appendix 6: Survey questions

- 1 To what extent does this statement apply to you? “I am interested in the digital changes in the organisation.”**
 - a Not at all
 - b Somewhat
 - c To a large extent
 - d Completely
- 2 To what extent does this statement apply to you? “I take responsibility for initiating digital changes or improvements”**
 - a Not at all
 - b Somewhat
 - c To a large extent
 - d Completely
- 3 To what extent does this statement apply to you? “I take responsibility for the results of digital changes.”**
 - a Not at all
 - b Somewhat
 - c To a large extent
 - d Completely
- 4 To what extent does this statement apply to you? “I think it is important that I am involved in the digital changes taking place in the organisation.”**
 - a Not at all
 - b Somewhat
 - c To a large extent
 - d Completely
- 5 To what extent does this statement apply to you? “I feel involved in the digital changes taking place within the organisation.”**
 - a Not at all
 - b Somewhat
 - c To a large extent
 - d Completely
- 6 How intensively are you currently involved in the digital changes in your organisation?**
 - a I am not involved
 - b I am only being informed
 - c My knowledge/experience/opinion is asked for
 - d I am actively involved and think along with the changes
 - e I am seen as a partner and work together to achieve successful digital change
- 7 How intensively would you like to be involved in the digital changes in your organisation?**
 - a I do not want to be involved
 - b I just want to be informed
 - c I would also like to be asked for my knowledge/experience/opinion
 - d I would like to be actively involved and think about the change
 - e I would like to work together as a partner to achieve successful digital change
- 8 What do you see as the biggest problem/bottleneck with (further) digitalisation in the organisation?**

[fill in]

9 What is your gender?

- a Female
- b Male
- c Other

10 How long do you work at your current company?

- a 0-1 years
- b 2-4 years
- c 5-9 years
- d 10-19 years
- e 20-29 years
- f 30-39 years
- g 40-49 years
- h 50+ years

11 What is the size of the organisation?

- a 0-9 employees
- b 10-25 employees
- c 26-50 employees
- d 50-100 employees
- e 100+ employees

12 I am a...

- a Manager
- b Employee
- c Executive/CEO/Owner/Board member

13 What is your role in the organisation in relation to logistics?

- a I am part of the logistics department and work in this department
- b I work in a different department, but logistics does play a role in my work
- c I work in another department and logistics plays no role in my work
- d I have an owner/director/board position within the organisation

14 I would describe my organisation as...

- a We are just starting to use technology to improve the organisation and we do not have a clear digital vision yet.
- b We have been using technology to actively to improve the organisation for a while. We also sometimes use data to increase customer value.
- c We use digital technology to create a competitive advantage. The organisation is broadly led by technology.
- d We are a digital technology leader in our industry and we have a clear digital vision, where digital technology and day-to-day business are one.

Appendix 7: Codebook SPSS

#	Variable	Question	Answers	Measurement
1	Var_interest	I am interested in the digital changes in the organisation.	1 = Not at all 2 = Somewhat 3 = To a large extent 4 = Completely	Ordinal
2	Var_initiatives	I take responsibility for initiating digital changes or improvements	1 = Not at all 2 = Somewhat 3 = To a large extent 4 = Completely	Ordinal
3	Var_results	I take responsibility for the results of digital changes.	1 = Not at all 2 = Somewhat 3 = To a large extent 4 = Completely	Ordinal
4	Var_impinvolvement	I think it is important that I am involved in the digital changes taking place in the organisation.	1 = Not at all 2 = Somewhat 3 = To a large extent 4 = Completely	Ordinal
5	Var_feelinvolvement	I feel involved in the digital changes taking place within the organisation.	1 = Not at all 2 = Somewhat 3 = To a large extent 4 = Completely	Ordinal
6	Var_nowinvolvement	How intensively are you currently involved in the digital changes in your organisation?	1 = I am not involved 2 = I am only being informed 3 = My knowledge/experience/opinion is asked for 4 = I am actively involved and think along with the changes 5 = I am seen as a partner and work together to achieve successful digital change	Ordinal
7	Var_desireinvolvement	How intensively would you like to be involved in the digital changes in your organisation?	1 = I do not want to be involved 2 = I just want to be informed 3 = I would also like to be asked for my knowledge/experience/opinion 4 = I would like to be actively involved and think about the change 5 = I would like to work together as a partner to achieve successful digital change	Ordinal
8	Open text	What do you see as the biggest problem/bottleneck with (further) digitalisation in the organisation?	Not coded in SPSS	
9	Var_gender	What is your gender?	1 = Female 2 = Male 3 = Other	Nominal
10	Var_lengthemployment	How long do you work at your current company?	1 = 0-1 years 2 = 2-4 years 3 = 5-9 years 4 = 10-19 years 5 = 20-29 years 6 = 30-39 years 7 = 40-49 years 8 = 50+ years	Nominal
11	Var_sizeorganisation	What is the size of the organisation?	1 = 0-9 employees 2 = 10-25 employees 3 = 26-50 employees 4 = 50-100 employees 5 = 100+ employees	Nominal

12	Var_hierarchy	I am a...	1 = Manager	Nominal
			2 = Employee	
			3 = Executive/CEO/Owner/Board member	
13	Var_role	What is your role in the organisation in relation to logistics?	1 = I am part of the logistics department and work in this department	Nominal
			2 = I work in a different department, but logistics does play a role in my work	
			3 = I work in another department and logistics plays no role in my work	
			4 = I have an owner/director/board position within the organisation	
14	Var_digitalmaturity	I would describe my organisation as...	5 = We are just starting to use technology to improve the organisation and we do not have a clear digital vision yet.	Nominal
			6 = We have been using technology to actively to improve the organisation for a while. We also sometimes use data to increase customer value.	
			7 = We use digital technology to create a competitive advantage. The organisation is broadly led by technology.	
			8 = We are a digital technology leader in our industry and we have a clear digital vision, where digital technology and day-to-day business are one.	

