

## When Managers Believe Technological Ability Is Fixed

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## Abstract

Drawing from mindset theory, we predict that managers' fixed mindset about technological ability (FM-TA) will negatively influence the developmental support they provide to their employees and, in turn, their employees' engagement in digitalization initiatives. Further, we predict that managers' FM-TA will have a disproportionate negative influence on female employees for whom negative stereotypes about technological ability exist. We test our hypotheses with two-wave field study data collected from 88 managers and 185 employees working in a Nordic banking institution. We find that managers' FM-TA relates negatively to their employees' experienced developmental support, and, in turn, their employees' efforts to approach new technology. Furthermore, our findings indicate that this negative, indirect relationship is more pronounced for female employees (Estimate =  $-.116$   $SE = .052$ ,  $p = .026$ ) than male employees (Estimate =  $-.048$ ,  $SE = .027$ ,  $p = .071$ ), although the interaction term (managers' FM-TA x employee gender) was not significant at the 95 percent confidence level (Estimate =  $-.266$   $SE = .0141$ ,  $p = .058$ ). Our study provides greater insight into the human resource management (HRM) issues managers might have fostering employee engagement and inclusion in the digitalized workplace.

*Keywords:* Manager fixed mindset; developmental support; technology approach; technology avoidance; gender stereotypes; inclusion in the digitalized workplace

## **Practitioner Notes**

### **What is currently known**

- Developmental HRM practices are important for helping employees adapt to new workplace technology
- Managers play a key role in implementing developmental HRM practices as well as informal coaching and development. Yet, they are also known to vary in their provision of developmental support to employees

### **What this article adds**

- Our study identifies managers' fixed mindset about technological ability (FM-TA) as a factor that explains variation in managers' provision of developmental support
- We find that managers' FM-TA is negatively related to employees' experienced developmental support and, in turn, their engagement in new workplace technology
- Our findings indicate that the negative influence of managers' FM-TA on experienced developmental support is more pronounced for female employees than male employees, although the differences observed were not statistically significant.

### **Implications for practitioners**

- Our study helps managers identify mindset beliefs that could undermine their ability to support employee engagement and inclusion in the digitalized workplace
- Our study also suggests the need for HRM practices to help managers tasked with leading digital transformation initiatives to provide developmental support to all their employees

## **Introduction**

Developing “digital employees” who proactively engage with new workplace technology is an important aspect of aligning human resource management (HRM) with the organization’s digitalization strategy (Parry & Strohmeier, 2014). As with other strategic initiatives, managers play a central role in the causal chain between an organization’s digitalization strategy, developmental HRM practices, and desired behavior in employees (Purcell & Hutchinson, 2007). Not only are managers important for implementing formal developmental HRM practices, they also provide informal coaching and development (Sikora & Ferris, 2014; Sikora, Ferris, & Van Iddekinge, 2015). Yet, managers are also individuals who differ in their abilities, personalities, motivations, and priorities, (Kehoe & Han, 2020). Thus, it is expected that managers will vary in providing the developmental support needed to facilitate positive attitudes and responses to workplace digitalization initiatives and in creating an inclusive work climate in this context.

Little research has addressed the individual factors that contribute to variation in managers’ displays of developmental support (Kehoe & Han, 2020), particularly in the context of workplace digitalization. However, one factor that may be relevant is managers’ mindset. Managers are known to self-regulate their behavior according to what they expect of the situation (Pfeffer & Salancik, 1975) and whether they believe their behavior will have an impact on outcomes (Bandura & Wood, 1989; Wood & Bandura, 1989). Managers’ mindset, or implicit beliefs they have about the malleability of human attributes (Dweck, 2006; Dweck & Leggett, 1988), notably ability, is a relatively stable individual difference that influences these expectancies and beliefs (Burnette, VanEpps, O’Boyle, Pollack, & Finkel, 2013), shaping, in turn, how managers perceive and relate to others (Dweck, Chiu, and Hong, 1995a).

