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Mindset Matters: How and When Fixed Digital Mindset Influences Employees' Approach Towards and Avoidance of New Workplace Technology

Navn:	Maria Paula Botero Aristizabal, Kaja Onsum Rasmussen-Moseid

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Mindset Matters: How and When Fixed Digital Mindset Influences Employees' Approach Towards and Avoidance of New Workplace Technology

Authors:

Kaja O. Rasmussen-Moseid and Maria Paula Botero

Supervisor:

Elizabeth Solberg

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Abstract

The aim of the present study was to investigate whether having a fixed digital mindset relates to employees' approach or avoidance towards new workplace technology. We draw on the field of implicit theories and the job crafting literature to explore technology acceptance in a novel manner. The study used questionnaire data collected at two time points from 94 employees in a Norwegian firm where a new technology was being implemented. The results of our first model indicate that there is a relationship between fixed digital mindset and the extent to which employees avoid technology, and this can be influenced by perceptions of subjective norms. Concerning our second model, the hypothesized moderated mediation relating fixed digital mindset to technology approach was not supported. This indicated that training initiative frequency and perceived usefulness did not mediate the relationship, even though digital self-efficacy was found to partially moderate the relationship between having a fixed digital mindset and training initiative frequency. These findings are reviewed in terms of their limitations and implications for future research.

1.0 Introduction

Technology has become increasingly central to the success of most contemporary businesses (Kane, Palmer, Phillips, Kiron, & Buckley, 2017). New technology offers numerous benefits, such as the potential to increase productivity and improve employees' daily lives (Cardona, Kretschmer & Strobel, 2013). Despite the associated benefits, the implementation of new technology is costly and its success rate is relatively low (Legris, Ingham & Collerette, 2003). The success is highly dependent on technology adoption, that is, the extent to which employees accept and use the new technology. For that reason, understanding what contributes to the successful adoption of new technology at work has become a key concern for organizations.

For more than two decades, the Technology Acceptance Model (TAM) has been the most widely used model to understand acceptance and usage of new technology (Lee, Kozar & Larsen, 2003). The earlier version of the model had a strong predictive power, which, combined with its parsimony, contributed to the proliferation of its research (Bagozzi, 2007). After multiple contributions and extensions, questions have been raised regarding the model's applicability, as it became too complex (Bagozzi, 2007, Yousafzai, Foxall & Pallister, 2007). Whereas other scholars suggest the core model could be adapted (Benbasat & Barki, 2007) and integrated in a way that takes into consideration more human and social change processes (Legris, Ingham and Collerette, 2003).

Tarafdar, Darcy, Turel and Gupta (2015, p. 61) argue that *"we may be entering an era in which human frailties begin to slow down progress from digital technologies"*, which sheds light on the importance of examining the role some individual differences could play in the process of technology adoption. Solberg, Traavik and Wong (2020) propose to look into implicit beliefs - or mindsets -,

suggesting this factor has the potential to direct behavior in the context of technology. They posit mindsets can influence employees' adoption or avoidance of new workplace technology. They introduce the idea of investigating digital mindset beliefs as an individual difference that directs individuals towards technology usage or avoidance.

Building on the research of Solberg et al. (2020), we seek to investigate how individuals' digital mindset beliefs, specifically as they refer to the malleability of technological ability, influence their adoption of new workplace technology, or avoidance thereof, both directly and in relation to variables central to TAM. Specifically, we are interested in how having a fixed digital mindset, referring to beliefs that one's technological abilities are static and unchangeable, might relate to these outcomes. We therefore aim to investigate the following research question: *How and under what conditions does having a fixed digital mindset relate to an employee's approach towards, or avoidance of, new technology?* With this in mind, we attempt to understand how and when these variables relate. In doing this, we address the proposal of scholars to integrate key variables from the TAM (Benbasat & Barki, 2007; Legris et al., 2003) with a noteworthy individual variable which has the potential to direct behavior when new technology is being introduced (Solberg et al., 2020). Thereby integrating theoretical contributions from what may seem like disparate literatures, in an attempt to examine how these two established theories can increase our understanding of technology adoption when applied together.

The intended contribution of our research is threefold. First, we contribute to theory by examining whether digital mindsets can influence individuals in avoiding or approaching new workplace technology. This is a valuable input to the field of information systems research as a step to further understand

technology acceptance by examining a new variable that has been unexplored within the field. We also contribute to the implicit theory - or mindset - literature by exploring the relevance of this concept when applied specifically to the domain of technology. Moreover, we provide value to the nascent research field of the novel conceptualization of digital mindset by examining how it can relate to other important variables.

Second, we explore substituting the traditional way of measuring technology usage by adopting a measure grounded in the job crafting literature. This advances the research on technology acceptance by trying to measure more broadly how employees may actively approach technology, or make efforts to avoid technology.

Third, our research provides value to practitioners by exploring whether training can be an underlying mechanism driving individuals with a fixed digital mindset towards approaching new workplace technology. Further, insight into how mindset may cause a portion of the employees to be more susceptible to avoid technology could benefit practitioners in the process of designing technology implementation processes. They could therefore try to manage and leverage the diversity of digital mindsets in a way that is tailored to the different needs of employees.

2.0 Literature Review

2.1 Technology acceptance model

Davis (1986) introduced the Technology Acceptance Model (TAM) to understand what factors lead to technology acceptance and to develop a validated model which could measure and predict technology usage. The model is an adaptation of the theory of reasoned action (TRA) developed by Ajzen and Fishbein (1980), which links individuals' attitudes and behavioral intentions to

their actual behaviors and actions. TAM posits that individual perceptions of a technology's attributes will influence attitudes and intention to use and thus lead to technology usage (Davis, 1989). The two main perceptions are the perceived usefulness (PU) and the perceived ease of use (PEU) of the new technology. The former is defined as *"the degree to which a person believes that using a particular system would enhance his or her job performance"*(Davis, 1989, p.320) whilst the latter refers to *"the degree to which a person believes that using a particular system would be free of effort"* (Davis, 1989, p.320).

Davis' (1989) study demonstrated that both PEU and PU correlated with self-reported current usage and self-predicted future usage. His findings revealed that PU was "significantly more strongly linked to usage than was ease of use" (p.333), and that PEU could be a potential antecedent of PU. Thereby presenting PU and PEU as the two main determinants for predicting technology acceptance or rejection. In essence, whether an individual uses a particular technology will depend on the extent to which they perceive the technology useful and easy to use. Through rigours research over several years it has been established that PU is the key in predicting usage, with PEU being a main antecedent (Benbasat & Barki, 2007; Davis, Bagozzi & Warshaw, 1989; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000; Yousafzai et al., 2007).

Davis et al. (1989) supported the original findings by conducting a longitudinal study which replicated the predictive power of the two determinants on intentions to use the given technology. Demonstrating TAM is able to explain around 40% of the variance in usage intentions and behavior. They advised future studies to examine multiple external variables, such as educational programs, training and user support, and the nature of the implementation process, as antecedents to PEU and PU to further explain and understand the process of

technology acceptance. For instance, they assert that educational programs could be designed to facilitate perceived usefulness by persuading users of the utility of a particular technology and the potential productivity gains.

2.2.1 TAM introduction, validation and extension

Lee and colleagues (2003) indicate that following the introduction of the TAM, several scholars tried to contribute to the research on the model either by replicating the TAM with different technologies (Adams, Nelson & Todd, 1992; Davis, 1993; Subramanian, 1994) or by trying to understand how the TAM differentiated to the theory of reasoned action, which was its origin (TRA). Mathieson (1991) was among the scholars that critically reviewed the model and compared it against the TRA. He acknowledged the TAM's empirical strength and value, but argued it ignored other potential variables that could influence an individual's decision to adopt a technology in addition to PU and PEU. He pointed to how the lack of consideration variables such as social norms which were present in the TRA could be pertinent to address, as it could be important in capturing variance that was not explained by other variables in the TAM.

After the introduction phase of the TAM, the model went through a validation and an extension period (Lee et al., 2003). In the validation period multiple studies tried to explore the validity and reliability of both PU and PEU, where the scales were found to be highly valid and reliable (Adams et al., 1992; Hartwick & Barki, 1994). Overall in this phase it was demonstrated that the TAM's instruments were powerful, consistent, reliable and valid (Lee et al., 2003). Subsequently, in the extension period of the model numerous scholars investigated the TAM with other main constructs and therefore new versions of the model were developed (Legris et al., 2003), which are reviewed in the following sections.

2.1.2 Model extension: TAM2

The first extension of the model was developed and established by Venkatesh and Davis (2000), and they labeled it TAM2. As prior research had investigated the determinants of PEU (Venkatesh & Davis, 1996), the focus of TAM2 was to investigate the antecedents of PU. Responding to the call for including social norms (Mathieson, 1991), social influence processes were now included as variables in the model. These were described as processes which can impact individuals when they form their attitudes and intentions towards acceptance or rejection of new technology. These variables included subjective norms, experience, voluntariness, and image. Subjective norms refers to whether the individual perceives that people who are important to him or her think that they should perform the behavior in question (Fishbein & Azjen, 1975). Experience refers to the amount of time an individual has used the particular technology. Voluntariness refers to the extent to which individuals believe that adopting the technology is non-mandatory. Lastly, image refers to the degree to which using a particular technology will enhance an individual's status in their social system.

Additionally, they included variables related to cognitive instrumental processes, which is described as how individuals evaluate the technology's capabilities against their needs for being able to perform their job (Venkatesh & Davis, 2000). These variables included job relevance, output quality, and result demonstrability. The former refers to the extent to which the target technology is applicable to an individual's job. Output quality refers to the tasks the technology is able to perform and how they relate to job goals specifically. Result demonstrability denotes the tangibility of the results using the technology (Venkatesh & Davis, 2000).

The findings of Venkatesh and Davis (2000) supported prior research on TAM, while providing evidence for how subjective norms, image, result demonstrability and an interaction between job relevance and output quality all significantly influenced PU. In mandatory settings, subjective norms had a significant effect on intention, especially at the beginning when the employee had less system experience. TAM2 provided a higher explanatory power than the original model, being able to explain up to around 60% in the variance of usage intention. Furthermore, social influence processes and cognitive instrumental processes accounted for 40-60 % of the explained variance in PU (Venkatesh & Davis, 2000), therefore providing value by identifying some of the antecedents of this key determinant of technology acceptance. Additionally, TAM2 uncovers the substantial role of subjective norms, given that it influences usage intentions in addition to PU. This indicates that this variable is not only an antecedent of PU, but also a variable that is worthy of further investigation.

2.1.3 TAM controversies

Despite the popularity of the TAM framework, questions have been raised regarding the continued relevance of TAM in the fast developing and increasing complex world of technology and IT (Benbasat & Barki, 2007). It has been argued that other more salient beliefs may overshadow PU and PEU (Bagozzi, 2007; Benbasat & Barki, 2007), and that the TAM does not allow for inclusion of other potential salient beliefs in the core model (Benbasat & Barki, 2007). Additionally, too much effort has been placed on adding variables to the TAM without adequate theoretical foundations (Bagozzi, 2007), instead of focusing on how the perceptions of technology can be manipulated to foster acceptance and usage (Yousafzai et al., 2007). Following this, a call for a better conceptualization of usage behavior has been forwarded, as the current measure of frequency of

technology usage does not adequately capture the full scope of usage behavior (Benbasat & Barki, 2007; Yousafzai et al., 2007). Legris et al. (2003) concluded their critical analysis of TAM-research stating that it is a useful model, but recommends incorporating variables related to both human and social change processes.

2.1.4 Model extension: TAM3

As a partial response to the questions raised, TAM3 was introduced by Venkatesh and Bala (2008). They presented an integrated model of TAM2 with previously identified antecedents of PEU (Venkatesh, 2000), building on the orginal TAM with thirteen different antecedents of PU and PEU. Additionally, they presented a research agenda on potential interventions aimed at enhancing employees' technology adoption through manipulating determinants of PU and PEU. Thereby arguing for the continued relevance of TAM, especially for complex technology implementation. The first objective was achieved through a longitudinal study which found that the variables in TAM3 explained between 40% and 53% variance in behavioral intention.

It seems reasonable to assume that providing possible interventions was a response to previous criticism posed by Benbasat and Barki (2007), who asserted that TAM had outlived its purpose. Further, Venkatesh and Bala (2008) addressed the criticism of TAM not being able to provide actionable guidance for practitioners (Yousafzai et al., 2007), by arguing for how one can manipulate the formation of perceptions to increase acceptance and usage. They emphasized that new technology may seem threatening due to the possibility of changing the nature of their job and relationship with others, and can possibly degrade employees' status (Venkatesh & Bala, 2008). All these threats could result in employees' avoidance of the new technology. They propose training as a key

intervention to manipulate determinants of use and technology adoption, suggesting to design initiatives which focus on influencing PU. They point to the problem of negative reactions from employees who are faced with complex technology, suggesting effective training interventions as a solution to mitigate these and help employees see the technology more favorably (Venkatesh & Bala, 2008).