Recode variables

#	Name recode var	Recode of variable	Answers	Original answer
10	Var_lengthrecode	Recode of length employment	1 = Short	1-4
			2 = Long	5-8
12	Var_hierarchyrecode	Recode of hierarchy	1 = Management and executives	1 and 3
			2 = Employees	2
1	Var_interestrecode	Recode of interest	1 = Not or little interested	1 and 2
			2 = Interested	3 and 4
2	Var_initiativesrecode	Recode of initiatives	1 = Not or little feeling responsible initiatives	1 and 2
			2 = Feeling responsible taking initiatives	3 and 4
3	Var_resultsrecode	Recode of results	1 = Not or little feeling responsible results	1 and 2
			2 = Feeling responsible for results	3 and 4
4	Var_impinvolvement recode	Recode of how important involvement is	1 = Not or little important involvement	1 and 2
			2 = Important involvement	3 and 4
5	Var_feelinvolvement recode	Recode of feeling of involvement	1 = Not or little feeling of involvement	1 and 2
			2 = Feeling of involvement	3 and 4
6	Intensity_now involvement recode	Recode of currently intensity involvement	1 = Passive involvement	1 and 2
			2 = Active involvement	3,4 and 5
7	Desire_involvement_ recode	Recode of desire intensity involvement	1 = Passive involvement	1 and 2
			2 = Active involvement	3,4 and 5

Appendix 8: Survey results

Missing data analysis

In total 51 respondents filled in the survey. From the 51 respondents, 46 could be used for the quantitative analysis. The 5 respondents stopped very early on in the survey and it has been decided not to use the entries of those 5 respondents. All the data that has been used for the analysis is therefore complete and doing a missing data analysis would be futile.

Data quality

The quality of the data has been measured in twofold. First the normality of the data has been analysed and afterwards the internal consistency of the questionnaire has been measured. The researcher is aware that in reality the sample of the study is too small for it to be reliable. However, still the tests will be carried out for education purposes. According to Field (2018) the theory of central limit theorem could apply here. The total of entries are 46, which makes that this exceeds the cut-off point for the central limit theorem, which is 30, and it can be assumed that the data is normally distributed. To test the normality of the data, kurtosis and skewness will be used. The limits of the kurtosis and skewness used in this study is ± 1.96 (Hair et al., 2019). After reviewing the data on kurtosis and skewness in the figure below, only Var_sizeorganisation (kurtosis = 3.17, skewness = 3.43) and Var_gender (kurtosis = 3.31, skewness = 2.06) are not within the limits. Var_sizeorganisation will not be used in this study, since it came apparent that these answers were not reliable. Var_gender is very much an outlier, as most of the people in the branche are male.

	Descriptive Statistics								
	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Var_interest In welke mate is deze stelling van toepassing op jou: Ik ben geïnteresseerd in de digitale veranderingen in de organisatie	46	2	4	3,22	,814	-,427	,350	-1,357	,688
Var_initiatives In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid om initiatieven te nemen met betrekking tot digitale veranderingen of verbeteringen	46	1	4	2,59	1,024	,014	,350	-1,118	,688
Var_results In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid voor de resultaten van de digitale veranderingen	46	1	4	2,52	1,090	-,004	,350	-1,274	,688
Var_impinvolvement In welke mate is deze stelling van toepassing op jou: Ik vind het belangrijk dat ik betrokken wordt bij de digitale veranderingen die plaats vinden in de organisatie	46	1	4	3,09	,784	-,446	,350	-,389	,688
Var_feelinvolvement In welke mate is deze stelling van toepassing op jou: Ik voel mij betrokken bij de digitale veranderingen die plaats vinden binnen de organisatie	46	1	4	2,48	,960	-,014	,350	-,888	,688
Var_nowinvolvement Hoe intensief wordt jij op dit moment betrokken bij de digitale veranderingen in jouw organisatie?	46	1	5	2,78	1,315	,176	,350	-1,166	,688
Var_desireinvolvement Hoe intensief zou jij betrokken willen worden bij de digitale veranderingen in jouw organisatie?	46	2	5	3,57	1,025	-,184	,350	-1,053	,688
Var_gender Wat is je geslacht?	46	1	3	1,87	,400	-1,112	,350	2,363	,688
Var_lengthemployment Hoeveel jaren ben je in dienst bij je huidige organisatie?	46	1	7	3,65	1,636	,178	,350	-,996	,688
Var_sizeorganisation Wat is de omvang van de organisatie waar je werkt?	46	1	5	3,28	,911	-1,159	,350	1,418	,688
Var_hierarchy Ik ben een...	46	1	3	1,80	,542	-,129	,350	,075	,688
Var_role Wat is jouw rol in de organisatie in relatie tot logistiek?	46	1	4	2,11	,795	,631	,350	,411	,688
Var_digitalmaturity Ik zou mijn organisatie omschrijven als...	46	1	4	2,26	,929	,312	,350	-,669	,688
Valid N (listwise)	46								

Frequency of the demographic variables

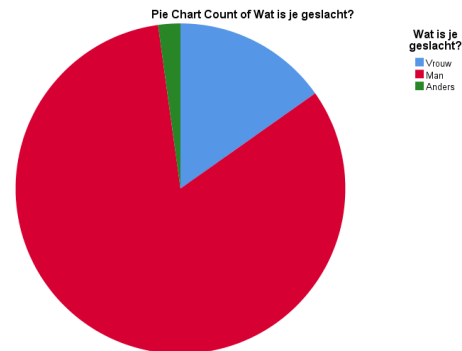
In this part of the analysis the frequencies of the various variables are shown. First the demographic variables (9-14) are shown and afterwards the main (1-7) variables are shown.