The present study builds on mindset theory and research (Dweck, 2006; Dweck & Leggett, 1988) to examine if managers' fixed mindset beliefs about technological ability (referred to hereafter as FM-TA) has implications for their employees' experience of developmental support and their subsequent approach towards new workplace technology. In doing so, we predict that managers with a FM-TA, who believe that little can be done to change or improve a person's proficiency to learn and adapt to new technologies (Solberg, Traavik, & Wong, 2020), will invest less effort in providing developmental support to their employees. Mindset theory indicates that people having a fixed mindset also make more stereotypical judgments of groups (Levy, Stroessner, & Dweck, 1998; Plaks, Stroessner, Dweck, & Sherman, 2001; Rydell, Hugenberg, Ray, & Mackie, 2007). As negative stereotypes exist about females' technological ability (Elsbach & Stigliani, 2019; Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012), we also predict that managers with a FM-TA will provide less developmental support to female employees than male employees. Employees who experience lower levels of developmental support and, thus, female employees in particular, are predicted to reduce their own efforts to proactively approach new workplace technology, or avoid it altogether (Berg, Wrzesniewski, & Dutton, 2010; Bruning & Campion, 2018).

Our study contributes to the growing body of research in the HRM and general management literature identifying the key role managers play in fostering workplace inclusion (Boekhorst, 2015; Mor Barak, Luria, & Brimhall, 2021; Shore & Chung, 2021). It also responds to calls made in the HRM literature for research that addresses how inclusion in the digitalized workplace can be established and promoted through HRM and managerial practices (Georgiadou, Olivas-Luján, Stone, & Bondarouk, 2020). By identifying managers' mindset as a factor that could account for variation in displays of developmental support, our study also contributes to recent calls for research on the individual qualities of managers that

have implications for HRM delivery more generally (Kehoe & Han, 2020). Finally, our study highlights the need for HRM practices such as training and leadership development to help managers develop the mindset needed to facilitate employees' positive responses to, and inclusion in, workplace digitalization initiatives (Han & Stieha, 2020).

## **Theory and Hypotheses**

### **Managers' FM-TA**

The term "mindset" comes from research finding that individuals hold different implicit theories about the extent to which human attributes are changeable, which result in different judgments and response patterns across tasks and situations (e.g., Dweck, 1999; Dweck, Chiu, & Hong, 1995a). Individuals who endorse an incremental theory are said to have a growth mindset, characterized by beliefs that intelligence, ability, and other human attributes are changeable, and thus can be significantly increased or improved with effort and effective learning strategies. Individuals who endorse an entity theory are said to have a fixed mindset, characterized by beliefs that intelligence, ability, or other human attributes are relatively unchangeable, regardless of effort and experience.

Research on fixed and growth mindset often captures beliefs about the nature of intelligence or general ability. However, scholars have expanded the concept to reflect beliefs about distinct areas of ability, for example, gaming abilities (Lee, Heeter, Magerko, & Medler, 2012) or athletic ability (Vella, Braithewaite, Gardner, & Spray, 2016). These and other studies support that beliefs about the changeability of human attributes tend to be domain-specific, and that domain-specific mindsets are a better predictor of outcomes in a particular domain than more general conceptualizations of mindset (Dweck, 1999).

Furthermore, research on mindset distinguishes between beliefs held about the changeability of one's own attributes or the attributes of others (Dweck et al., 1995a). Self-focused beliefs are relevant when predicting a person's own goals, self-judgments, reactions,

and behaviors. Other-focused mindsets, relating to beliefs about the ability of others, or people in general, to change, are important for explaining and predicting how individuals evaluate the behavior or outcomes of those around them and the nature of subsequent interpersonal interactions.

The present research seeks to identify if managers' FM-TA is negatively associated with employees' experienced developmental support, and the implications this has for employees' engagement in workplace digitalization initiatives. Thus, FM-TA reflects a domain-specific, other-focused conceptualization of fixed mindset that is relevant for the context of technological change.

### **Managers' FM-TA and Employees' Experienced Developmental Support**

Mindset theory is a social-cognitive approach to motivation and personality (Diener & Dweck, 1978, 1980; Dweck & Leggett, 1988). The main tenet of the theory is that having a fixed or a growth mindset will affect the type of goals people adopt as how they react to challenges and obstacles in achieving their goals. Individuals with growth mindset tend to pursue mastery goals aimed at improving competence. They react to setbacks by increasing effort and changing strategies. On the other hand, those with a fixed mindset tend to pursue performance goals aimed at demonstrating competence. Under pressure, they exhibit greater helplessness and withdrawal.