As such, training initiatives should be designed to focus on influencing PU through emphasizing its antecedents, the cognitive instrumental processes. They advise to highlight the value of using the technology to achieve better performance and to emphasize how it can make one's tasks more effective (Venkatesh & Bala, 2008). Thereby creating understanding of both the functionality and effectiveness of the new technology by increasing job relevance and the output quality, while reducing anxiety related to loss of performance. Through training, perceived job relevance can be enhanced by portraying how the technology can support the employee´s tasks. Further, training may reveal the output quality of the technology, that is, how the function of the technology can match what the employees want to accomplish at work. Lastly, training might frame employees towards attributing part of the gains in their job performance to the new technology, referred to as result demonstrability. In line with this view, Agarwal and Prasad (1999) examined how participation in training could influence PU. Their results indicated that participation in training has a direct effect on PU which mediated the relationship on intention to use. Given that individuals are exposed to multiple functionalities of the technology during training, this highlights how it can play an important role in diffusing and encouraging use of new technology being implemented. Though Agarwal and Prasad (1999) did provide evidence for the mediated effect of PU on the

relationship between training and intention to use, Marler, Liang and Dulebohn (2006) were not able to replicate their findings. They point to different measures of training as a possible explanation to the divergent findings. Therefore, it could be valuable to continue the exploration of this relationship.

In further assisting the employees with negative reactions, Venkatesh and Bala (2008) emphasize the importance of organizational support, through informal and formal activities aimed at helping employees make use of the new technology. For example in the form of a help desk, infrastructure and expert assistance. This was supported by Marler et al. (2006) who found training that raised an employee's awareness of the supportive resources available would relate to intention to use. Further, they highlight the importance of peer support, as coworkers could support and assist employees to more effectively make use of the new technology. Similarly, Solberg et al. (2020) refer to how the Royal Bank of Scotland was successful in their digitalization process by supporting their employees and helping them understand how the new technology could help them perform in their new role (Cameron, 2016). According to Venkatesh and Bala (2008) if organizations focus their training initiatives on giving support and helping its employees see the usefulness of the technology in relation to their performance, they might be able to increase acceptance of new workplace technology.

Even though TAM3 partly responded to the criticism raised, it did not follow Bagozzi's (2007) advice on avoiding the continued adding of more variables to the previous framework without having rigorous theoretical underpinnings. Further, the variables that were included make TAM quite focused on the perceptions of the technology's utility. In accordance with Legris et al. (2003), future researchers are recommended to incorporate variables related to

both human and social change processes. Finally, the call for a better conceptualization of usage behavior was not addressed. As these questions were not answered by TAM3, they should be taken into consideration moving forward with research on the TAM framework.

2.2 Subjective norms

In the Theory of Reasoned Action, Ajzen and Fishbein (1980) conceptualized subjective norms as an individual's perceived pressures to perform a given behavior, as well as the motivation to comply with these pressures. The pressures were found to be associated with each individual's behavioral intentions. Despite subjective norms being included in the TRA, the founding theory used for the original TAM, subjective norms was first included until TAM2, as an antecedent to PU (Venkatesh & Davis, 2000). Accordingly, an employee's path to technology adoption may be influenced by their perceptions of important referents such as peers or managers, such that if they hold positive attitudes towards the given technology's usefulness and importance, they could potentially adopt their attitudes (Venkatesh & Davis, 2000). This is an example of internalization, which, together with compliance and identification are mechanisms portraying how subjective norms may influence an individual's behavior (Kelman, 1958). Compliance refers to performing a behavior to obey and conform to what others expect, while identification refers to performing a behavior as a way to get a positive evaluation and elevate one's standing with a particular group or social referent (Kelman, 1958; Venkatesh & Davis, 2000). People may choose to perform a behavior such as using a new technology, even if they do not have a favorable view of that behavior if they believe other important referents want them to (Venkatesh & Davis, 2000). This can happen through the aforementioned theoretical mechanisms (Kelman, 1958).

Individuals are embedded in social environments where other people's behavior and thoughts have the potential to influence their attitudes, beliefs and behavior (Berger & Luckmann, 1967; Salancik & Pfeffer, 1978). As such, an individual's use of newly introduced technology will be influenced by the social group they are a part of (Robertson, 1989). For instance, the perceived risk of adopting a new technology may be reduced if the employee observes other people using it, thereby legitimating their own decision to adopt it (Karahanna, Straub & Chervany, 1999). On the other hand, the action of adopting new workplace technology could be motivated by a belief that others may perceive that employee as technologically sophisticated by peers (Mathieson, 1991).

Venkatesh and Davis (2000) concluded that subjective norms influence perceptions of usefulness while also explaining significant variance in intention to use. This is supported by meta-analytic evidence provided by Schepers and Wetzels (2007), who found subjective norms have the potential to influence PU as well as attitudes towards use and behavioral intentions. Furthermore, Lucas and Spitler (1999) found that social norms established by managers and peers were more important in predicting technology usage than users' perceptions of the technology.

Overall, sound empirical evidence has been provided for the importance of subjective norms in technology acceptance (Hartwick & Barki, 1994; Karahanna et al., 1999; Lucas & Spitler, 1999; Taylor & Todd, 1995). Given that this variable has shown to be pertinent to technology usage and adoption, it has been advised to further explore this variable's relationship with other important factors (Mathieson, 1991).

2.3 Technology approach and avoidance: A job crafting perspective

Research on technology adoption has used different definitions and operationalizations of the term. In TAM, the focus is on technology acceptance through examining attitudes, intentions and usage behavior (Davis et al., 1989). The latter is operationalized by frequency of use through self-reports on hours and minutes of usage of said technology. Karahanna et al. (1999) defined adoption as the process of starting to use a new technology, measuring it through self-reported behavioral intentions of starting to use it. Rogers (1983) describes adoption as a process, starting with the individual becoming aware of the existence of the new technology, to forming positive or negative attitudes about it, subsequently leading to the decision to adopt or reject it, where the decision of adoption involves usage of the technology. Despite the differences in the conceptualization of the term (Karahanna et al., 1999; Rogers, 1983) they all relate to the usage of new technology being implemented.

Benbasat and Barki (2007) raise an issue of the potential shortcoming of operationalizing usage behavior as a frequency measure of system use. They argue this operationalization (self-reporting hours and minutes of use) neglects important aspects of usage behavior. Furthermore, Solberg et al. (2020) point to the fact that traditional top-down models, such as the TAM, focus on acceptance and adoption without addressing how and why employees actively engage in, or withdraw from, digital transformation processes. Taking this into consideration, we investigate technology adoption through the lens of job crafting with an aim to capture a broader scope of the concept and thus address the aforementioned criticism.

Job crafting is a self-management practice where individuals make changes to their job tasks and relationships in an effort to increase well-being,

work enrichment and performance (Wrzesniewski & Dutton, 2001). Building on the job demands-resource model, which divides work conditions into either demands or resources (Demerouti, Bakker, Nachreiner & Schaufeli, 2001), job crafting is viewed as a strategy for coping with job demands that involves the self-initiated efforts of individuals to alter job demands and job resources (Zhang & Parker, 2019). Zhang and Parker (2019) distinguish between job crafting as being either approach - or avoidance - oriented, and depicts them as two conceptually distinct constructs. Building on motivational theory, an underlying assumption is that individuals will be motivated by either the possibility to approach desirable goals, or avoid negative outcomes (Elliot, 1999). Similarly, approach crafting is described as *"effortful and directed actions to seek positive aspects of work"* (Zhang & Parker, 2019, p.130), while avoidance crafting is described as as *"effortful and directed actions to avoid, or escape from, negative aspects of work"* (Zhang & Parker, 2019, p.132).

Bruning and Campion (2018) found evidence for individuals actively crafting to use new workplace technology that they found useful in making their job easier and more effective. Therefore, in view of the job crafting literature, we define technology adoption as the extent to which employees engage in crafting to approach or avoid new workplace technology (Bruning & Campion, 2018). Building on this, we define technology approach as the extent to which employees actively organize their work and direct their behavior towards using the new workplace technology. Technology avoidance, on the other hand, is defined as the effort of an individual to actively organize their work and direct their behavior in order to avoid or minimize the usage of the new workplace technology (Bruning & Campion, 2018). These definitions entail a more nuanced view of technology acceptance and rejection than frequency of use alone, as it includes an individual's

active directed behavior in the pursuit of approaching or avoiding such technology. In sum, the job crafting literature provides a more employee-driven approach to technology acceptance (Zhang & Parker, 2019), providing a more nuanced understanding of technology adoption in terms of how employees engage in or withdraw from new workplace technology.

2.4 Implicit theories and mindset

The implicit theories of intelligence posit that individuals hold two main implicit theories about the nature and malleability of personal attributes: an incremental theory and an entity theory (Dweck, 1986; Dweck & Leggett, 1988). The former refers to the belief that attributes like intelligence can be learnt, they are dynamic and developable; whilst the latter thinks of attributes as fixed, trait-like entities, which cannot be improved over time. These central theories were later labeled by Dweck as a growth or a fixed mindset, where mindset can be defined as implicit theories or beliefs people hold about the plasticity of human attributes (Dweck, 1986; Sisk, Burgoyne, Sun, Butler & Macnamara, 2018). A fixed mindset is defined as the belief that human attributes are static (entity theory), and growth mindset is defined as the belief that human attributes that can be improved and cultivated through effort (incremental theory) (Dweck, 2006). For the purpose of this paper, here onwards we will use the terms growth and fixed mindset.

Mindsets can have a powerful influence on an individual's feelings, cognitions and behavior (Kray & Haselhuhn, 2007). They have shown to be related to an array of self-regulatory processes (Burnette, O'Boyle, VanEpps, Pollack & Finkel, 2013) including goal setting (Thompson & Musket, 2005) and mastery-oriented strategies (Molden & Dweck, 2006; Nussbaum & Dweck, 2008). The mindset an individual endorses can influence what they are trying to

achieve in a given task. Those with a fixed mindset tend to adopt performance goals which are concerned with gaining favorable judgments of their competence. On the contrary, those with a growth mindset tend to pursue learning goals which are concerned with increasing their competence and abilities (Dweck & Leggett, 1988). These divergent goals can lead to patterns of adaptive and maladaptive behavior. For instance, those with a performance goal are more prone to adopt a helpless behavior pattern, avoiding tasks where their intelligence or ability is threatened and only seeking out situations where they can validate their competence (Dweck & Leggett, 1988). Challenges could therefore translate to a tendency to give up instead of trying harder for individuals with a performance goal orientation (Diener & Dweck, 1978; Dweck, 1975). Conversely, those with a learning goal will seek out and engage in challenges where they can develop their abilities and thereby be more inclined to carry out new tasks and adopt new strategies, assimilating a mastery-oriented pattern.

The mindset an individual holds will also influence how they understand or interpret outcomes of one's behavior. Those with a fixed mindset tend to see outcomes in terms of their fixed traits, for instance, performing poorly in an exam is attributed to them not being smart enough. Those with a growth mindset, on the other hand, would attribute it to other more specific behavioral mediators such as not placing enough effort or studying enough (Dweck, Chiu & Hong, 1995). Furthermore, mindsets can also influence the extent to which an individual values getting help from others. Yeager & Dweck (2012) argue that those with a fixed mindset place less value on receiving help. This may be because receiving help or needing to exert more effort can be interpreted as a sign of lacking ability and thereby as a sign of incompetence. In academic settings, when those with a fixed

mindset encounter challenges, they have a tendency to give up instead of trying harder (Diener & Dweck, 1978; Dweck, 1975).

When we present the two main mindsets and differentiate among them, it is pertinent to clarify that they are not mutually exclusive. Dweck (2006, 2015) argues most people hold a mixture of both mindsets, and emphasizes that individuals can simultaneously hold distinct mindsets in different domains. Instead of an either or phenomena one should therefore think of individuals being somewhere along the continuum between a growth and fixed mindset, and where they lie in this continuum can also differ for different domains (Heslin & VandeWalle, 2008).

2.4.1 Domain specificity of mindset

Traditionally, the term fixed and growth mindset have referred to individual's implicit beliefs regarding their intelligence or general abilities (Dweck & Leggett, 1988), however, it can also refer to other, more domain specific beliefs of human characteristics (Murphy & Dweck, 2016). Multiple scholars have expanded the conceptualization of mindset and applied it to different domains. For example, individuals can hold a fixed or growth mindset about domain specific abilities such as negotiation (Kray & Hasselhuhn, 2007), networking and interviewing (Keating, 2016), sports (Murphy & Dweck, 2016), personal attributes such as morality (Hughes, 2015), and even mental health (Schroder, Dawood, Yalch, Donnellan & Moser, 2016). These studies suggest that an individual can hold a fixed mindset in relation to sports, thinking that individuals are either born good at sports or not, while at the same time hold a growth mindset on networking, believing that individuals can become better at this by practicing. The above mentioned studies support Dweck's (1999) argument that people can hold a growth mindset in one domain, but hold a fixed

mindset in another, making the domain specific mindset a better predictor of behavior than the general conceptualization of it.