9. Var_gender

This variable represents the gender of the respondents. The variable gender has been asked to understand if there is a big difference in gender in the results. As can be seen in the graph and table below, 82,6% of the respondents are male. The study is therefore very male-dominated.

Statistics		
Var_gender Wat is je geslacht?		
N	Valid	46
	Missing	0
Mode		2

Var_gender Wat is je geslacht?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Vrouw	7	15,2	15,2	15,2
	2 Man	38	82,6	82,6	97,8
	3 Anders	1	2,2	2,2	100,0
	Total	46	100,0	100,0	

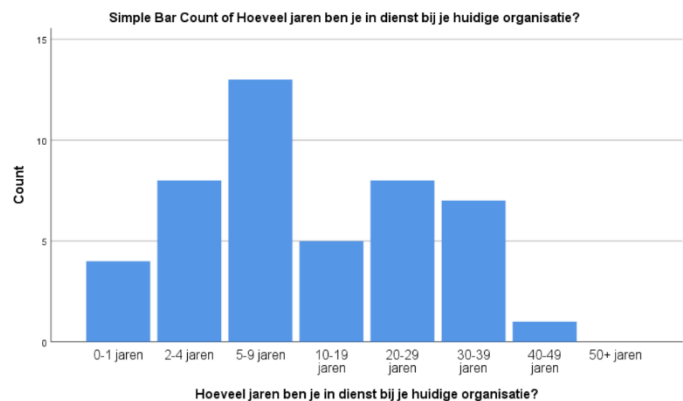


10. Var_lengthemployment

This variable entails the length of the employment of the organisation members in their current organisation. As can be seen in the figures below, the mean of the length of employment is 3,65. This means that average of the length of employment lies between 10 and 19 years.

Statistics		
Var_lengthemployment Hoeveel jaren ben je in dienst bij je huidige organisatie?		
N	Valid	46
	Missing	0
Mean		3,65
Median		3,00
Mode		3
Std. Deviation		1,636

Var_lengthemployment Hoeveel jaren ben je in dienst bij je huidige organisatie?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 0-1 jaren	4	8,7	8,7	8,7
	2 2-4 jaren	8	17,4	17,4	26,1
	3 5-9 jaren	13	28,3	28,3	54,3
	4 10-19 jaren	5	10,9	10,9	65,2
	5 20-29 jaren	8	17,4	17,4	82,6
	6 30-39 jaren	7	15,2	15,2	97,8
	7 40-49 jaren	1	2,2	2,2	100,0
	Total	46	100,0	100,0	



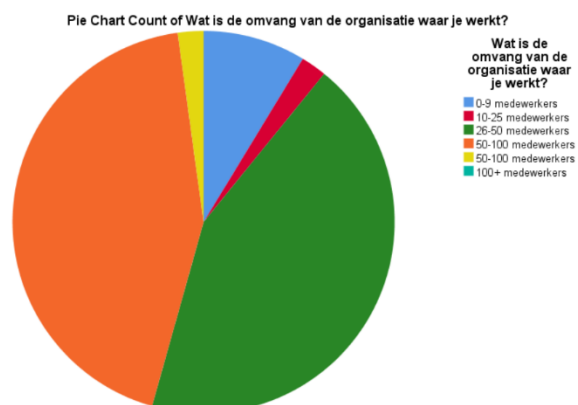
11. Var_sizeorganisation

This variable needed to ask what the size was of the organisation they currently work in is. However, apparently lots of the respondents do not know their actual organisation size. This became apparent, since the survey had just been sent to one organisation and already the answers differed too much from the actual size of the organisation. The results can be found in the table down below, but this variable will not be used in any other analyses, nor will it be in the main report.

Statistics		
Var_sizeorganisation Wat is de omvang van de organisatie waar je werkt?		
N	Valid	46
	Missing	0
Mean		3,28
Median		3,00
Mode		3 ^a
Std. Deviation		,911

a. Multiple modes exist.
The smallest value
is shown

Var_sizeorganisation Wat is de omvang van de organisatie waar je werkt?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 0-9 medewerkers	4	8,7	8,7	8,7
	2 10-25 medewerkers	1	2,2	2,2	10,9
	3 26-50 medewerkers	20	43,5	43,5	54,3
	4 50-100 medewerkers	20	43,5	43,5	97,8
	5 100+ medewerkers	1	2,2	2,2	100,0
	Total	46	100,0	100,0	



12. Var_hierarchy

This question entails what kind of position the respondent has in the organisation. This could either be employee, manager or owner/director. Most of the respondents are employees, 67,4%. The other 32,6% are managers or owners/directors.

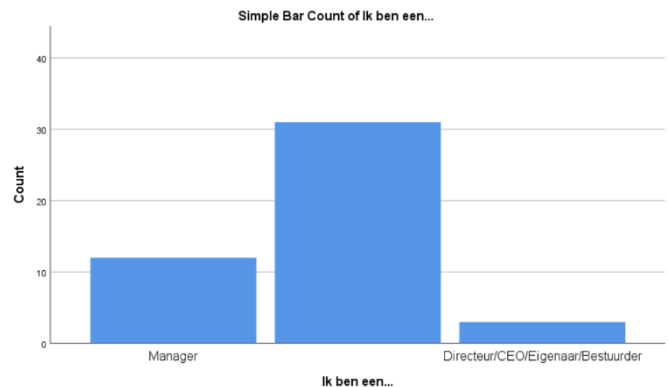
Statistics

Var_hierarchy Ik ben een...