Expanding on the basic tenet of mindset theory, later research demonstrated that individuals with a fixed mindset have a tendency to believe that abilities are innate and hereditary, i.e., factors they have little control over, while individuals with a growth mindset believe that environmental factors have an influence on behavior (Levy & Dweck, 1998). These beliefs influence, in turn, how much focus is given to the limitations of people in a developmental setting. As summarized by Dweck (1999), and supported by empirical research (Gutshall, 2013; Heyman & Dweck, 1998), those with growth mindset, who focus on learning

potential, put more effort into instructing and helping others achieve their potential. Those with fixed mindset, who focus on limitations of people, tend to offer minimal advice and support to others. Further support is provided by research conducted by Heslin, Vandewalle, and Latham (2006) who found that managers having a fixed mindset about intelligence and personality provided their employees with less developmental support, as evidenced in employees' perceptions of receiving less and poorer quality coaching from their managers.

Building on the theory and empirical findings reviewed above, we contend that a manager who views technological ability as fixed will be more likely to view employees' technological ability as something that they have little control over, because they are more likely to relate these attributes to the inherent ability or nature of employees. Accordingly, we hypothesize:

Hypothesis 1: There will be a negative relationship between managers' FM-TA and employees' experienced developmental support.

### **Managers' FM-TA, Gender Stereotypes, and Experienced Developmental Support**

Extensions of mindset theory find that people having a fixed mindset make more stereotypical judgments of groups (Levy et al., 1998; Plaks et al., 2001; Rydell et al., 2007), because they more readily assign fixed traits to people instead of looking at the psychological processes and circumstances behind behaviors (Dweck, Chiu, & Hong, 1995b). Furthermore, just as people having stereotype expectations are found to focus on information that confirms their beliefs (Heilman, 2012), people having a fixed mindset are less likely to search for disconfirming evidence that is necessary to counteract stereotypical judgments (Heslin, Latham, & Vandewalle, 2005; Plaks et al., 2001). This has implications for how much focus a person having a fixed mindset will place on the limitations of another person, based on their stereotypical judgments of the group to which that person belongs. Accordingly, it will also have implications for the effort that will be made in instructing and helping persons who belong to a stereotyped group (Shapcott & Carr, 2020).



Gender stereotypes are prevalent, consistent, and robust in society and in organizations (Heilman, 2001, 2012). Among these stereotypes are beliefs that women have lower abilities in science, technology, engineering, and mathematics (STEM) subjects (Smeding, 2012) and lower capabilities to learn and master new workplace technologies (Elsbach & Stigliani, 2019; Moss-Racusin et al., 2012) than men. Knowing that people having a fixed mindset make more stereotypical judgments, we expect that managers with a FM-TA would make more negative stereotypical judgments about the technological ability of their female employees. Their selective perception and interpretation of women's abilities in the context of technological change would likely serve to strengthen their belief system. We therefore expect that managers with a FM-TA would provide less instruction and support to female employees, who belong to this stereotyped group. Accordingly, we hypothesize:

Hypothesis 2: Employee gender will moderate the negative relationship between managers' FM-TA and employees' experienced developmental support, such that the relationship will be more negative for female employees than for male employees.

### **Managers' FM-TA, Experienced Developmental Support, and Employees' Technology Approach and Avoidance**

The influx of new technology in workplace digitalization initiatives is a job demand that must be dealt with (Wang, Liu, & Parker, 2020). Research suggests that employees might do this by modifying their work tasks and relationships to proactively learn and use new technology, and help others do the same (e.g., Berg et al., 2010; Bruning & Campion, 2018; Solberg et al., 2020). We refer to this as technology approach in the present study. On the other hand, employees might modify tasks and relationships to avoid or reduce interactions with tasks or people that require them to engage in new technological tools and systems. We refer to as technology avoidance.