2.4.2 Digital mindset

In accordance with the notion of mindset as domain-specific beliefs, we examine the concept of "Digital Mindset". This term has been extensively used by practitioners in the context of digital transformations, claiming that it is key to succeeding in a digital world (Kane et al., 2017; Lipman, 2017). Is it mostly understood as an organizational culture that stresses the importance of digital transformation and supports it in several ways (Solberg et al., 2020). Despite the term being used mostly as a buzzword in the practitioner world, the work of Solberg and colleagues (2020) is paving the way for investigating the role of digital mindsets in the academic realm. Building on the work of Dweck (1986), their conceptualization of digital mindset includes the self-oriented aspect of *"individual beliefs about the extent to which one's personal ability to learn and use new technologies are fixed or malleable"* (Solberg et al., 2020, p.3). Additionally, their conceptualization also includes situation-oriented beliefs related to the availability of situational resources, that is, the degree to which resources are expandable or finite in the context of technological change. They refer to the principles of social cognition research which posit that individuals have a tendency to rely on general beliefs when making judgments and directing behavior, especially in complex situations (Macrae, Milne, & Bodenhausen, 1994). Thereby suggesting employees' individually held beliefs can influence how employees process information and respond to the introduction of new technology (Solberg et al., 2020).

Consistent with this proposition, our conceptualization of digital mindset is underpinned by the implicit theories and mindset literature. Thereby defining

digital mindset as an individual's perception of the malleability of their technological abilities, that is, the extent to which they believe in their personal ability to learn and use the new technology. A growth digital mindset therefore refers to the extent to which an individual believes they will be able to develop their technological abilities, while a fixed digital mindset refers to the extent to which a person believes their technological abilities are static and unchangeable. Individuals endorsing more of a growth digital mindset will likely view the new technology as a learning opportunity and will thereby be more inclined to try to learn and use the new technology. Contrarily, individuals endorsing more of a fixed digital mindset could assess the need to master a new technology as a possible threat to the validation of their abilities, thereby being more inclined to avoid using said technology.

The success and benefits of new technology implementation depend on employee's adoption of such technologies (Davis, 1989). In an effort to foster technology adoption, companies invest a large amount of resources in training initiatives that can promote the use of new technology (Deloitte, 2017a; Knight, 2015). Based on the pervasiveness of maladaptive patterns (Dweck & Leggett, 1988), individuals with a fixed digital mindset may tend to be more skeptical and resistant towards new technology (Solberg et al., 2020) and any additional training initiatives, as they are concerned with the risk of appearing incompetent to others. Traditionally, individuals who do not comply with new technology implementation have been labelled as "resistant" (Henry, 1994). One of the main causes of such resistance is possibly a lack of adequate training, leading those who are resistant to believe the technology will be too difficult for them to learn and thus a threat to their performance. Such beliefs could be comparable to individuals with a fixed digital mindset, where there is a higher probability for

avoidance based on the belief that they will not be able to validate their abilities or experience difficulties. Going forward, the variable of fixed digital mindset (FDM), rather than growth digital mindset, will be the focus in this paper.

2.5 Self-efficacy

On the premise that an individual's fixed digital mindset may influence whether they interpret new technology implementation and their respective training initiatives as an evaluative situation, an important factor to consider is the employee's beliefs about how they will perform in those situations. Their expected performance will probably be influenced by the beliefs they hold regarding their current technological abilities, which is why we have decided to delve into the concept of self-efficacy.

Researchers have two main ways of conceptualizing self-efficacy. On one hand it can be understood as trait-like phenomena (Schwarzer & Jerusalem, 1995) that refers to general beliefs in one's capabilities across domains, which is referred to as general self-efficacy (Chen, Gully, & Eden, 2001). Contrarily, others consider it to be a situation and task-specific state (Whyte Saks, & Hook, 1997). Given that self-efficacy can relate to distinct performances that can widely vary across tasks, Bandura views this latter conceptualization as superior (1997). He defines self-efficacy as belief in one's own capability to perform a given task. He argues self-efficacy can predict behavior as individuals regulate their behavior based on their perception of their own capabilities to perform a particular task at hand. Individuals with the same skills may therefore perform differently depending on their self-beliefs of efficacy (Wood & Bandura, 1989). Overall, efficacy beliefs have been theorized to impact whether an individual decides to perform a particular task, the amount of effort they exert on it, as well as their persistence in the face of adversities (Bandura, 1977). For instance, high self-

efficacy can enhance motivation, where individuals may choose to perform more challenging tasks and set higher goals. Contrarily, low self-efficacy is related to more anxiety and helplessness thus potentially impeding motivation (Bandura, 1977).

Bandura (1995) argues that efficacy beliefs determine the subjective perilousness of situations. If people have a low sense of efficacy, they are likely to interpret both safe and risky situations as dangerous, while individuals who judge themselves to be highly efficacious will interpret situations in a more benign manner (Bandura, 1995). Individuals with perceptions of high self-efficacy are less likely to pay attention to the threats in a particular situation and place more emphasis in their ability to influence the environment (Krueger & Dickson, 1994). In accordance with this, Sanderson, Rapee and Barlow (1989) provide evidence showing that efficacy beliefs impact the way situations are interpreted, where perceived efficacy can help cognitively transform threatening situations into benign ones. Self-efficacy also influences the extent to which individuals believe they can exert control over situations (Wood & Bandura, 1989). Individuals who see themselves as highly efficacious are likely to see situations as controllable, whereas those low in self-efficacy might see certain situations as uncontrollable (Krueger & Dickson, 1994).

In the same way that mindset can be applied to different domains, self-efficacy is also a domain specific construct. Bandura (2006) argues that instruments that are created for measuring self-efficacy should be adapted to the particular content domain that is being investigated. Consequently, scholars have developed domain specific self-efficacy conceptualizations and measurements in different fields. For instance, Tierney and Farmer (2002) investigated creative self-efficacy, which they define as the belief that one has the ability to produce

creative outcomes. Huang, Zhang, and Hudson (2019) studied mathematical self-efficacy which they defined as one's perceived confidence in mathematics. In regards to efficacy beliefs on technology, research on TAM has investigated the role of computer self-efficacy, which is defined as one's beliefs about his or her ability to perform a given task using a computer (Venkatesh & Davis, 1996; Venkatesh, 2000).

Several studies have found that mindset correlates with self-efficacy, specifically, having a growth digital mindset has been related to a high self-efficacy (Ahmavaara & Houston, 2007; Young & Urdan, 1993). For instance, in relation to efficacy beliefs pertaining to the mathematical domain, Huang et al. (2019) showed a growth mindset may increase mathematical self-efficacy. Similarly, other studies provide evidence for a relationship between mindset and both domain specific and general self-efficacy (Abdullah, 2008; Bråten & Strømsø, 2005) and connecting fixed mindset to helpless behavior patterns leading to lower self-efficacy (Davis, Burnette, Allison & Stone, 2011). Further, Huang et al. (2019) argue that individuals with low mathematical self-efficacy tended to avoid situations and careers revolving around math, thereby providing evidence for the claim that self-efficacy influences judgments and decisions, and its potential for influencing and directing behavior.

A few studies have examined the relationship between self-efficacy and training. For instance, Noe and Schmitt (1986) proposed that individuals who believe they will succeed in training situations will also perceive them as more useful. Furthermore, Guthrie and Schwoerer (1994) concluded that an individual's belief in their ability to master training material was positively related to perceptions of the training being worthwhile and useful. In relation to the context of learning new technology, Webster and Martocchio (1995) found a positive

relationship between software efficacy beliefs and post-training reactions, as well as learning. They concluded that those higher in self-efficacy learned more during the training, and that they also used the software more following the training. In sum, self-efficacy has been shown to influence an individual's thoughts and motivations. In combination with mindset, self-efficacy may affect reactions to specific situations and elicit certain behavior patterns.

2.6 Summary

Research has consistently shown PU as TAM's central variable determining intentions to use and actual usage behavior (Benbasat & Barki, 2007; Davis, 1989; Davis et al., 1989; Lee et al., 2003; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000; Yousafzai et al., 2007). Through the extension of TAM2 and TAM3 numerous variables were introduced to the model as a way of explaining more variance in technology acceptance, causing the model to be too complex, thereby limiting its applicability for practitioners (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). Furthermore, the advice on avoiding the continued adding of more variables without a good theoretical foundation (Bagozzi, 2007) as well as the call for attempting to adapt the core model instead (Benbasat & Barki, 2007) has not been addressed. Legris et al. (2003) recommend looking into variables related to human and social change processes to advance the understanding of technology adoption. One possibility could be to adapt the core model by identifying the key variables of TAM, thus maintaining its strong predictive power, while simultaneously examining new research avenues that show promise for understanding technology adoption which have a strong theoretical foundation.

One of the TAM variables that has shown to play a pertinent role in technology acceptance is subjective norms (Hartwick & Barki, 1994; Karahanna

et al, 1999; Lucas & Spitler, 1999; Taylor & Todd, 1995). Grounded in the origins of the TRA, the variable has a strong theoretical foundation, thus combined with its potential to influence technology it is considered to be a valuable avenue for further research trying to understand technology adoption.

Moreover, Venkatesh and Bala (2008) encourage further research to address the role of training, arguing training initiatives could be valuable in enhancing the perceived usefulness of the new technology being introduced at work, thereby leading to increased usage and acceptance. Previous research has provided evidence for such a relationship. Agarwal and Prasad (1999) were among the few scholars who looked into this relationship previous to Venkatesh and Bala's (2008) proposition, and found that training could significantly influence perceptions of usefulness. As such, following Venkatesh and Bala's call for further research into training initiatives, and the potential value for practitioners, we deem it an interesting variable for further exploration in our present research.

Furthermore, the value of TAM's conceptualization of usage behavior has been questioned (Benbasat & Barki, 2007; Yousafzai et al., 2007). Therefore, in an effort to capture a larger scope of usage behavior, we introduce approach and avoidance crafting from the job crafting literature (Bruning & Campion, 2018; Zhang & Parker, 2019) as a substitute for measuring technology adoption. The crafting literature provides a more nuanced view of technology adoption and rejection than frequency of use alone, as it taps into employees' active organization of their tasks and relationships (Wrzesniewski & Dutton, 2001), while directing behavior in the pursuit of approaching or avoiding the new workplace technology.

Additionally, Solberg et al. (2020) proposed a conceptualization of digital mindset, which they argue is likely to influence perceptions and responses towards digital transformations. We briefly review some of the research on implicit theories and mindset in an attempt to lay a foundation to explore how digital mindset beliefs can direct individuals towards technology approach or avoidance. Despite the investigation of digital mindset is in a nascent state, it appears to be a promising avenue to be explored.

Moreover, self-efficacy has been established as an important variable which can significantly affect cognitions and behavior (Bandura, 1977; Sanderson et al., 1989; Wood & Bandura, 1989). In synergy with mindset it has the potential to direct individuals towards certain behavior response patterns (Ahmavaara & Houston, 2007; Huang et al., 2019; Young & Urdan, 1993), making this a particularly interesting variable to examine further in the context of technology adoption.

In sum, we believe that the theoretical underpinnings of these different fields provide an interesting foundation to move forward with the above mentioned variables in examining new avenues of technology adoption. In the next section we theorize how these variables may relate, and propose two conceptual models that will be tested.

3.0 Theoretical Framework and Hypotheses

3.1 Fixed digital mindset and technology avoidance

In demanding situations where employees have to master new technologies at work, we propose that an individual's fixed digital mindset will influence the extent to which they avoid new workplace technology. Employees with a fixed digital mindset might interpret the situation as threatening to their competence and therefore this appraisal would likely lead to efforts made to

withdraw from or avoid the situation, as they fear the outcome of being viewed as incompetent (Dweck & Leggett, 1988). The possibility of ending up in an evaluative situation, which could compromise established perceptions about the employee's competencies, may have a strong enough influence to guide their behavior on this information alone. Consequently, they might disregard the potential for learning the new technology by solely focusing on the threat it poses. The evidence provided in the literature review supports the idea that holding a fixed mindset has the potential to elicit certain maladaptive response patterns and behaviors in employees when encountering new challenges (Dweck & Leggett, 1988; Elliott & Dweck, 1988). On those grounds, we aim to investigate whether these patterns might arise when examining implicit beliefs on technology specifically. We propose that having a fixed digital mindset will influence the extent to which employees will avoid new technology.

The extensive evidence from the TAM emphasizes the pivotal role of subjective norms on technology acceptance (Lucas & Spitler, 1999; Schepers & Wetzels, 2007; Venkatesh & Davis, 2000). Furthermore, as individuals with a fixed mindset are highly concerned with validating their abilities in front of others (Dweck, 2006; Dweck et al., 1995; Dweck & Legget, 1988), their perceptions of what other people think might be more likely to influence their behavior. Drawing on the aforementioned theoretical foundation, we theorize that subjective norms could have the possibility to impact the relationship between having a fixed digital mindset and technology avoidance.