N	Valid	46
	Missing	0
Mode		2
Std. Deviation		,542

Var_hierarchy Ik ben een...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Manager	12	26,1	26,1	26,1
	2 Medewerker	31	67,4	67,4	93,5
	3 Directeur/CEO/Eigenaar/Bestuurder	3	6,5	6,5	100,0
	Total	46	100,0	100,0	



13. Var_role

This variable shows how the respondent is related to the logistics department. As you can immediately see, the amount of 4's answered in this variable correspond with the answer 3 in the previous variable. Most of the respondents work in the logistic department or logistics plays an important part in their job.

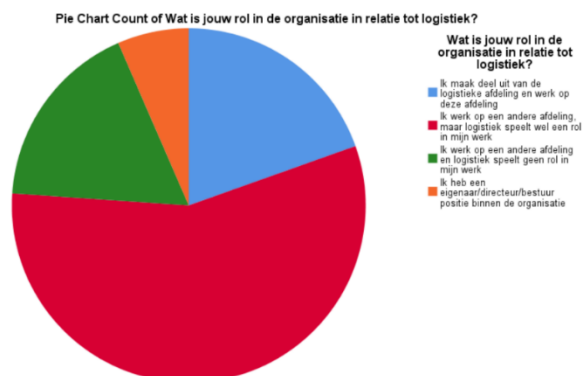
Statistics

Var_role Wat is jouw rol in de organisatie in relatie tot logistiek?

N	Valid	46
	Missing	0
Mode		2

Var_role Wat is jouw rol in de organisatie in relatie tot logistiek?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Ik maak deel uit van de logistieke afdeling en werk op deze afdeling	9	19,6	19,6	19,6
	2 Ik werk op een andere afdeling, maar logistiek speelt wel een rol in mijn werk	26	56,5	56,5	76,1
	3 Ik werk op een andere afdeling en logistiek speelt geen rol in mijn werk	8	17,4	17,4	93,5
	4 Ik heb een eigenaar/directeur/bestuurder positie binnen de organisatie	3	6,5	6,5	100,0
	Total	46	100,0	100,0	



14. Var_digitalmaturity

This variable shows what kind of digital maturity stage the organisation is, according to the respondents. The answers are quite dispersed. In reality, based on the forms which actually measure the digital maturity, some respondents overestimated the organisations digital maturity and some underestimated this.

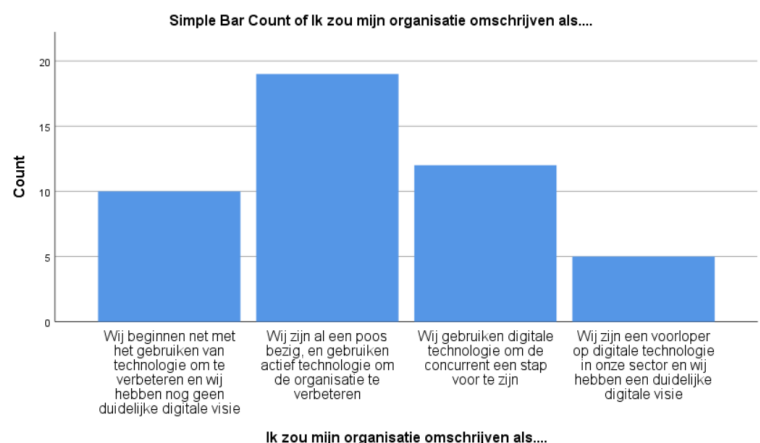
Statistics

Var_digitalmaturity Ik zou mijn organisatie omschrijven als....

N	Valid	46
	Missing	0
Mean		2,26
Median		2,00
Mode		2

Var_digitalmaturity Ik zou mijn organisatie omschrijven als....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Wij beginnen net met het gebruiken van technologie om te verbeteren en wij hebben nog geen duidelijke digitale visie	10	21,7	21,7	21,7
	2 Wij zijn al een poos bezig, en gebruiken actief technologie om de organisatie te verbeteren	19	41,3	41,3	63,0
	3 Wij gebruiken digitale technologie om de concurrent een stap voor te zijn	12	26,1	26,1	89,1
	4 Wij zijn een voorloper op digitale technologie in onze sector en wij hebben een duidelijke digitale visie	5	10,9	10,9	100,0
	Total	46	100,0	100,0	



Frequency of the main variables

1. Var_interest

This question was asked to understand the interest of the respondents in the digital changes happening in their organisation. As can be seen in the figures below, most of the respondents say that they are very interested in the digital changes in their organisation. Not even one respondent said that they were not interested.

Statistics

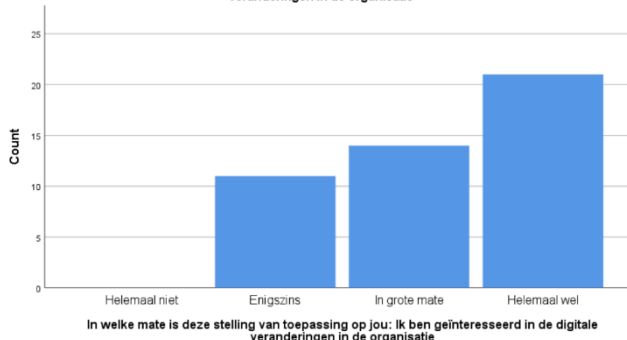
Var_interest In welke mate is deze stelling van toepassing op jou: Ik ben geïnteresseerd in de digitale veranderingen

N	Valid	46
	Missing	0
Mean		3,22
Median		3,00
Mode		4

Var_interest In welke mate is deze stelling van toepassing op jou: Ik ben geïnteresseerd in de digitale veranderingen in de organisatie

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2 Enigszins	11	23,9	23,9	23,9
3 In grote mate	14	30,4	30,4	54,3
4 Helemaal wel	21	45,7	45,7	100,0
Total	46	100,0	100,0	

Simple Bar Count of In welke mate is deze stelling van toepassing op jou: Ik ben geïnteresseerd in de digitale veranderingen in de organisatie



2. Var_initiatives

This variable entails if the respondent feels the responsibility to take initiatives regarding digital changes or improvements. Most of the respondents (34,8%) feels somewhat responsible for taking initiatives. There is a clear line, that half of the people do not feel responsible or somewhat and the other half feels responsible for taking initiatives.