We expect that receiving developmental support from one's manager would be important for increasing employees' technology approach and decreasing their technology

avoidance in times of technological change. This is because managerial support is important resource in the context of organizational change (Parker & Grote, 2020), enabling employees' personal initiative as well as their change-oriented citizenship behavior (e.g., Chiaburu, Lorinkova, & Van Dyne, 2013; Petrou, Demerouti, & Schaufeli, 2018). Research finds that employees who experience developmental support are more likely to engage in the self-led learning important for mastering new tasks and ways of working (Maurer & Tarulli, 1994; van Dam, Nikolova, & van Ruysseveldt, 2013). They also make more efforts to help their coworkers (Y. Zhang & Chen, 2013). Furthermore, when employees receive sufficient developmental support, they have less need to maintain the resources they do have by engaging in technology avoidance (Bruning & Campion, 2018).

Yet, as argued earlier, employees who have a manager with a FM-TA are expected to receive less development support. This could put them in a position where they do not have the resources needed to approach new technology fully. They may even need to avoid interaction with new technology and those who want them to use it to maintain the resources they do have. Thus, putting the arguments made above together with those relating to Hypothesis 1 leads us to expect a negative relationship between managers' FM-TA and employees' technology approach and a positive relationship between managers' FM-TA and employee's technology avoidance, both of which are mediated by decreases in development support. As predicted in Hypothesis 1, as managers' FM-TA increases, experienced development support should decrease. The lower levels of experienced development support should relate, in turn, to lower levels of employees' technology approach and higher levels of technology avoidance. Accordingly, we hypothesize:

Hypothesis 3: There will be a negative relationship between managers' FM-TA and employees' technology approach that is mediated by decreases in employees' experienced development support.

Hypothesis 4: There will be a positive relationship between managers' FM-TA and employees' technology avoidance that is mediated by decreases in employees' experienced development support.

In line with our earlier discussions, we also expect that the relationships predicted between managers' FM-TA, employees' experienced developmental support, and technology approach and avoidance will be stronger for females than for males. Specifically, we hypothesize:

Hypothesis 5: Employee gender will moderate the negative relationship between managers' FM-TA and employees' technology approach, which is mediated by decreases in employees' experienced developmental support, such that the relationship will be more negative for female employees than for male employees.

Hypothesis 6: Employee gender will moderate the positive relationship between managers' FM-TA and employees' technology avoidance, which is mediated by decreases in employees' experienced developmental support, such that the relationship will be more positive for female employees than for male employees.

## **Method**

### **Sample and Procedure**

We tested our conceptual model (depicted in Figure 1) with two-wave field study data from 88 managers and 185 employees working in the corporate office of a large Nordic banking institution. Like other banking institutions, this organization was in the process of transitioning away from its legacy infrastructure to become a digital bank prepared for the future of the industry. This transition involved the implementation of several new workplace technologies. Data was collected using one manager survey (Time 1) and two employee surveys (Time 1 and Time 2) administered in Qualtrics by two master's students under the close supervision of one of the study's authors.

The manager survey, measuring managers' FM-TA, and the Time 1 employee survey measuring experienced developmental support and the control variables were distributed to 249 managers and 2,132 employees, respectively. Responses were received from 126

managers (51%) and 759 employees (35%). The Time 2 employee survey was distributed two months later and included the measures of technology approach and avoidance. It received 252 responses (12%). Matching the three data sets yielded a final sample of 88 managers and 185 employees. The number of employee responses per manager ranged from 1 to 7. On average, each manager was matched with responses from 2.10 employees. Women accounted for 44% of the manager respondents and 46% of the employee respondents.

A mean comparison t-test was conducted to assess the possible bias of the smaller matched dataset. No significant differences were found in the mean values of the employee-rated study variables between respondents who were included in the matched dataset compared to respondents who were not. Managers' FM-TA was significantly lower among respondents included in the matched dataset (mean = 2.22) than among those respondents not included (mean = 2.33). However, as the difference was relatively small, the threat of bias in the smaller, matched dataset was low.

## **Measures**

All measures were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), unless otherwise stated.