If an employee with a fixed digital mindset believes that their supervisor, top management and coworkers think they should adopt the new technology (and thus have a high score on subjective norms), they might be less likely to avoid technology, thus weakening the relationship between fixed digital mindset and

technology avoidance. Employees might prefer to avoid using the technology, yet, they can change their behavior and decide not to avoid it, as people are inclined to choose to perform behaviors contrary to their preferences due to the opinion of important referents (Marler et al., 2009; Schepers & Wetzels, 2007). On the other hand, if an employee believes that the people who are important to them do not think they should engage in using the new technology (having a low score on subjective norms), this could further reinforce the extent to which they avoid technology and strengthen the relationship. Employees will believe it is even less worthwhile to use the new technology, not only because of the risk of being judged, but also because other important referents are unconcerned with their usage of the technology. We therefore propose the following hypothesis:

> *Hypothesis 1: Fixed digital mindset will positively relate to technology avoidance. This relationship will be moderated by subjective norms, such that the relationship is stronger when subjective norms are low.*

3.2 Fixed digital mindset and technology approach

In the previous section, we propose that having a fixed digital mindset could create a natural tendency to avoid new workplace technology, thus leading us to hypothesize a positive relationship between fixed digital mindset and technology avoidance. However, this does not necessarily imply that the relationship between fixed digital mindset and technology approach should be negative. As technology approach and technology avoidance are conceptually distinct constructs in the job crafting literature (Zhang & Parker, 2019), they should be addressed separately. In the section that follows, we elaborate why and when we believe that having a fixed digital mindset will relate to technology approach, investigating training initiative frequency and perceived usefulness as potential mediators.

3.3 Training initiative frequency, perceived usefulness and technology approach

Training has been suggested as one of the most important initiatives organizations can focus on to influence perceived usefulness by targeting employees' cognitive instrumental processes (Davis et al., 1989; Venkatesh & Bala, 2008). Therefore, we find it relevant to examine if perceived usefulness could mediate the relationship between training and technology approach. Evidence for training participation influencing perceived usefulness has been established by previous studies (Agarwal & Prasad, 1999). When attending training, employees are exposed to uncovering the usefulness and functionality of the new workplace technology. Accordingly, by highlighting how the technology is relevant in making employee's jobs more effective and increasing their performance, the training has the potential to influence the cognitive instrumental processes by portraying how the technology has job relevance, result demonstrability and output quality.

Furthermore, as the conceptualization of technology approach captures a broader scope of usage behavior, perceived usefulness should relate to technology approach given the vast evidence supporting the relationship with usage behavior. Additionally, as employees have been found to actively craft to adopt new workplace technology they find useful for their work (Bruning & Campion, 2018), it is reasonable to expect a relationship between these variables.

In sum, if training initiatives are able to influence employees' perceptions on the usefulness of new workplace technologies, this should in turn influence the extent to which employees engage in approach crafting towards the given technology. As such, we propose the following hypothesis:

> *Hypothesis 2: Perceived usefulness will mediate the relationship between training initiative frequency and technology approach*

3.4 Fixed digital mindset, digital self-efficacy and training initiative frequency

If the training initiatives implemented by the organization serve to enhance perceived usefulness and ultimately lead to technology approach, it is important to consider how an employee's mindset could influence the extent to which they engage in the training initiatives.

Given that a person's fixed mindset is likely to affect the extent to which they value receiving help (Yeager & Dweck, 2012), an employee who encounters challenges when trying to use the new technology might be more likely to avoid that new technology than seek help through training.

Despite the initiatives' emphasis on portraying the usefulness of the technology, employees with a fixed digital mindset might fear being judged as less competent, thus shifting their focus away from the potential for learning. Instead of seeing training initiatives as a space for learning, it could be interpreted as an evaluative situation. Consequently, employees' beliefs on how they will perform in the training initiative is likely to have a significant effect on the extent to which they decide to engage in them. The training revolves around the new technology therefore employees' beliefs on their specific technological capabilities might be influential. For this reason we examine the concept of digital self-efficacy (DSE), which we define as the extent to which individuals believe they have the ability and competence to use and master new technologies being implemented at work.

Dweck and Leggett (1988) suggest that when performance-oriented individuals (those with a fixed mindset) have low confidence in their abilities, they will particularly see challenging tasks in the light of possible aversive experiences such as high anxiety and expected negative judgements. Combined with Bandura's (1995) argument that efficacy-beliefs determine the subjective

perilousness of situations, this could suggest that a training initiative which is supposed to be a safe situation to promote learning can be interpreted as dangerous for employees with a low sense of efficacy. In addition to the fear of being judged, they will be preoccupied thinking about the fact that they do not have the capabilities to succeed in the training situation. Accordingly, employees with a fixed mindset and a low digital self-efficacy are likely to see training initiatives as a threatening and anxiety producing situation, and are therefore less likely to engage in such initiatives.

Contrarily, employees with a high sense of efficacy will be more likely to engage in the training initiatives due to the confidence in their abilities. Perceived efficacy can help convert the threatening perception of the situation into more benign (Bandura, 1995; Sanderson et al., 1989). Those who judge themselves to be highly efficacious tend to engage in more challenging tasks (Bandura, 1997) and perceive situations as more controllable (Krueger & Dickson, 1994), therefore we believe it is reasonable to expect that those employees might engage more in the training initiatives. For these reasons, we believe that those with a fixed digital mindset who are high on digital self-efficacy will likely interpret the situation as less risky for obtaining negative evaluations, while at the same time, see it as an opportunity to prove their technological capabilities. Accordingly, we propose the following hypothesis:

> *Hypothesis 3: Fixed digital mindset will be negatively related to training initiative frequency when digital self-efficacy is low. However, when digital self-efficacy is high, fixed digital mindset will be positively related to training initiative frequency.*

3.5 The combined model

Combining our previous argumentation for Hypotheses 2 and 3, we propose a second conceptual model to investigate how fixed digital mindset could

ultimately relate to technology approach. As previously established, external factors which influence perceived usefulness will increase the likelihood of technological usage (Benbasat & Barki 2007; Venkatesh, & Davis, 2000; Venkatesh & Bala, 2008; Yousafzai et al., 2007). Training initiatives designed to influence the perceived usefulness of a technology should thereby relate to technology approach towards the given technology.

Further, if individuals with a fixed digital mindset have a high digital self-efficacy they would be more likely to engage in the initiatives, thereby being more susceptible for increasing PU, which in turn could lead to technology approach. Additionally, if employees believe that they will succeed in the technology training provided by the company, they will perceive it as more useful (Noe & Schmitt, 1986). Contrarily, if digital self-efficacy is low, employees will likely not engage in the initiatives and thus have a reduced perception of usefulness and hence a negative relationship to technology approach. Based on this theoretical argumentation we propose the following hypothesis:

> *Hypothesis 4: When digital self-efficacy is low, fixed digital mindset will be negatively related to technology approach, by way of reduced training initiative frequency and perceived usefulness. When digital self-efficacy is high, fixed digital mindset will be positively related to technology approach, by way of increased training initiative frequency and perceived usefulness.*

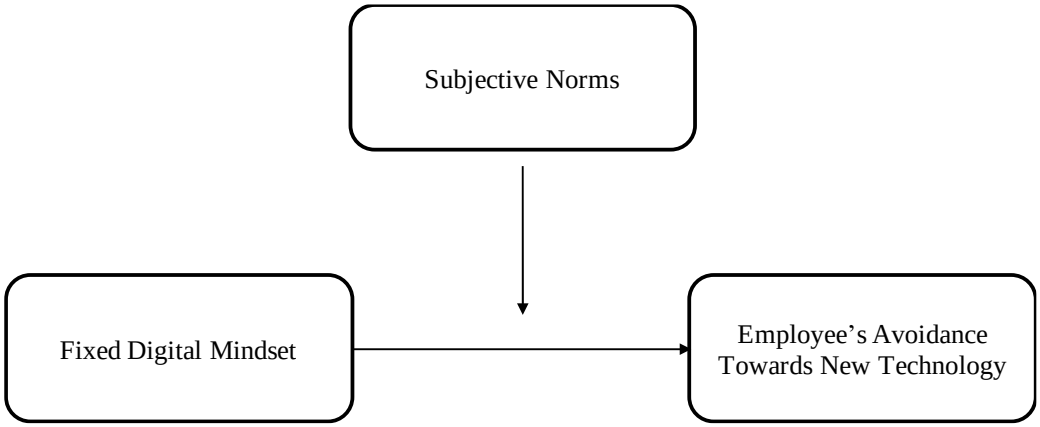

Figure 1. Conceptual Model 1

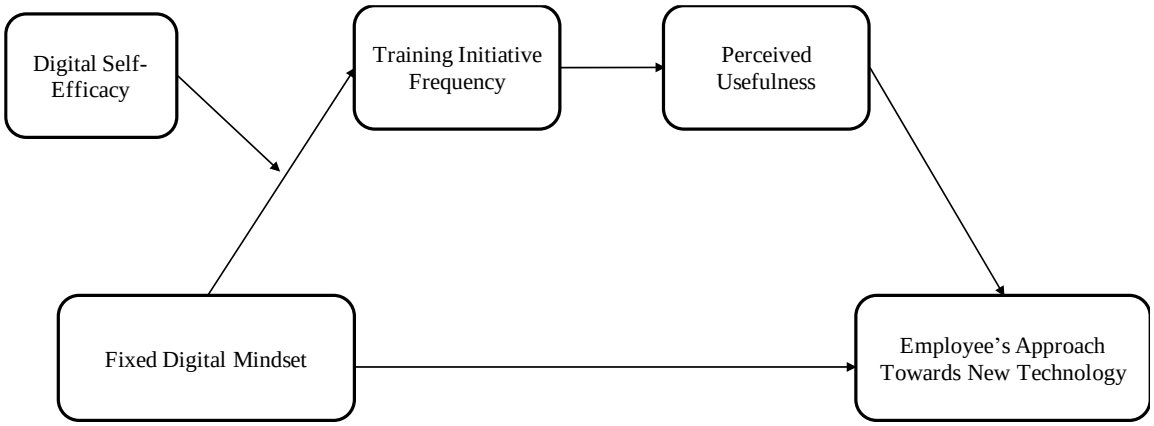

Figure 2. Conceptual Model 2

3.0 Research Methodology

3.1 Sample and data collection procedure

To test our hypotheses we conducted a quantitative cross-sectional field research with two, temporally lagged, self-reported surveys. The data was collected in a Norwegian company that operates in the Fast Moving and Consumer Goods industry. Our study was conducted in an organization which was implementing Microsoft Teams, a communication and collaboration platform (Koeningsbauer, 2016). As part of their implementation strategy they had designed several training initiatives to foster effective technology adoption among

their employees. The training initiatives in our study included both initiatives aimed at providing organizational support (drop-in sessions, helpdesk, community-platform, and an agent-network) and training aimed at increasing the perceived usefulness of the technology (Digital workplace-site including; how-to-videos, guides, FAQ, and drop-in sessions for particular trainings with internal experts). Further, the communication regarding the implementation process and the respective training initiatives was designed to frame the usefulness of the new technology: "Anna-Lotta loves Microsoft Teams because it makes her day way more efficient". Therefore, in our study, training initiatives include initiatives aimed at facilitating adoption through organizational support and a focus on the technology's usefulness.

The Norwegian Social Science Data Services (NSD) was contacted prior to the data collection for the purpose of ensuring that ethical standards were met, and privacy and GDPR regulations were upheld. The study design, planned sample, procedure, questionnaire and information letter (see Appendix 2) was evaluated and accepted by the NSD. For collecting the data we used Qualtrics, an online survey software which is GDPR compliant and in accordance with the ethical regulations outlined by the NSD.

Our contact persons for this research included the responsible for the digital workplace department in the company as well as an internal member of the digital implementation team. Employees were invited to participate by one of our contact persons who shared information about the study as well as a link to the survey through the company's intranet and internal social networking groups. The participants were informed that their participation was voluntary and that their response would be treated confidentially. The company is divided into different business units, which are in different stages of implementing Microsoft Teams.

Our sample consisted of employees working across the different business units who voluntarily decided to participate.

A total of 137 employees completed the first survey. The participants were invited to the second survey by email, which they provided when they consented to participate in the first wave of the survey, approximately two weeks later. Those who did not complete the survey were sent between one and three reminders to improve our response rate. Out of the employees who completed wave 1, a total of 98 completed wave 2, representing a response rate of 71.53%.

The final data set consisted of a total of 94 employees, of which 64 completed both wave 1 and wave 2 of the study (see details of inclusion in the analysis section). Of the employees included in the final data set, 39 (41.5%) were male and 55 (58.5%) were female. Concerning age, 17% were between 21-30 years, 18% were between 31-40 years, 37% were between 41-50 years, 22% were between 51-60 years and 5% were above 60 years. Regarding leadership status, 47% did not hold a leadership position, while 31% had a leadership position with personnel responsibility and 20% without direct personnel responsibility. With regards to those who did have leadership responsibility, it included line managers (8.5%), middle managers (23.4%) as well as being part of the management group of the business unit (20%). Lastly, the mean organizational tenure was quite varied, with 13.8% having worked in the company for less than a year, 27.7% from 1-5 years, 18.1% from 6-10 years, 17% from 11-15 years, 9.6% from 16-20 years and 13.8% for over 20 years.