Statistics

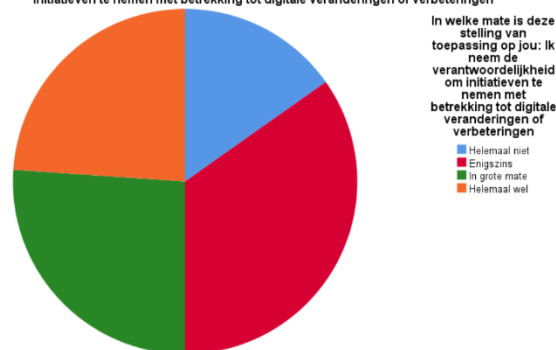
Var_initiatives In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid om initiatieven te nemen

N	Valid	46
	Missing	0
Mean		2,59
Median		2,50
Mode		2

Var_initiatives In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid om initiatieven te nemen met betrekking tot digitale veranderingen of verbeteringen

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Helemaal niet	7	15,2	15,2	15,2
2 Enigszins	16	34,8	34,8	50,0
3 In grote mate	12	26,1	26,1	76,1
4 Helemaal wel	11	23,9	23,9	100,0
Total	46	100,0	100,0	

Pie Chart Count of In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid om initiatieven te nemen met betrekking tot digitale veranderingen of verbeteringen



3. Var_results

This question entails if the respondents feel the responsibility for the results of the digital changes. There are therefore more people who feel responsible for the results, than for taking the initiative. Here again is there a big separation between one half of the respondents who do not feel responsible and the half who does feel responsible.

Statistics

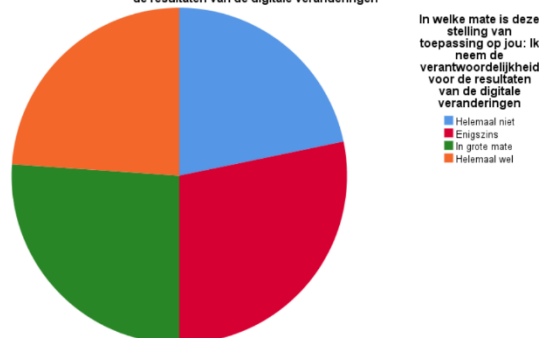
Var_results In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid voor de resultaten

N	Valid	46
	Missing	0
Mean		2,52
Median		2,50
Mode		2

Var_results In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid voor de resultaten van de digitale veranderingen

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Helemaal niet	10	21,7	21,7	21,7
2 Enigszins	13	28,3	28,3	50,0
3 In grote mate	12	26,1	26,1	76,1
4 Helemaal wel	11	23,9	23,9	100,0
Total	46	100,0	100,0	

Pie Chart Count of In welke mate is deze stelling van toepassing op jou: Ik neem de verantwoordelijkheid voor de resultaten van de digitale veranderingen



4. Var_impinvolvement

This variable entails the feeling of wanting to be involved in the digital changes and how important that is to the organisations members. 97,8 % of the respondents find it important that they are involved. Most of the respondents want to be involved to a large extent.

Statistics

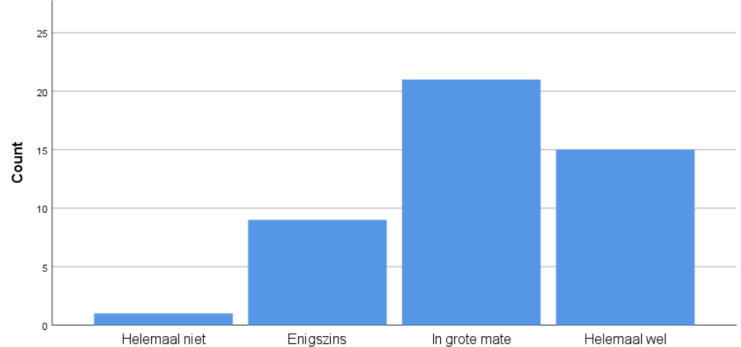
Var_impinvolvement In welke mate is deze stelling van toepassing op jou: Ik vind het belangrijk dat ik betrokken wordt bij de digitale veranderingen

N	Valid	46
	Missing	0
Mean		3,09
Median		3,00
Mode		3

Var_impinvolvement In welke mate is deze stelling van toepassing op jou: Ik vind het belangrijk dat ik betrokken wordt bij de digitale veranderingen die plaats vinden in de organisatie

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Helemaal niet	1	2,2	2,2	2,2
	2 Enigszins	9	19,6	19,6	21,7
	3 In grote mate	21	45,7	45,7	67,4
	4 Helemaal wel	15	32,6	32,6	100,0
Total		46	100,0	100,0	

Simple Bar Count of In welke mate is deze stelling van toepassing op jou: Ik vind het belangrijk dat ik betrokken wordt bij de digitale veranderingen die plaats vinden in de organisatie



5. Var_feelinvolvement

This question asked about how involved the respondents currently feel regarding to digital changes. 50% of the respondents answered that they did not feel involved or just a little bit. The other 50% says they do feel involved to a large extent or completely. However, comparing to Var_impinvolvement, there is a discrepancy between how important they find it to be involved, to how they actually feel involved.