**Managers' FM-TA.** Managers' FM-TA was captured with three items adapted from the implicit theory measures developed by Dweck et al. (1995a). Items adapted for the present study included, "A person's level of technological ability is something basic about them and it can't be changed very much," "Whether a person will be quick and skilled at using new technology or not is deeply ingrained in the kind of person they are. It cannot be changed very much," and "Though people can learn new things, they can't change their basic ability to adapt to new technology."

**Experienced developmental support.** Employees' experienced developmental support was measured with eight items from previous research (Lai, 2011; Lai & Kapstad,

2009). Items reflect support aimed at understanding employees' development needs and goals ("My manager takes time to understand my needs and wishes for further development"), providing helpful feedback ("My manager gives me helpful advice and support to improve my work performance"), and providing challenges and opportunities where employees can develop and strengthen their knowledge and skills ("My manager gives me challenges that develop and strengthen my knowledge").

**Technology approach and avoidance.** Technology approach and technology avoidance were measured with eight items each that we developed for the study. Following recommendations made by Hinkin (1998), we generated items based on a review of the literature that corresponded to our definitions of technology approach and avoidance. The job crafting literature provided the basis for item generation as this literature emphasizes employees' self-regulated efforts to approach or avoid job demands, including new technology, through modifications of tasks and relationships (e.g., Berg et al., 2010; Bruning & Campion, 2018; Tims, Bakker, & Derks, 2012; F. Zhang & Parker, 2019). We examined the discriminant validity of the measurement items using data from an independent sample ( $N = 289$ ). The results of this analysis and the measurement items are presented in the Appendix.

**Employee gender.** Employee gender was coded with a categorical variable based on the respondent's email address, which included the respondent's full name, prior to anonymizing the data. Males were coded "0" and Females were coded "1." In two cases, names were indistinguishable as to the gender of the respondent. Gender for these respondents was coded as missing.

**Control variables.** We included employees' self-efficacy about their ability to learn, use, and master new workplace technology as a control variable in the study. Self-efficacy is a primary mechanism affecting the self-regulation of their behavior (Bandura, 1997). Accordingly, we expected that employees' self-efficacy could contribute positively to their

efforts to approach new technology and might, alongside any support they receive from their manager, also reasonably explain this behavior. Self-efficacy was measured with three items that were adapted from the measure of creative self-efficacy (Tierney & Farmer, 2002). Items included, “I have confidence in my ability to master new technology implemented at work,” “I believe in my ability to use new technology implemented at work,” and “I am confident that I can learn to use any new technology introduced at work.”

### **Analysis**

Using Mplus (version 8.3), we first conducted a confirmatory factor analysis (CFA) with maximum likelihood estimation to examine the discriminate validity of the employee-rated measures included in our study (Cable & DeRue, 2002). This included experienced development support and self-efficacy, measured at Time 1, and technology approach and technology avoidance measured at Time 2. We allowed for certain error terms to be correlated within the same latent factor, when there was justifiable reason for a correlation to be present (e.g., close question proximity or similarly worded items). We compared the four-factor model to alternative models to assess the superiority of the four-factor model fit. One alternative model specified three-factors, with items measuring employees’ technology approach and avoidance assigned to a single factor. A second alternative model specified two-factors, with items measuring experienced developmental support and self-efficacy assigned to one factor and employees’ technology approach and avoidance assigned to another. A final model assigned the measurement items for all four variables to a single factor.

With regards to hypothesis testing, our data consists of 185 employee responses nested within 88 managers. Given the nested nature of our data, analyzing our hypotheses using ordinary least squares (OLS) regression models could lead to errors of prediction (e.g., Aguinis, Gottfredson, & Culpepper, 2013). The intraclass correlations (ICC) for the dependent variables were .10 for experienced developmental support, .04 for employees’

technology approach, and .07 for technology avoidance. Therefore, we tested our hypotheses using “complex” regression analysis in Mplus, as this type of analysis allows for specification of a cluster-level variable in the model (i.e., manager) and calculates cluster robust standard errors (CR-SEs) that account for the non-independence of observations. This approach is argued to be a good alternative to hierarchical linear modeling, particularly when cluster-specific inferences and random effects are not of substantive interest in the research (McNeish, Stapleton, & Silverman, 2017), as they are not in the present study.