3.2 Measures

We collected data on most of the variables included in our research models in wave 1, including our independent variables (fixed digital mindset, digital self-efficacy, training initiative frequency, perceived usefulness and subjective norms),

as well as our control variables and demographic data. In the second wave, we collected data on our dependent variables technology approach and technology avoidance. The survey was provided in both English and Norwegian to make participation available to most employees. To ensure a reliable and valid measure the translation was conducted based on the back-translation method developed by Brislin (1970) by including a three-step process of translation, back-translation and final approval and comparison with the original text by three different groups of external advisors with competencies in both languages.

All of the scale's items, except Training Initiative Frequency are accompanied by a likert-scale ranging from 1 to 5 (1 = disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, 5 = agree). Several of the measures were adapted from previous research where the scales have been previously tested and validated. All of the measures and their respective items used in our study can be found in Appendix 1.

Fixed Digital Mindset (FDM) was measured using an adapted scale from an implicit theory measure used by Levy, Stroessner and Dweck (1998). Original items included "Everyone is a certain kind of person, and there is not much that they can do to really change that,"(Levy et al., 1998, p.1431) which were adapted to the context of technological abilities: "A person's technological ability is something basic about them, and there isn't much that can be done to change it". Another example item is: "Though people can sometimes learn new things, you can't really change people's basic talent for adapting to new technology" (Levy et al., 1998, p.1431). The scale used included a total of 4 items. The Cronbach Alpha coefficient for the final four items was .823.

Technology Avoidance (TAvoid) as well as technology approach, were adapted from job crafting measures of acceptance or avoidance crafting (Bruning

& Campion, 2018; Solberg & Wong, 2016; Zhang & Parker, 2019). It included four items that indicate the extent to which individuals make effort to avoid or reduce the time spent using the new technology. Example items include "I have organized my work in a way that allows me to largely avoid using Microsoft Teams" and "I have found ways to cut out tasks that need to be done in Microsoft Teams, so that I can substantially reduce the time and effort I put into working on this platform". Cronbach Alpha coefficient was .720.

Subjective Norms (SN) included three items adapted from the work of Karahanna et al. (1999): "Top management thinks I should adopt Microsoft Teams" , "My colleagues think I should adopt Microsoft Teams", and "My immediate supervisor thinks I should adopt Microsoft Teams". The Cronbach Alpha coefficient was .879.

Training Initiative Frequency (TIF). We have operationalized our training variable as the frequency of participation in the training initiatives available and thus labeled the variable Training Initiative Frequency. The following question was presented to measure the extent to which employees use the different training initiatives available: "The following initiatives have been set up to help you work with Microsoft Teams. Please indicate how frequently you have used each, if at all, for this purpose." The likert scale included the following frequencies: 1 = never, 2 = seldom, 3 = sometimes, 4 = frequently and 5 = very frequently. The different training initiatives available for the adoption and use of Microsoft Teams were discussed with the employees responsible for leading such initiatives. Based on this, a list of the five main initiatives were included as individual items (1- Drop-in Sessions, 2- Digital Workplace Site, 3- Office 365 Agent Network, 4- Digital Workplace Community in Yammer, and 5- How-to Videos on Stream). The Training Initiative Frequency variable was computed

based on the mean of these 5 items, each individual item representing one of the initiatives available. The Cronbach Alpha coefficient for the five item scale was .660.

Perceived Usefulness (PU) was measured by adapting the scale used by Venkatesh and Davis (2000) into items that referred to the specific technology being implemented. The scale included 5 items in total. Some examples of the items include: "Microsoft Teams generally makes my work easier" and "Microsoft Teams enhances my effectiveness at work". The Cronbach Alpha coefficient for the scale was .940.

Technology Approach (TApp) included 4 items which indicate the extent to which individuals craft or make changes in their work to approach the new technology. Example items include "I have organized my work in a way that allows me to more actively use Microsoft Teams" and "I have sought out or developed, on my own, projects at work where I can use Microsoft Teams". The Cronbach Alpha coefficient was .844.

Digital Self- Efficacy (DSE) was measured by adapting existing items from domain specific measures of self-efficacy (Tierney & Farmer, 2002). The scale included the following three items: "I have confidence in my ability to master new technologies implemented at work" , "I believe in my ability to effectively use new technological tools implemented in my workplace" and "I feel certain that I have the necessary competence to use new work technologies successfully." Cronbach Alpha coefficient was .766.

Control Variables. Multiple demographic differences such as workplace tenure, age and gender have been shown to influence the adoption of new technology (Agarwal & Prasad, 1999; Gefen & Straub, 1997; Venkatesh & Morris, 2000; Niehaves & Plattfaut, 2014; Venkatesh, Morris & Ackerman,

2000). For such reasons, we decided to collect information on these control variables. Nevertheless, consistent with the view of Bernerth and Aguinis (2016), we decided to be critical when introducing such variables into our analysis. In the literature review we outlined the important role that subjective norms can have on the extent to which employees approach technology. In our research we decided to focus on understanding the extent to which this variable can interact with mindset to influence active avoidance of new technology. However, given the potential of the variable in influencing behavior, as presented in the theory, we deemed it important to include it as a control variable in testing Model 2, which concerned technology approach.

4.0 Analysis

The analysis was conducted in several steps. First, we inspected the data for careless respondents given that they can diminish the credibility of findings (Goldammer, Annen, Stockli & Jonas, 2020). We used a screening measure of global average response time per item to detect careless respondents. This was done by calculating the average response time per item, where does who spent less than five seconds per item were removed. The less than five second per item cut score resulted in an elimination of 5 participants from the sample (Goldammer et al., 2020).

Furthermore, we evaluated the sample that should be included in our analysis. The company has a group called the Office 365 Agents, which are individuals who serve as ambassadors and help others in using the new technology. Bearing in mind the fact that these individuals might be more prone to both engage in training initiatives and approach the new technology, we conducted a mean comparison between agents and non-agents. The training initiative frequency was significantly higher for agents (mean = 2.51) than non-

agents (mean = 1.91), *t* (129)= -4.671, *p* =.000. Similarly, those that were agents (mean = 4.21) showed a statistically significant higher technology approach score than non-agents (mean =3.61), *t* (90)= -2.802, *p* =.006. We considered the mean difference to be substantial enough to influence the results of our study, for such a reason we decided to remove from the sample those participants who were Office 365 agents, keeping only those employees who were not agents (N=94).

4.1 Principal component analysis

Subsequently, as we had our final sample for the analysis, we tested the expected factor structure of all the item measures using an exploratory principal component analysis (PCA) with promax rotation. This was done with the purpose of evaluating the factor structure and determining the item retention. Only those items with a loading of .50 or more in their target factor were retained and included in their respective scales. In addition, only items that didn't present cross-loadings higher than .35 were included (Nunnally & Berstein, 1994). In accordance with these rules of thumb, the reversed item 3 for the Fixed Digital Mindset measure was removed. We also decided to remove the reversed item 6, given that the reversed items of this scale have presented some prior issues, where respondents tend to endorse growth mindset statements even after they have endorsed fixed mindset statements, due to social desirability bias (Dweck et al., 1995).

After the principal component analysis was conducted, we calculated the reliability coefficients for all the variables. All of the measures of existing theoretical constructs presented a good internal consistency, with their reliability estimates being above 0.7 (Cronbach, as cited in Peterson, 1994): the Cronbach Alpha ranged between .715 and .942. The only atheoretical variable that was computed was Training Initiative Frequency, which had a cronbach's alpha

of .660. Despite it being lower than the threshold, it is still considered fairly acceptable (Peterson, 1994).

As another important step prior to testing the hypotheses, we followed the steps of Meyers, Gamst and Guarino (2006) and calculated the Pearson correlations between all the variables included in the analysis to pinpoint potential multicollinearity conditions. All independent variable correlations were below the critical value of 0.70, and none of the variance inflation factors (VIF) were greater than (10) (the highest VIF value was 1.28) indicating no evidence for multicollinearity in our study (Bowerman & O´Connell, 1990; Myers, 1990). Thereafter we analyzed the bivariate correlations among the main study variables.

4.2 Hypothesis testing

To test our hypotheses, we used Process macro for SPSS (version 3.5), created by Andrew Hayes (www.afhayes.com). This process macro enables the testing of entire mediation and moderation models simultaneously, integrating bootstrapping techniques for estimating indirect effects. Although the casual step approach popularized by Baron and Kenny (1986) and the Sobel test strategies have been widely used, the former approach is nowadays preferred by methodologists (MacKinnon, Lockwood & Williams, 2004). Some of the reasons why bootstrapping technique is preferred is that it is more powerful, and it also allows to have a better control over Type I errors, which is when one concludes there is a relationship between two variables where there isn't (MacKinnon, Lockwood, Hoffman,West & Sheets, 2002).

Hypothesis 1 was tested by conducting using PROCESS Model 1, where X=Fixed Digital Mindset, Y=Technology Avoidance, and W=Subjective Norms. Hypothesis 2 was tested using PROCESS Model 4, where X=Training Initiative Frequency, Technology Approach=Y, and Perceived Usefulness=M. Hypothesis 3

was tested using PROCESS Model 1, where X=Fixed Digital Mindset, Training Initiative Frequency =Y, and W=Digital Self-Efficacy. Finally, to test Hypothesis 4, we conducted a moderated mediation analysis using PROCESS Model 83, where X=Fixed Digital Mindset, Y=Technology Approach, M1=Training Initiative Frequency, M2=Perceived Usefulness, and W=Digital Self-Efficacy. Subjective Norms was included as a covariate in testing all hypotheses for Model 2 (hypothesis 2, 3 and 4). All of our analyses were conducted by using a 95 % confidence interval, with 5,000 resamplings in the bootstrapping.

5.0 Results

Means, standard deviations and bivariate correlations between all study variables included in the study are presented in Table 1.

Table 1

Descriptive Statistics, Correlations and Scale Reliabilities

Variables	Mean	SD	1	2	3	4	5	6	7
1. Fixed Digital Mindset (FDM)	2.20	0.84	**(.823)**						
2. Digital Self-Efficacy (DSE)	4.43	0.64	-.043	**(.766)**					
3. Training Initiative Frequency (TIF)	1.91	0.61	.070	.100	**(.660)**				
4. Perceived Usefulness (PU)	3.73	0.97	.016	.333**	.341**	**(.940)**			
5. Technology Approach (TApp)	3.61	1.03	-.062	.354**	.251*	.574**	**(.844)**		
6. Technology Avoidance (TAvoid)	1.25	0.50	.321**	-.277*	-.106	-.250*	-.294*	**(.720)**	
7. Subjective Norms (SN)	3.98	1.04	-.093	.318**	.232*	.367**	.523**	-.256*	**(.879)**

Note. N=94 for all except TApp & Tavoid, for which N=64. Coefficient alphas specifying scale reliabilities are in parentheses.*p< .05,**p< 0.01.

Table 2 presents the findings related to testing Hypothesis 1. Looking at this table, the main effect of FDM on TAvoid is positive and significant (b =1.10, t = 3.41, 95% CI =.4543, 1.7450, p <.01). Furthermore, the interaction effect was significant (b = -.22, t = -2.92, 95% CI = -.3722, -.0694, p < .05). The low-subjective norms level attenuated the effect of a FDM on TAvoid (b =.44, t = 3.97, 95% CI = .2169, .6577, p <.001). The mean and high level simple slopes showed a non-significant relationship. This is also illustrated in Figure 3, where it

can be seen that FDM is more positively related to TAvoid when subjective norms are low. Hypothesis 1 was therefore supported.

Table 2

Moderation effect of Subjective Norms on the Relationship between Fixed Digital Mindset (FDM) and Technology Avoidance (TAvoid).

				$CI_{95\%}$	
Technology Avoidance		*b*	*t*	Lower	Upper	p
Constant		-.72(.75)	-.96	-2.2162	.7832	.34
FDM		1.10(.32)**	3.41	.4543	1.7450	.00
SN		.37(.17)*	2.14	.0238	.7207	.04
FDM x SN		-.22(.08)*	-2.92	-.3722	-.0694	.01
	(1)	.44(.11)***	3.97	.2169	.6577	.00
	(2)	.11(.07)	1.53	-.0330	.2452	.13
	(3)	-.00(.09)	-.05	-.1846	.1761	.96

Note. Fit for model R_2 = .26, F (3,60) = 7.11, p < .001. N = 64. * p <.05, ** p <.01, *** p <.001
b = unstandardized coefficient; $CI_{95\%}$ = confidence interval
Slopes (1): Low subjective norms, (2): Mean subjective norms, (3): High subjective norms.
Standard Errors are in Parentheses.