Statistics

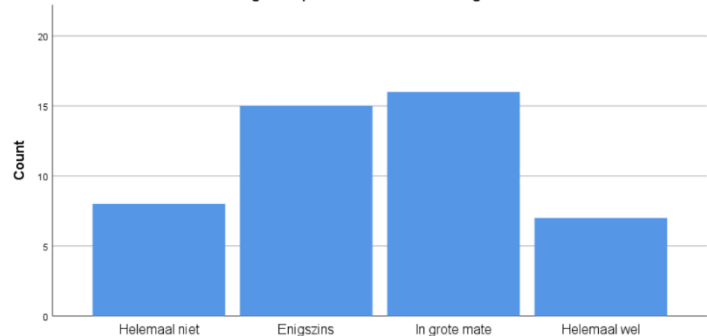
Var_feelinvolvement In welke mate is deze stelling van toepassing op jou: Ik voel mij betrokken bij de digitale veranderingen

N	Valid	46
	Missing	0
Mean		2,48
Median		2,50
Mode		3

Var_feelinvolvement In welke mate is deze stelling van toepassing op jou: Ik voel mij betrokken bij de digitale veranderingen die plaats vinden binnen de organisatie

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Helemaal niet	8	17,4	17,4	17,4
	2 Enigszins	15	32,6	32,6	50,0
	3 In grote mate	16	34,8	34,8	84,8
	4 Helemaal wel	7	15,2	15,2	100,0
Total		46	100,0	100,0	

Simple Bar Count of In welke mate is deze stelling van toepassing op jou: Ik voel mij betrokken bij de digitale veranderingen die plaats vinden binnen de organisatie



6. Var_nowinvolvement

This variable entails how the respondent is currently involved with digital changes in the organisation. Only 34,8% of the organisation gets actively involved in digital changes. 19,6% say they are not being involved at all.

Statistics

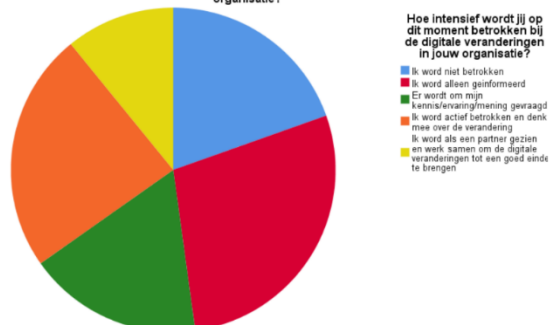
Var_nowinvolvement Hoe intensief wordt jij op dit moment betrokken bij de digitale veranderingen in jouw organisatie?

N	Valid	46
	Missing	0
Mean		2,78
Median		3,00
Mode		2

Var_nowinvolvement Hoe intensief wordt jij op dit moment betrokken bij de digitale veranderingen in jouw organisatie?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Ik word niet betrokken	9	19,6	19,6	19,6
	2 Ik word alleen geïnformeerd	13	28,3	28,3	47,8
	3 Er wordt om mijn kennis/ervaring/ mening gevraagd	8	17,4	17,4	65,2
	4 Ik word actief betrokken en denk mee over de verandering	11	23,9	23,9	89,1
	5 Ik word als een partner gezien en werk samen om de digitale veranderingen tot een goed einde te brengen	5	10,9	10,9	100,0
Total		46	100,0	100,0	

Pie Chart Count of Hoe intensief wordt jij op dit moment betrokken bij de digitale veranderingen in jouw organisatie?



7. Var_desireinvolvement

This variable entails how the respondent would want to get involved in digital changes. As can be seen, the option “not at all”, has not been answered. The mode of this variable is answer four. This means that most of the people want to be actively involved or at least asked for their opinions.

Statistics

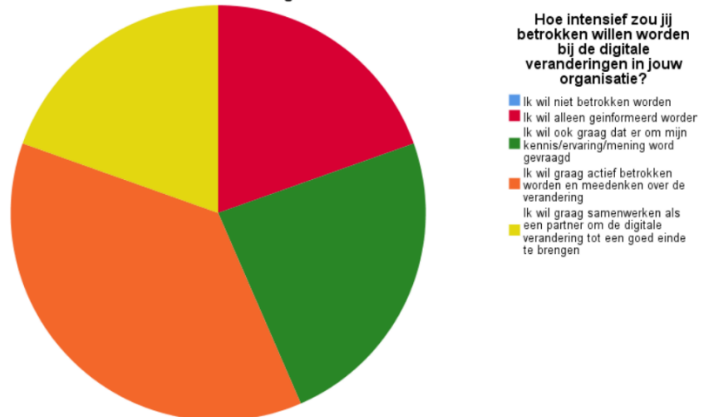
Var_desireinvolvement Hoe intensief zou jij betrokken willen worden bij de digitale veranderingen in jouw organisatie?

N	Valid	46
	Missing	0
Mean		3,57
Median		4,00
Mode		4

Var_desireinvolvement Hoe intensief zou jij betrokken willen worden bij de digitale veranderingen in jouw organisatie?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 Ik wil alleen geïnformeerd worden	9	19,6	19,6	19,6
	3 Ik wil ook graag dat er om mijn kennis/ervaring/mening word gevraagd	11	23,9	23,9	43,5
	4 Ik wil graag actief betrokken worden en meedenken over de verandering	17	37,0	37,0	80,4
	5 Ik wil graag samenwerken als een partner om de digitale verandering tot een goed einde te brengen	9	19,6	19,6	100,0
Total		46	100,0	100,0	

Pie Chart Count of Hoe intensief zou jij betrokken willen worden bij de digitale veranderingen in jouw organisatie?