Hypothesis 1 was tested by regressing employees’ experienced development support on manager’s FM-TA. Hypothesis 2 was tested by including gender and the interaction term (FM-TA x Gender) in the regression model. Hypotheses 3 and 4 were tested using basic mediation models (Hayes, 2017) where technology approach and avoidance, respectively, were regressed on managers’ FM-TA, experienced developmental support, and self-efficacy (control variable), while experienced developmental support was simultaneously regressed on managers’ FM-TA. Hypotheses 5 and 6 were tested by including gender and the interaction term (FM-TA x Gender) in the mediation models, as moderators of the path between managers’ FM-TA and experienced developmental support. For testing the mediation and moderation hypotheses (Hypotheses 2-5), we utilized the Mplus syntax corresponding to Hayes’ (2017) PROCESS models 4a and 7, developed by Stride, Gardner, Catley, and Thomas (2015; <http://offbeat.group.shef.ac.uk/FIO/mplusmedmod.htm>).

## **Results**

The results from the CFA, presented in Table 1, indicated that the four-factor model that assigned experienced developmental support, self-efficacy, technology approach, and technology avoidance to respective factors fit the data well and was superior to three alternative models tested. Thus, the discriminate validity of the measures was supported.

== INSERT TABLE 1 ABOUT HERE ==

Table 2 reports the descriptive statistics, bivariate correlations, and Cronbach's alpha for all computed study variables. Of note, a one-way analysis of variance (ANOVA) found that managers' FM-TA did not differ significantly between male and female managers in our sample,  $F(1, 86) = 2.20, p = .142$ .

== INSERT TABLE 2 ABOUT HERE ==

Regression model results relating to Hypotheses 1 and 2 can be found in Table 3. In testing Hypothesis 1, we found that managers' FM-TA was significantly and negatively related to experienced developmental support. Accordingly, Hypothesis 1 was supported. In testing Hypothesis 2, we found a negative interaction term between managers' fixed mindset and employee gender in relation to experienced developmental support. An examination of the simple slope estimates for each gender found that the negative relationship between managers' FM-TA and experienced developmental support was more negative for females (Estimate =  $-.453, SE = .126, p < .001$ ) than for males (Estimate =  $-.187, SE = .082, p = .023$ ), but our findings only support a significant slope difference at the 90 percent confidence level. Accordingly, Hypothesis 2 was not supported.

== INSERT TABLE 3 ABOUT HERE ==

Regression model results relating to Hypothesis 3 can be found in Table 4, Model 1. In testing Hypothesis 3, experienced developmental support was found to relate positively to employees' technology approach, controlling for self-efficacy. Further, the relationship between managers' FM-TA, experienced developmental support, and technology approach was significant and negative, as predicted. Accordingly, Hypothesis 3 was supported.

Regression model results relating to Hypothesis 4 can be found in Table 5, Model 1. In testing Hypothesis 4, experienced developmental support was found to have a non-significant relationship with employees' technology avoidance, controlling for self-efficacy. Further, the relationship between managers' fixed mindset, experienced developmental



support, and technology avoidance was non-significant. Accordingly, Hypothesis 4 was not supported.

Regression model results relating to Hypothesis 5 can be found in Table 3, Model 2. In testing Hypothesis 5, we found that the relationship between managers' FM-TA, experienced developmental support, and technology approach was negative and significant for females, but not for males. However, given our earlier finding that the interaction between managers' FM-TA and employees' gender in predicting experienced developmental support was only marginally significant, we interpret this finding with caution (Hayes, 2017) and conclude that Hypothesis 5 is not sufficiently supported.

Regression model results relating to Hypothesis 6 can be found in Table 4, Model 2. In testing Hypothesis 6, the relationship between managers' fixed mindset, experienced developmental support, and technology avoidance was positive but not significant, both for females and for males. Accordingly, Hypothesis 6 was not supported.