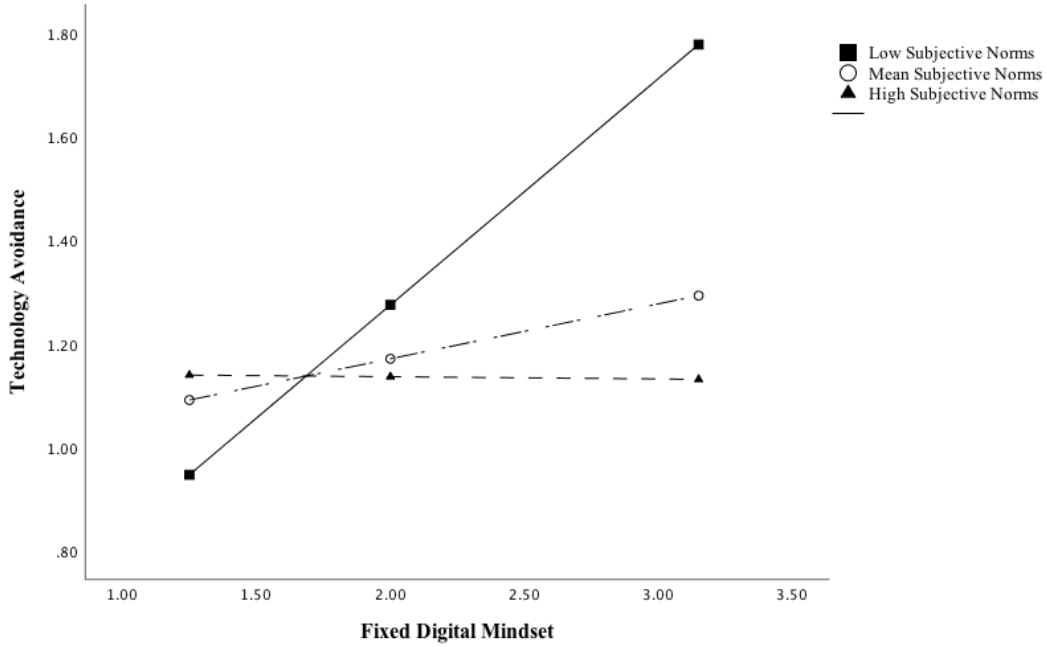

Figure 3. *Interaction between fixed digital mindset and subjective norms on technology avoidance.*

Table 3 presents the findings related to testing Hypothesis 2. Findings indicate that while PU was significantly and positively related to TApp (*b* = .47, *t*

= 4.33, 95% CI = .2546, .6925, $p < .001$), TIF was positively related to PU, but only marginally significant (b =.37, t = 1.84, 95% CI = -.0330, .7745, p = .071), controlling for SN. A test of the mediating effect of PU between TIF and TApp yielded a nonsignificant coefficient, as the confidence interval for the indirect effect includes zero (b = .18, SE =.11, 95% CI = -.0027, .4374.). Thus, Hypothesis 2 is not supported.

Table 3

Mediation Effects of Perceived Usefulness (PU) on the Relationship between Training Initative Frequency (TIF) and Technology Approach (TApp)

	Perceived Usefulness (M)					Technology Approach (Y)				
			$CI_{95\%}$					$CI_{95\%}$		
	b	*t*	*Lower*	*Upper*	*p*	*b*	*t*	*Lower*	*Upper*	*p*
Constant	1.96(.53)**	3.70	.8993	3.0157	.00	.29(.50)	.58	-.7092	1.2936	.56
TIF (X)	.37(.20)	1.84	-.0330	.7745	.07	.06(.18)	.36	-.2916	.4178	.72
PU (M)						.47(.10)	4.33	.2546	.6925	.00
Indirect Effect						.18(.11)		-.0027	.4374	
Direct Effect						.06(.18)	.36	-.2916	.4178	.72
Total Effect						.24(.20)	1.22	-.1535	.6307	.23
Subjective Norms	.25(.11)	2.20	.0225	.4691	.03	.36(.10)	3.66	.1648	.5616	.00
	R^2 = .15, F (2,61) = 5.36, p <.01					R^2 = .46, F (3,60) = 16.97, p.<001				

Note. b = unstandardized coefficient; $CI_{95\%}$ = confidence interval. N= 64. * p <.05, **p <.01, *** p.<00. Standard Errors are in Parentheses.

Table 4 presents the findings related to testing Hypothesis 3. The predicted interaction effect between FDM and DSE was marginally significant (b = .21, t = 1.72, 95% CI = -.0321, .4497, p = .09), controlling for SN. The simple slope estimates show that FDM had a positive relationship with TIF when DSE was high, however the finding was only marginally significant (b = .19, t = 1.85, 95% CI = -.0143, .3916, p = .07). The simple slope estimates at low levels of DSE were negative, as predicted, but not statistically significant (b = -.09, t = -.76 , 95% CI = -.3246, .1451, p = .45). The nature of the interaction can also be seen in Figure 4. Thus, Hypothesis 3 was only partially supported.

Table 4

Moderation effect of Digital Self-efficacy (DSE) on the Relationship between Fixed Digital Mindset (FDM) and Training Initative Frequency (TIF).

				CI95%		
Training Initative Frequency		*b*	*t*	Lower	Upper	p
Constant		3.02(1.23)*	2.46	.5851	5.4626	.02
FDM		-.86(.54)	-1.58	-1.9313	.2207	.12
DSE		-.41(.27)	-1.49	-.9476	.1361	.14
FDM x DSE		.21(.12)	1.72	-.0321	.4497	.09
Subjective Norms		.14(.06)*	2.12	.0087	.2613	.04
	(1)	-.09(.12)	-.76	-.3246	.1451	.45
	(2)	.12(.08)	1.49	-.0401	.2782	.14
	(3)	.19(.10)	1.85	-.0143	.3916	.07

Note. Fit for model R_2 = .09, F (4,89) =2.29 , p =.07. N = 94. * p <.05, **p <.01, ***p <.001

b = unstandardized coefficient; $CI_{95\%}$ = confidence interval. Slopes (1): Low digital self-efficacy, (2): Mean digital self-efficacy, (3): High digital self-efficacy. Standard Errors are in Parentheses.

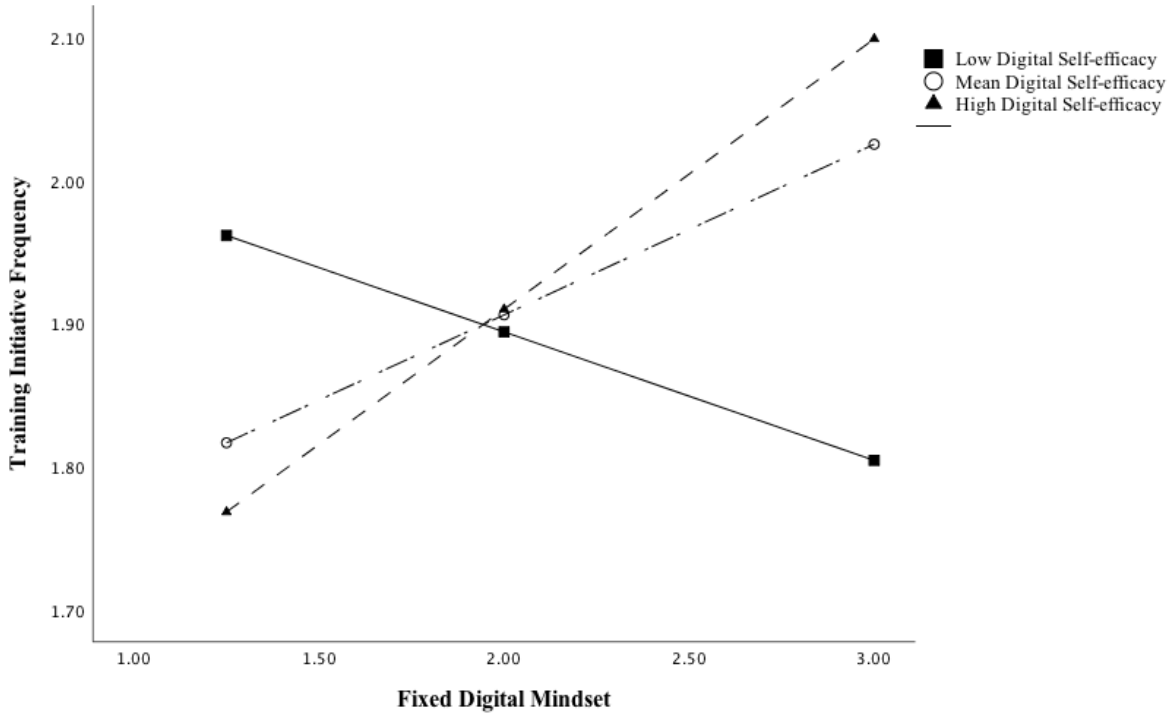

Figure 4. *Interaction between fixed digital mindset and digital self-efficacy on training initiative frequency.*

The analysis conducted to test Hypothesis 4 revealed a non-significant index of the moderated mediation effect of FDM on TApp through TIF and PU, with DSE moderating the relationship between FDM and TIF (indirect effect = .02; 95% CI = -.0574, .0904) (the unstandardized coefficients for the different paths can be seen in Figure 5). Furthermore, FDM was not found to have a significant relationship with TIF (*b* = -.22, *t* = -0.33, 95% CI = -1.5986, 1.1514, *p* =.74), nor did DSE serve as a significant moderator for this relationship (*b* = .10, *t* = .68, 95% CI = -.1985, .4035, *p* = .49). Thus, Hypothesis 4 was not supported.

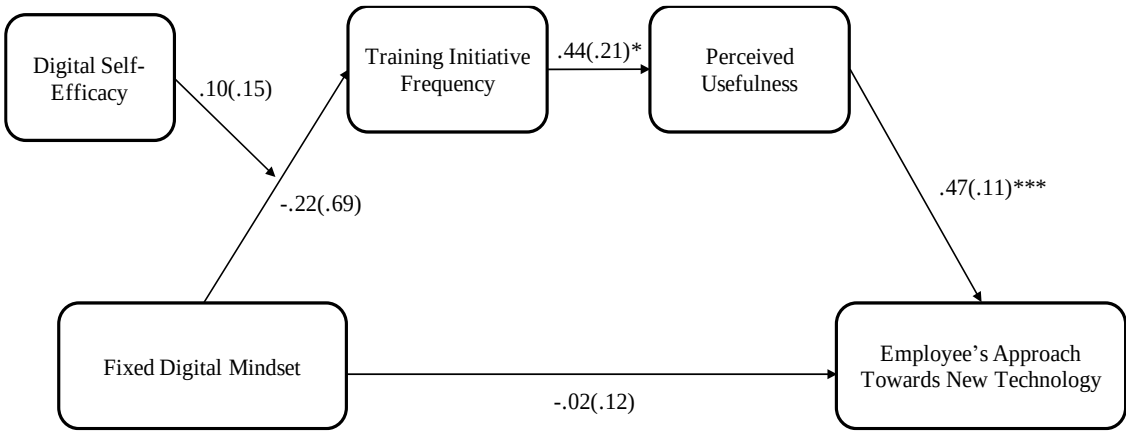

Figure 5. *Moderated mediation model for fixed digital mindset and technology approach*. *Note.* Unstandardized coefficients and standard errors (in parentheses). *N*=64. *p <.05; **p <.01; ***p <.001.

6.0 General Discussion

The main purpose of this study was to examine when and how having a fixed digital mindset relates to employees' avoidance or approach towards new workplace technology. We aimed to take into consideration an important individual difference which can influence technology adoption, we incorporated key variables from TAM with the proposed domain specific concept of digital mindset. We then theorized how these would relate to technology adoption, which

we conceptualized through the lense of job crafting by examining technology avoidance and technology approach.

Our first conceptual model hypothesized that having a fixed digital mindset would positively relate to technology avoidance, and that this relationship would be stronger when subjective norms are low. In our second conceptual model we hypothesized that the relationship between fixed digital mindset and technology approach would be mediated through training and perceived usefulness, while digital self-efficacy would influence the extent to which individuals with a fixed digital mindset engaged in said training.

The results from our study provide initial support for the proposition that mindset plays a role in technology adoption. Specifically, we found that having a fixed digital mindset is related to technology avoidance and this relationship is influenced by subjective norms. We also found partial support for the moderating effect of digital self-efficacy on the relationship between fixed digital mindset and training initiative frequency.

6.1 First conceptual model: Fixed digital mindset and technology avoidance

In regards to our first conceptual model, our analysis demonstrated a positive relationship between fixed digital mindset and technology avoidance. The implicit theories literature shows that individuals with a fixed mindset tend to interpret situations in light on how their abilities will be judged and therefore might construe new challenges as a threat to their competencies (Dweck & Leggett, 1988). In accordance with this research, it is possible that employees with a fixed digital mindset are likely to interpret new technology being introduced at work as a threat to their technological abilities. Previous studies have shown that individuals with a fixed mindset have a propensity to adopt helpless behavior patterns such as avoiding situations where their ability is threatened (Dweck,

1986; Dweck & Leggett,1988). Consistent with these findings, our results suggest that these maladaptive patterns pertaining to endorsing a fixed mindset also arise in the specific domain of implicit beliefs about technology. We believe this is a key finding for the field, given that we are providing preliminary evidence supporting the idea that fundamental beliefs can play a significant role in the process of technology adoption.