8. Var_problemdt

This question was an open question, where respondents could fill in text. The question entails what according to the respondents the biggest problems were with digital transformation. Two respondents answered that there were no problems according to them. 40% of the answers were related to the digital transformation itself. Repeating themes related to digital transformation were finances, so having a budget to pursue the digital transformation. Other problems were software itself and knowledge of the digital transformation which is not there now. The other 60% of the answers were related to organisation members themselves. Most often the answers were related to inadequately sharing information or not communicating at all. The other answers were related to resistance or not being able to work together.

Crosstabs & Chi Square

In this paragraph, only the tests who seemed significant are mentioned. To understand if there is a difference between two nominal groups, the chi square has been used (Baarda, van Dijkum, & de Goede, 2014). The chi square can be used when not one expected celfrequencies is smaller than 1, 80% of the expected celfrequencies must have a value bigger than 5, and they cannot have too many categories. This test has been conducted for the main questions and below a few of them who seemed significant ($p < \alpha$, $\alpha=0.05$), according to the chi square, have been shown.

Var_initiatives x Var_hierarchy

To measure the initiatives well, the initiatives variable has been recoded. Instead of four answers, there are now two answers. In which 1 and 2 are together 1, and 3 and 4 are together 2. 1 means that there is no feeling of responsibility towards taking initiatives at all or just very little. 2 means that there is a lot of feeling of responsibility towards taking initiatives. This together has been measured with the recode of Var_hierarchy, wherein 1 means the role of a manager or director and 2 means the role of an employee.

Var_hierarchyrecode Hierarchy recode * Var_initiativesrecode initiatives recode Crosstabulation

Count		Var_initiativesrecode initiatives recode		Total
		1,00000	2,00000	
Var_hierarchyrecode Hierarchy recode	1,00000	3	12	15
	2,00000	20	11	31
Total		23	23	46

It seems that there is a significant difference between employees and managers in their feeling of responsibility in taking initiatives in digital transformations. Managers feel more responsibility to take initiatives than employees. However, around the same amount of employees as managers feel the responsibility to take initiatives ($\chi^2=8,013$; $df=1$; $p<.01$).

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8,013 ^a	1	,005		
Continuity Correction ^b	6,331	1	,012		
Likelihood Ratio	8,433	1	,004		
Fisher's Exact Test				,011	,005
Linear-by-Linear Association	7,839	1	,005		
N of Valid Cases	46				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,50.

b. Computed only for a 2x2 table

Var_results x Var_hierarchy

To measure the results variable well, the results variable has been recoded. Instead of four answers, there are now two answers. In which 1 and 2 are together 1, and 3 and 4 are together 2. 1 means that there is no feeling of responsibility for the results of the digital transformation at all or just very little. 2 means that there is a lot of feeling of responsibility for the results of the digital transformation. This together has been measured with the recode of Var_hierarchy, wherein 1 means the role of a manager or director and 2 means the role of an employee.

Var_hierarchyrecode Hierarchy recode * Var_resultsrecode Results recode Crosstabulation

Count		Var_resultsrecode Results recode		Total
		1,00000	2,00000	
Var_hierarchyrecode Hierarchy recode	1,00000	3	12	15
	2,00000	20	11	31
Total		23	23	46

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8,013 ^a	1	,005		
Continuity Correction ^b	6,331	1	,012		
Likelihood Ratio	8,433	1	,004		
Fisher's Exact Test				,011	,005
Linear-by-Linear Association	7,839	1	,005		
N of Valid Cases	46				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,50.

b. Computed only for a 2x2 table

It seems that there is a significant difference between employees and managers in their feeling of responsibility for the results of the digital transformation. Managers feel more responsibility for the results of the transformation than employees. However, around the same amount of employees as managers feel the responsibility to take initiatives ($\chi^2=8,013$; $df=1$; $p<.01$).

Var_feelinvolvement x Var_hierarchy

To measure the feeling of involvement variable well, the Var_feelinvolvement variable has been recoded. Instead of four answers, there are now two answers. In which 1 and 2 are together 1, and 3 and 4 are together 2. 1 means that there is no or little feeling of involvement currently. 2 means that the respondent does feel involved in the digital transformation. This together has been measured with the recode of Var_hierarchy, wherein 1 means the role of a manager or director and 2 means the role of an employee.

Var_hierarchyrecode Hierarchy recode *
Var_feelinvolvementrecode Feel involvement recode
Crosstabulation

Count		Var_feelinvolvementrecode Feel involvement recode		Total
		1,00000	2,00000	
Var_hierarchyrecode	1,00000	3	12	15
Hierarchy recode	2,00000	20	11	31
Total		23	23	46

It seems that there is a significant difference between employees and managers in if they feel involved yes or no. Relatively spoken, managers feel more involved than employees. However, around the same amount of employees as managers feel involved. Employees feel more not involved, than they do feel involved. ($\chi^2=8,013$; $df=1$; $p<.01$).

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	8,013 ^a	1	,005		
Continuity Correction ^b	6,331	1	,012		
Likelihood Ratio	8,433	1	,004		
Fisher's Exact Test				,011	,005
Linear-by-Linear Association	7,839	1	,005		
N of Valid Cases	46				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,50.

b. Computed only for a 2x2 table

As can be seen the three variables above have the same χ^2 . The other two statement variables are not significant. Var_interest ($\chi^2=1,369$; $df=1$; $p=.242$). Var_impinvolvement ($\chi^2=2,972$; $df=1$; $p=.085$).