== INSERT TABLE 4 ABOUT HERE ==

== INSERT TABLE 5 ABOUT HERE ==

### **Discussion**

In the present study we examined if managers' FM-TA has implications for employees' experienced developmental support and their subsequent approach or avoidance of new workplace technology, particularly for female employees about whom negative stereotypes about technological ability exist. We found that employees working with managers having a FM-TA experienced less developmental support (Hypothesis 1), which had negative implications for their technology approach (Hypothesis 3) but did not promote their technology avoidance (Hypothesis 4). Furthermore, we found that the negative relationship between managers' FM-TA, employees' experienced developmental support, and their technology approach was stronger for female employees than male employees (Hypothesis 5). However, the non-significant interaction term found between managers' FM-

TA and employee gender in predicting experienced developmental support (Hypothesis 2), although near the  $p$ -value threshold, makes for a more cautious interpretation of this finding.

### **Theoretical Implications and Future Research Suggestions**

HRM practices that support and develop employees in line with the organization's digitalization strategy are important for achieving desired outcomes in the context of digital transformation (Parry & Strohmeier, 2014). As with other HRM practices, managers play a central role in implementing the developmental practices needed in this context (Sikora & Ferris, 2014; Sikora et al., 2015). Yet, they are also known to vary in the support and feedback they provide to employees (Kehoe & Han, 2020). Our research contributes to a better understanding of the factors that contribute to variation in managers' provision of developmental support, and the implications this has for employee engagement and inclusion in workplace digitalization initiatives.

Specifically, we find that managers having a FM-TA provide less developmental support to their employees, which, in turn, has negative implications for their employees' approach towards new technology. As such, employees working with fixed mindset managers are likely to perform and adapt less optimally in the context of technological change than those working with managers having a growth mindset about technological ability. They are also likely to experience less belonging and involvement in an organization's digitalization strategy.

While managers' FM-TA was found to have implications for their employees' technology approach, we did not find evidence that managers' FM-TA had implications for employees' technology avoidance. This finding is reassuring; however, it could also be explained by self-presentation motives. In experimental research, Murphy and Dweck (2010) have shown that people who are exposed to organizational cultures projecting growth mindset values tend to focus on projecting their attitudes and motivation while those exposed to

organizational cultures projecting fixed mindset values tend to project themselves as being smart. Extrapolating the present study, employees working with managers having a FM-TA, who project fixed mindset values, may find it socially undesirable to admit that they avoid technology, because it would project an image of incompetence in this area. The nature of technology approach behaviors makes truthful responses to this measure less self-demeaning.

A recent call has been made in the HRM literature for research on how inclusion in the digitalized workplace can be promoted through HRM and managerial practice (Georgiadou, Olivas-Luján, Stone, & Bondarouk, 2020). In response to this call, we sought to understand if managers' FM-TA could influence employee inclusion in the digital workplace, notably female employees about whom negative stereotypes about technological ability exist. However, we found a non-significant relationship between managers' FM-TA and employee gender in predicting experienced developmental support. One explanation for our finding could be that Norway, where the study was conducted, is a country with high gender equality (World Economic Forum, 2020). Research on stereotypes in different social groups in Norway finds that respondents rate both women and men equally high in terms of their competence (Bye, Herrebrøden, Hjetland, Røyset, & Westby, 2014). Accordingly, negative stereotypes about females' technological ability may be less salient in Norway than in other countries where women are reported to have lower competence than men (e.g., Germany, Australia, USA; Bye et al., 2014). The more negative trend that we observed in the relationship between managers' FM-TA, experienced developmental support, and technology approach among female employees might be found to be significant in future research conducted in different national contexts.

Despite the non-significant interaction, our study does highlight the need to consider stereotypical judgements when examining managers' fixed mindset in relation to developmental support in future research. Scholars working with mindset theory have studied

the relationship between fixed mindset and developmental support (Heslin et al., 2006; Heyman & Dweck, 1998) and the relationship between fixed mindset and stereotyping (Levy et al., 1998; Plaks et al., 2001). However, we only know of one other study, Shapcott and Carr's (2020) examination of coaches' mindset in the context of recreational golfing, that has put these pieces together to examine how fixed mindset influences the developmental support provided to individuals about whom negative stereotypes exist. Similarly, research on gender bias in the workplace has identified gender stereotypes as explaining why women receive lower performance evaluations from their managers than men (Heilman, 2012). However, few studies have identified characteristics of the manager that could account for this discrimination. By studying fixed mindset and stereotypes together, a more complete understanding of managerial self-regulation in their provision of developmental support or other inducements can be achieved and more inclusive managerial practices can be cultivated.