Furthermore, we hypothesized that the positive relationship between fixed digital mindset and technology avoidance would be moderated by subjective norms considering that employees are embedded in a social environment and thus affected by normative influences. The results for the first hypothesis indicated that the interaction effect was significant, more specifically, the existing positive relationship was strengthened when perceptions of subjective norms were low. Prior research has shown that subjective norms can heavily influence people's attitudes (Hartwick & Barki, 1994; Karahanna et al., 1999) and intentions to use technology (Venkatesh & Davis, 2000). In line with this research, our results indicated that this variable can influence patterns of technology adoption. In our study, however, we took one step forward by investigating how subjective norms can act in conjunction with mindset and thus tried to understand how the interplay between the individual and their subjective perception of the environment can influence technology avoidance.

Our results revealed that low subjective norms amplified the positive relationship between a fixed digital mindset and technology avoidance. If employees with a fixed digital mindset believe that other important referents do not care about whether they decide to adopt the technology they are even more likely to avoid it. This could be due to the fact that those endorsing a fixed mindset are highly concerned with how others perceive their competence (Dweck

& Leggett, 1988). Thus important referents' indifference towards the use of the technology can lead them to avoid it even more as they will find it unworthy to risk obtaining a negative judgment of their technological abilities if others are unconcerned with the technology.

An important factor that could have affected the prominent influence low subjective norms had in technology avoidance is the type of technology we investigated. Microsoft Teams is a collaborative platform whose purpose is to streamline communication and foster information sharing (Koenigsbauer, 2016) thereby requiring interaction among employees for its usage. Bearing in mind the main purpose of the technology is to communicate and collaborate with others, it is reasonable that the opinion of coworkers influenced the extent to which employees with a fixed mindset avoided the technology. Furthermore, perceptions on whether they believe coworkers think they should adopt the technology might be more salient with collaborative technologies such as Microsoft Teams. Take for instance an example of an employee who belongs to a team who continues to communicate mostly through email instead of using Microsoft Teams. This will create a clear perception that coworkers do not think adopting the technology is important. If the technology was used for accomplishing more individual tasks, it could be more difficult to grasp others' perceptions of the technology in question. It would therefore be interesting to explore whether this relationship found would appear in other types of technology that are not of a collaborative nature.

6.2 Second conceptual model: Fixed digital mindset and technology approach

6.2.1 Training, perceived usefulness and technology approach

When testing our second hypothesis we tried to understand whether perceived usefulness could mediate the relationship between training initiative frequency and technology approach. TAM advises to try to influence perceived

usefulness (Bagozzi, 2007; Lee et al., 2003; Venkatesh & Davis, 2000) by focusing on employees' cognitive instrumental processes in the training offered (Venkatesh & Bala, 2008). The company where we conducted our study offered training initiatives with a focus on how the new technology could aid in making employees' jobs more effective and increase their performance. Therefore, we expected perceived usefulness to mediate the relationship between training and technology approach. However, contrary to our expectations perceived usefulness did not significantly mediate the relationship.

We were not able to provide evidence for the relationship between these variables in our study. Previous research on this relationship has yielded inconsistent results, while some previous studies have been able to show a mediating effect of perceived usefulness between training and intention to use (e.g. Agarwal & Prasad, 1999), others have not (e.g. Marler et al., 2006). Marler and colleagues (2006) point to different measures of training as one of the possible reasons for the divergent results. The exact design and execution of training initiatives are bound to vary from field study to field study. In addition to the differing types of training available, the different ways of operationalizing training initiatives might influence the findings. The operationalization used in this study examined the concept of training through employee's total self-reported frequency of participation. Our measure could have been limited in uncovering the effect of training on perceived usefulness, as frequency alone might not fully reflect the possible impact, which is one potential explanation to our lack of findings. On the other hand, the lack of support for the assumption that training initiatives would relate to perceived usefulness could entail that other factors, rather than the utility of the system, is what mediates the relationship between training and technology usage. For instance, Marler et al. (2006) found employee

resources is a significant mediator of this relationship, reasoning that training which highlights the available resources for aiding the employee can increase technology adoption.

Nonetheless, our findings did portray a significant relation between perceived usefulness and technology approach, thereby supporting our assumption that technology approach is an appropriate substitute for measuring usage behavior. As suggested, TAM's traditional methods of measuring usage have been accused of inadequately describing behavior and being too narrow (Benbasat & Barki, 2007). The alternative usage of an approach crafting measure provides a more nuanced outcome variable which includes a larger scope of usage behavior thereby providing better insight when seeking understanding of technology adoption. Additionally, this could serve as a good alternative given that objective measures of usage can be difficult to access.

6.2.2 Fixed digital mindset, digital self-efficacy and training

Organizations heavily invest in training initiatives intended to enhance the technology adoption process of its employees (Training Industry Report, 2019). For this reason, we deemed it important to explore whether having a fixed digital mindset and perceptions of digital self-efficacy could influence employees' participation in such initiatives. Our findings revealed partial support for Hypothesis 3, where a positive, marginally significant relationship was found between having a fixed digital mindset and training initiative frequency, when employees had high digital self-efficacy. As individuals with a fixed mindset are highly concerned with appearing competent to others (Dweck & Leggett, 1988) it was reasonable to believe that the perceptions of their own competence would influence the extent to which they joined the training initiatives. Though marginally significant, our findings support Dweck & Leggett's (1988) argument

that individuals with a fixed mindset will only seek situations if they are confident they can validate their abilities in that given situation. Furthermore, our findings could be explained by Bandura's (1977) proposition that a high self-efficacy might reduce the subjective perilousness of situations, and thus causing employees with a fixed mindset to engage in such initiatives despite the potential threat of a negative evaluation. Our findings indicate that a high level of digital self-efficacy could potentially buffer against the likely propensity of those with a fixed digital mindset to avoid training initiatives.

Our findings did not support our proposition that having a fixed digital mindset would negatively relate to training initiative frequency when digital self-efficacy was low. Nonetheless, the slope for low digital self-efficacy was negative, indicating a negative relationship consistent with our proposition. It could be valuable to explore several reasons for which the findings were non-significant. First, the initiatives provided by the company are voluntary, therefore it could be that a high sense of efficacy drives employees to engage more in these initiatives but a low sense of efficacy might not have such a strong pattern for avoiding these initiatives. Second, the proposed effect low self-efficacy could have on making employees avoid training may not have been as relevant for those initiatives which concerned independent learning. The independent nature of those initiatives could pose less of a threat for being evaluated, rendering the effect of self-efficacy less relevant.

6.2.3 The full model: Fixed digital mindset and technology approach

In regards to testing hypothesis 4, our intention was to establish that having a fixed digital mindset could relate to training initiatives when influenced by high digital self-efficacy, which would further open the possibility of influencing perceived usefulness, thereby ultimately relating to technology

approach. However, we did not find support for the complete model, which essentially integrates hypothesis 2 and 3. Even though the indirect effect was not significant it is interesting to note that in the full model training initiatives do relate to perceived usefulness, which in turn relates to technology approach.

A last note worth mentioning is that although fixed digital mindset did positively relate to technology avoidance, there was no significant negative relationship with technology approach. It could be that fundamental beliefs can foster maladaptive patterns of behavior such as avoiding technology, but the influence is not as prevalent when it comes to approaching technology. It would be interesting to further explore why fixed digital mindset did not correlate negatively with technology approach.

6.4 Limitations

The results of our study should be interpreted in light of its limitations, therefore we address a few methodological concerns. Given the design of our study is of cross-sectional nature, we can not make any inferences of causality and we cannot rule out the possibility of reverse causality (Bryman & Bell, 2015). Despite the limitation of drawing causal claims, we believe that it could be a strength that our research was a field study where we collected real-time data within one large organization, and thus having higher ecological validity than that of an experimental design (Bryman & Bell, 2015). Moreover, our data is based on self-report surveys, making it prone to common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), therefore we included a temporally lagged design by conducting two waves as means to reduce this effect.

Furthermore, we were not able to obtain a truly random sample as the only available distribution option provided by the organization was to invite respondents through internal web platforms, making it prone to sampling bias

(Agresti & Finlay, 2014). Thus, there could be a group difference between our sample and the employees who did not participate in the study. Further, our sample was quite small (N= 94 for Time 1, N = 64 for Time 2), hence there is a risk of decrease in statistical power due to the small sample size, therefore increasing the possibility of type II errors, where one concludes there is no statistically significant relationship when in reality there is one (Howell, 2013). In addition to the size of the sample, our data was collected from only one organization within a specific industry and thus the homogenous nature of our sample further reduces the ability to generalize the findings (Bryman & Bell, 2015).

Lastly, the influence COVID-19 had on the Norwegian society and the business community has to be taken into consideration. The timing of our survey distribution coincided with the introduction of governmental restrictions, making the use of home office and thereby Microsoft Teams much more crucial for all respondents in our study. This could have influenced our results, as people who generally make efforts to avoid the technology may have had no other choice then to approach it under the given circumstances. Further, it could influence our measures of training and perceived usefulness. The former given that employees might have a higher need to use the available digital initiatives when the situation forced them to make use of the technology. Whilst the latter bearing in mind that Microsoft Teams suddenly became necessary for employees in the execution of their tasks. We can not be certain of the influence COVID-19 had on our findings. Nevertheless, it should be mentioned as there is a general consensus that COVID-19 has heightened the focus on the need for digital transformation for many organizations (Filev, 2020; Jevnaker & Olaisen, 2020; Morgan, 2020), which is relevant for this study.

6.5 Future research directions

This study offers several opportunities for future research. The results reinforce the idea that there seems to be a conceptual connection between having a fixed digital mindset and other important variables related to technology adoption. Our findings provided evidence for the premise that having a fixed digital mindset can influence employees' technology avoidance, suggesting that mindsets have the potential to direct usage behavior towards new workplace technology. It could therefore be beneficial to expand research on this matter to further establish the existence of this relationship. It appears that low subjective norms strengthen this relationship, however, high subjective norms do not reduce the extent to which employees avoid technology. Future research is warranted in expanding the understanding of what factors could help mitigate against the existing positive relationship between having a fixed digital mindset and technology avoidance. Furthermore, it could be interesting to understand the specific underlying mechanism of this relationship by exploring potential mediators between these two concepts.

In our second model we tried to understand whether having a fixed digital mindset could relate to technology approach through training initiatives focused on increasing perceived usefulness. Our study's inability to provide evidence for this mediating effect could further be explored. As our operationalization of training could have influenced the results, we believe that replicating this part of the model with a larger sample and with broader measures of training could provide a more comprehensive understanding of this proposed relationship. It could also be interesting to understand whether the type of training matters. Additionally, it could be fruitful to expand on the moderating role of digital self-efficacy between fixed digital mindset and different types of training initiatives.

This, due to the fact that we provide some preliminary evidence that a high digital self-efficacy might influence the extent to which individuals engage in such initiatives. As this variable correlated with both technology acceptance and technology avoidance we believe it could be valuable to further explore these relationships and uncover the role perceptions of digital efficacy can have in the technology adoption processes.

Furthermore, it would be informative to understand whether a growth digital mindset relates to the extent to which individuals approach new technology. As mentioned, people do not have a fixed or growth mindset, but rather a combination of the two (Dweck, 2006; Dweck, 2015), therefore it could be valuable to study whether the extent to which one has a growth digital mindset would influence technology approach. In addition, a study with a larger, randomized and more representative sample could further support our results in an effort to improve the generalizability of our findings. Lastly, future research could adopt either an experimental or a longitudinal design to determine whether there is a causal relationship between the variables studied.

6.6 Practical and theoretical implications

This study has several noteworthy practical implications. Our results serve as initial corroboration to the idea that an individual's fundamental beliefs could be instrumental in influencing technology adoption. Therefore these should be considered in conjunction with perceptions of technological attributes rather than examining utility attributes of the technology alone. Practitioners would benefit from understanding that employees hold different mindsets and that these should be taken into account when implementing new workplace technology.

Recognizing that a portion of employees might be more susceptible than others to avoid new technology, organizations could tailor training initiatives

accordingly. The initiatives and their outreach communication should be designed to reduce the possibility that employees might perceive the situation as a potential risk to being evaluated as this could trigger the fear of invalidating their competence level. Besides the considerations regarding training, managers should overall try to understand that differing mindsets can direct towards different degrees of technology avoidance. Therefore they could bring awareness to these dissimilarities to be able to manage and support employees in a way that appropriately considers their fundamental beliefs. By being aware and educating managers and stakeholders, organizations might be able to adjust the communication, assistance and initiatives to support and create situations that are less threatening for employees with a fixed digital mindset. In addition, as digital self-efficacy seems to play an important role in training engagement it could be beneficial to frame the communication and messages in a way that supports and encourages employees' digital self-efficacy.

Furthermore, our results provide evidence for subjective norms influencing the extent to which individuals avoid new technology. Practitioners should therefore leverage the fact that employees are embedded in a social environment where normative influences can have a high impact. Our findings did not reveal an effect of high subjective norms on technology avoidance, however, low subjective norms did have an impact, indicating that it is pertinent that employees with a fixed digital mindset do not believe coworkers do not care whether they use the technology. As such, it could be advised to allocate resources to ensure that managers and other important stakeholders communicate clearly that they believe the technology is important, and that employees should adopt it, to avoid the potential impact of low subjective norms. One such method is to provide a

champion network of people which are intended to promote and aid peers in the use of the technology (Deloitte, 2017b; Microsoft 2018; Microsoft 2019).