Var_nowinvolvement x Var_hierarchy

To measure the intensity of involvement variable measures how the respondents are currently involved in the digital transformation in his or her organisation. This together has been measured with the recode of Var_hierarchy, wherein 1 means the role of a manager or director and 2 means the role of an employee.

It seems that there is a significant difference between employees and managers in how the members are involved. Relatively spoken, managers are more actively involved than employees. ($\chi^2=12,622$; $df=4$; $p<.05$).

Var_hierarchyrecode Hierarchy recode * Var_nowinvolvement Hoe intensief wordt jij op dit moment betrokken bij de digitale veranderingen in jouw organisatie? Crosstabulation

Count		Var_nowinvolvement Hoe intensief wordt jij op dit moment betrokken bij de digitale veranderingen in jouw organisatie?					Total
		1 Ik word niet betrokken	2 Ik word alleen geïnformeerd	3 Er wordt om mijn kennis/ervaring/ mening gevraagd	4 Ik word actief betrokken en denk mee over de verandering	5 Ik word als een partner gezien en werk samen om de digitale veranderingen tot een goed einde te brengen	
Var_hierarchyrecode	1,00000	0	3	2	6	4	15
Hierarchy recode	2,00000	9	10	6	5	1	31
Total		9	13	8	11	5	46

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12,622 ^a	4	,013
Likelihood Ratio	14,881	4	,005
Linear-by-Linear Association	11,633	1	,001
N of Valid Cases	46		

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is 1,63.

However, another aspect of the chi square is that at least 80% of the cells have an expected count of more than 5. This is not the case for this involvement. So yes, the variable is significant, but because 60% of the cells have an expected count less than 5, this test cannot be used.

If we recode this variable to 1= passive involvement and 2= active involvement, the tests can be used. 1 is the codes 1 and 2, so no involvement or only informed. And 2 exists of 3,4 and 5, and means that the respondents are actively involved in the digital transformation process. It seems that there is now a significant difference between employees and managers in how the members are involved. Managers are more actively involved, while employees are more passive involved. ($\chi^2=6,907$; $df=1$; $p<.01$).

Var_hierarchyrecode Hierarchy recode * intensity_nowinvolvement Now involvement recode

Crosstab				
Count		intensity_nowinvolvement Now involvement recode		Total
		1,00000	2,00000	
Var_hierarchyrecode	1,00000	3	12	15
Hierarchy recode	2,00000	19	12	31
Total		22	24	46

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6,907 ^a	1	,009	
Continuity Correction ^b	5,351	1	,021	
Likelihood Ratio	7,290	1	,007	
Fisher's Exact Test				,012
Linear-by-Linear Association	6,757	1	,009	
N of Valid Cases	46			

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,17.
b. Computed only for a 2x2 table

Var_desireinvolvement x Var_hierarchy

To measure the intensity of involvement variable measures how the respondents want to be involved in the digital transformation in his or her organisation. This together has been measured with the recode of Var_hierarchy, wherein 1 means the role of a manager or director and 2 means the role of an employee.

Var_hierarchyrecode Hierarchy recode * Var_desireinvolvement Hoe intensief zou jij betrokken willen worden bij de digitale veranderingen in jouw organisatie? Crosstabulation

Count		Var_desireinvolvement Hoe intensief zou jij betrokken willen worden bij de digitale veranderingen in jouw organisatie?				Total
		2 Ik wil alleen geïnformeerd worden	3 Ik wil ook graag dat er om mijn kennis/ervaring/ mening word gevraagd	4 Ik wil graag actief betrokken worden en meedenken over de verandering	5 Ik wil graag samenwerken als een partner om de digitale verandering tot een goed einde te brengen	
Var_hierarchyrecode	1,00000	0	2	7	6	15
Hierarchy recode	2,00000	9	9	10	3	31
Total		9	11	17	9	46

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10,715 ^a	3	,013
Likelihood Ratio	13,163	3	,004
Linear-by-Linear Association	10,418	1	,001
N of Valid Cases	46		

a. 3 cells (37,5%) have expected count less than 5. The minimum expected count is 2,93.

It seems that there is a significant difference between employees and managers in how they want to be involved in the digital transformation. Relatively spoken, managers are more actively involved than employees. ($\chi^2=10,715$; $df=4$; $p<.05$). However, another aspect of the chi square is that at least 80% of the cells have an expected count of more than 5. This is not the case for this involvement. So yes, the variable is significant, but because 37,5% of the cells have an expected count less than 5, this test cannot be used.

If we recode this variable to 1= passive involvement and 2= active involvement, the tests can be used. 1 is the codes 1 and 2, so no involvement or only informed. And 2 exists of 3,4,5 and means that the respondents want to be actively involved in the digital transformation process. It seems that there is now a significant difference between employees and managers in how they want to be involved. Managers and employees both want to be involved in the digital transformation ($\chi^2=5,414$; $df=1$; $p<.05$).

Var_hierarchyrecode Hierarchy recode * Desire_involvement_recode Desire involvement recode

Crosstab				
Count		Desire_involvement_recode Desire involvement recode		Total
		1,00000	2,00000	
Var_hierarchyrecode	1,00000	0	15	15
Hierarchy recode	2,00000	9	22	31
Total		9	37	46

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5,414 ^a	1	,020	
Continuity Correction ^b	3,726	1	,054	
Likelihood Ratio	8,126	1	,004	
Fisher's Exact Test				,021
Linear-by-Linear Association	5,296	1	,021	
N of Valid Cases	46			

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 2,93.
b. Computed only for a 2x2 table