Our research provides several theoretical implications. We contribute to the conceptualization of fixed digital mindset proposed by Solberg et al. (2020) by testing the adapted measure in a new sample and evidencing the concept's discriminant validity when compared against other constructs. Furthermore, we also contribute to exploring a relatively new way of measuring technology acceptance which is grounded in the job crafting literature. Specifically we provide evidence for the measure of technology approach and avoidance crafting as a substitute for the traditional TAM measure of usage behavior. Finally, our results underpin the relevance of digital mindset as an individual difference with the potential to direct employees' behavior towards new technology. This introductory evidence serves as groundwork for integrating the concept of mindset into the technology adoption research, which we hope prompts others to continue to explore.

7.0 Conclusion

In summary, the present study sought to investigate how fixed digital mindset would relate to employees' approach or avoidance towards new workplace technology. Our intention was to integrate an important individual difference that could likely direct behavior in the context of technology adoption with key variables from the TAM, and thus introduced the role of fundamental beliefs. Overall, the results highlight the importance of digital mindset as a concept for future exploration. Specifically, the study revealed that a fixed digital mindset is related to the extent to which employees avoid new workplace technology. Although the investigation of digital mindset is yet in its infancy

within the academic realm, we hope that our results help stimulate future research on this concept and its potential to influence technology acceptance.

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Appendix

Appendix 1. Principal Component Analysis

Items	PU	FDM	TAvoid	TApp	SN	DSE
PU_1 - Microsoft Teams generally makes my work easier.	.734					
PU_2 - Microsoft Teams generally improves my performance.	.950					
PU_3 - Generally speaking, Microsoft Teams increases my productivity.	.966					
PU_4 - Microsoft Teams enhances my effectiveness at work.	.955					
PU_5 - Generally speaking, Microsoft Teams is useful in my job.	.664					
SN_1 - Top management thinks I should adopt Microsoft Teams.					.953	
SN_2 - My colleagues think I should adopt Microsoft Teams.					.785	
SN_3 - My immediate supervisor thinks I should adopt Microsoft Teams.					.906	
DSE_1 - I have confidence in my ability to master new technologies implemented at work.						.759
DSE_2 - I believe in my ability to effectively use new technological tools implemented in my workplace.						.839
DSE_3 - I feel certain that I have the necessary competence to use new work technologies successfully.						.832
FDM_1 - A person's technological ability is something basic about them, and there isn't much that can be done to change it.		.844				
FDM_2 - Whether or not a person will be quick and skilled to use new technology is deeply ingrained in the kind of person they are. It cannot be changed very much.		.804				
FDM_3_Reversed - No matter what kind of person someone is, they can improve even their most fundamental technological skills with effort.		.468	-.361			-.386

Items	PU	FDM	TAvoid	TApp	SN	DSE
FDM_4 - Not much can be done to change how well a person will keep pace with technological change. Everyone is a certain kind of person, and some will fare better with technological changes than others.		.713				
FDM_5 - Though people can sometimes learn new things, you can't really change people's basic talent for adapting to new technology.		.800				
FDM_6_Reversed - Everyone has the ability to learn and master new technology.		.656				
TAvoid_1 - I have organized my work in a way that allows me to largely avoid using Microsoft Teams.			.550			
TAvoid_2 - I have made changes in the way I interact with others at work so that I can avoid working with those who would require me to use Microsoft Teams.			.872			
TAvoid_3 - I have organized my work so as to minimize contact with people who expect me to use Microsoft Teams.			.919			
TAvoid_4 - I have found ways to cut out tasks that need to be done in Microsoft Teams, so that I can substantially reduce the time and effort I put into working on this platform			.764			
TApp_1 - I have organized my work in a way that allows me to more actively use Microsoft Teams.				.855		
TApp_2 - I have made changes in the way I interact with others at work so that I can more actively use Microsoft Teams.				.899		
TApp_3 - I have sought out or developed, on my own, projects at work where I can use Microsoft Teams.				.522		
TApp_4 - I have organized my work so as to increase contact with people who want to use Microsoft Teams.						

Extraction Method: Principal Component Analysis; Rotation Method: Promax with Kaiser Normalization. Factor Loadings under 3.0 are not displayed. Underlined loadings are the ones included in the final scales.

Appendix 2: Information Letter for Participants in English.

Do you want to participate in the research project *"Digital Mindset " ?*

This is a questionnaire for you to participate in a research project whose purpose is to examine how various initiatives affect individuals' perception about the new technology being implemented in the workplace. Below we provide you with information about the goals of the project and what your participation entails.

Purpose of the study

The purpose of this study is to identify how different individuals make use of, as well as whether or not they value the different initiatives being offered, to facilitate the implementation of new technology in the workplace. Furthermore, we will also examine how this is related to the perception of the new technology. We want to identify whether individual differences affect which initiatives are preferred and how these are related to the implementation of a new technology. The purpose is to investigate whether some Initiatives are more useful than others, therefore organizations will have more knowledge on what to invest on, when implementing new technology. The project is part of a master thesis, where data collected will be anonymized before being analyzed.

Who is responsible for the research project ?
BI Norwegian School of Management , Oslo, is responsible for the project .

Why are you being asked to participate?
The study is distributed by *Company Name* on its internal channels. Everyone who works in *Company Name* is encouraged to answer the survey. We have partnered to create this research and help the Digital Workplace Team understand more about which of their initiatives are the most useful.

What does it mean for you to participate?

If you choose to participate in the project, it means that you will fill out the questionnaire. It will take you approximately five minutes. The questionnaire contains questions about your use of initiatives related to the implementation of Microsoft Teams in *Company Name* as well as your view of Microsoft Teams. Your responses from the questionnaire are recorded electronically.

Participation is Voluntary
The participation on this project is voluntary. If you choose to participate, you can at any time withdraw consent back without giving any reason. All information about you will be anonymized. It will not have any negative consequences for you if you do not want to participate or if you choose to withdraw.

Your privacy - how we store and use your information
We will only use the information about you for the purposes we have stated in this letter. We treat information confidential and in accordance with the established policies. The only personal data that will be kept is your e-mail address and IP

address, which will be used to send out a follow-up survey two weeks after your reply. Your e-mail will be recorded, but the answers will be encoded and anonymized and stored in an encrypted file. It will not be possible to identify participants who have submitted their answers. Only graduate students Kaja Rasmussen -Moseid and Maria Botero and supervisor at BI Elizabeth Solberg will have access to the personal information. The survey will
be distributed via Qualtrics, which is GDPR compliant given the existing processor agreement between Qualtrics and BI Norwegian School of Management.

What happens to the information your when we finish the prescribed lift project?
The project is scheduled to end on July 1st 2020. At the end of the project, all personal information, including your e-mail address, will be deleted.

Your rights
As long as you can be identified in the parent material, you are entitled to:
- get insight into what personal information is registered about you,
- to get the right to personal information about you,
- delete personal information about you,
- to receive a copy of your personal information (data portability) , and
- to submit a complaint to the Privacy Ombudsman or the Data Inspectorate regarding the processing of your personal data.

What gives us the right to treat your personal information?
We process information about you based on your consent.

On behalf of BI Norwegian School of Management, NSD - Norwegian Center for Research Data AS has considered that the processing of personal data in this project complies with the privacy regulations.

Where can I find out more?
If you have questions about the study, or wish to exercise your rights, please contact :

BI Norwegian School of Management professor Elizabeth Solberg, elizabeth.solberg@bi.no
BI's privacy representative: Vibeke Nesbakken (vibeke.nesbakken@bi.no), or telephone: 48 01 26 48
NSD - Norwegian Center for Research Data AS, by e-mail (personal services@nsd.no) or by phone: 55 58 21 17.

Best regards,
Elizabeth Solberg
Project manager and associate professor in management and organizational psychology
BI Norwegian School of Management

Kaja Rasmussen-Moseid
Master student in the Leadership and Organisational Psychology program Kaja.O.Rasmussen-Mosed@student.bi.n o

Maria Botero
Master student in the Leadership and Organisational Psychology
Maria.PBAris tizabal@student.bi.no.

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Consent statement

I have received and understood information about the *Digital Mindset* project and have had the opportunity to ask questions. I agree to participate in the survey by filling out an electronic questionnaire and that my information (response to the survey, IP address and e-mail address) is processed until the master thesis is delivered:

☐ Yes, I agree to participate in the survey and that my information is processed until the master's thesis is submitted on July 1, 2020

Appendix 3

Survey Time 1

How long have you used Microsoft Teams at your workplace?

• I have not used Microsoft Teams (1) , Under 6 months (2), Between 6 months and 1 year (3), Between 1-2 years (4), Between 2-3 years (5), Between 2-3 years (6)

Are you an Office 365 agent?

• No (1) , Yes (2)

The following initiatives have been set up to help you work with Microsoft Teams. Please indicate how frequently you have used each, if at all, for this purpose.

Never (1), Seldom (2), Sometimes (3), Frequently (4), Very frequently (5)

• Drop-in Sessions
• Digital Workplace Site
• Office 365 Agent Network
• Digital Workplace Community in Yammer
• How-to Videos on Stream

Please think about Microsoft Teams, which has been introduced in *Company Name* and indicate the extent to which you agree with the statements below.

Disagree (1), Somewhat disagree (2), Neither agree nor disagree, (3)Somewhat agree, (4), Agree (5).

• Microsoft Teams generally makes my work easier.
• Microsoft Teams generally improves my performance.
• Generally speaking, Microsoft Teams increases my productivity.
• Microsoft Teams enhances my effectiveness at work.
• Generally speaking, Microsoft Teams is useful in my job.

Please indicate the extent to which you agree with the statements below

Disagree (1), Somewhat disagree (2), Neither agree nor disagree, (3)Somewhat agree, (4), Agree (5).

• Top management thinks I should adopt Microsoft Teams.

• My colleagues think I should adopt Microsoft Teams.

• My immediate supervisor thinks I should adopt Microsoft Teams.

Please indicate the extent to which you agree with the statements below Disagree (1), Somewhat disagree (2), Neither agree nor disagree, (3)Somewhat agree, (4), Agree (5).

• I have confidence in my ability to master new technologies implemented at work.

• I believe in my ability to effectively use new technological tools implemented in my workplace.

• I feel certain that I have the necessary competence to use new work technologies successfully.

Please indicate the extent to which you agree with the statements below Disagree (1), Somewhat disagree (2), Neither agree nor disagree, (3)Somewhat agree, (4), Agree (5).

• A person’s technological ability is something basic about them, and there isn’t much that can be done to change it.

• Whether or not a person will be quick and skilled to use new technology is deeply ingrained in the kind of person they are. It cannot be changed very much.

• No matter what kind of person someone is, they can improve even their most fundamental technological skills with effort.

• Not much can be done to change how well a person will keep pace with technological change. Everyone is a certain kind of person, and some will fare better with technological changes than others.

• Though people can sometimes learn new things, you can’t really change people’s basic talent for adapting to new technology.

• Everyone has the ability to learn and master new technology.

Do you have a leadership position?

• No (1), Yes, with people reporting directly to me (2), Yes, without people reporting directly to me (3)

What is your managerial status?

• Line manager (1), Middle manager (2), Part of the management group in your company (3)

What is your gender identity?

• Male (1), Female (2), Other (3)

What is your age?

• Under 20 years (1), 21-30 years (2), 31-40 years (3), 41-50 years (4), 51-60 years (5), Above 60 years (6)

How many years have you been working at *Company Name*?

• Less than 1 year (1), 1 - 5 years (2), 6 - 10 years (3), 11 - 15 years (4), 16 - 20 years (5), Over 20 years (6)

Survey Time 2

Please indicate the extent to which you agree with the statements below.
Since Microsoft Teams has been introduced in my workplace…
Disagree (1), Somewhat disagree (2), Neither agree nor disagree, (3) Somewhat agree, (4), Agree (5).

• I have organized my work in a way that allows me to largely avoid using Microsoft Teams.
• I have made changes in the way I interact with others at work so that I can avoid working with those who would require me to use Microsoft Teams.
• I have organized my work so as to minimize contact with people who expect me to use Microsoft Teams.
• I have found ways to cut out tasks that need to be done in Microsoft Teams, so that I can substantially reduce the time and effort I put into working on this platform.

Please indicate the extent to which you agree with the statements below.
Since Microsoft Teams has been introduced in my workplace…
Disagree (1), Somewhat disagree (2), Neither agree nor disagree, (3) Somewhat agree, (4), Agree (5).

• I have organized my work in a way that allows me to more actively use Microsoft Teams.
• I have made changes in the way I interact with others at work so that I can more actively use Microsoft Teams.
• I have sought out or developed, on my own, projects at work where I can use Microsoft Teams.
• I have organized my work so as to increase contact with people who want to use Microsoft Teams.