It is important to mention that although we examined the interactive effect of gender on the relationship between managers' FM-TA and employees' experienced developmental support, we did not measure the actual stereotypes that managers held towards women, or towards their own female employees more specifically. Future research should include direct measures of these stereotypes. In addition, the role of managers' FM-TA and the differential impact this could have on their male and female employees requires further investigation, not only how it relates to development support but also how it relates to other inducements provided by the manager and performance evaluations.

### **Practical Implications**

Our study emphasizes the need for managers to recognize and self-regulate their implicit beliefs about the technological ability of others, including stereotypical beliefs, to be effective and inclusive leaders in the digital workplace. Our study also suggests several important implications for HRM practice, particularly as it relates to the selection and training

and development of managers tasked with leading digital transformation initiatives. Mindset measures could be used to identify managerial candidates having more favorable implicit beliefs about technological ability, while leadership development programs could be aimed at nurturing growth mindset thinking (Han & Stieha, 2020) and raising awareness of stereotypes (Kawakami, Dovidio, & Van Kamp, 2007). Also, interventions could be used to reverse fixed mindset beliefs (Heslin et al., 2006). For example, a manager mindset intervention reported by Heslin et al. (2006) had managers attend a short, 90-minute session consisting predominantly of self-reflection exercises focused on reframing their own experiences. It was shown to reverse the effects of fixed mindset and increase the time and quality of coaching the managers engaged in. Moreover, the effects lasted 6 weeks after the intervention. Considering the low cost of such interventions, they may be easy to implement as part of HRM practices in organizations where fixed mindset thinking is problematic. Although the results of diversity training vary, the ability of diversity training to raise awareness of bias and present practices aimed at reducing bias, signal that it is important to include in leaders' training and development programs (Berzukova, Spell, Perry, & Jehn, 2016).

### **Limitations**

A primary limitation of our study is that data was collected in a cross-lagged, self-report survey. Therefore, our ability to make conclusions about the causality of the mechanisms hypothesized is limited. It is possible in experimental settings to prime mindsets (Heslin et al., 2006) and stereotypical beliefs (Ellemers, 2018). Therefore, a logical next step would be to assess the theory put forward in our study experimentally.

Additionally, we did not conduct a power analysis/sample size calculation before collecting data in this study. It could be that our study was underpowered to be able to find a significant interaction term between managers' FM-TA and employees' experienced developmental support at the level found in the present study, using the methods we used.

Future studies can use the results of this study to determine likely effect sizes when conducting power analyses to determine the possible sample size.

Furthermore, we have argued that the domain-specific FM-TA is a more suitable predictor for behavior and other outcomes in the context of technological change. However, we did not compare our measure of FM-TA with more general mindset measures about ability to test for its superior predictive validity. Future research should address this for the reasons of retaining conceptual parsimony. The answer to this question also has practical implications for how context-specific manager selection and development interventions should be.

Finally, our study was conducted in a banking institution in Norway. We have already addressed how the national context could influence findings concerning the gender differences hypothesized in our study. However, it could also be that the banking institution where we conducted our study had policies or practices that set up an idiosyncratic environment for managers and employees to behave in ways (in)consistent with our hypotheses. As such, future replication of our study in other work and national contexts is needed to support the generalizability of our findings.

### **Conclusion**

Our research supports that managers' FM-TA has negative implications for employees' experienced developmental support and their subsequent engagement in workplace digitalization initiatives. We observed a more negative trend in the relationship between managers' FM-TA, experienced developmental support, and technology approach among female employees compared to male employees. However, the interaction between managers' FM-TA and employee gender in predicting experienced developmental support was not statistically significant and was therefore not supported. Still, our study provides greater insight into the reasons why managers might vary in fostering employee engagement

and inclusion as the workplace becomes more digitalized. In doing so, we provide a theoretical and empirical foundation on which to build further studies on the topic.

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## APPENDIX

### Discriminant validity of items measuring technology approach and avoidance

The discriminant validity of items developed to measure technology approach and avoidance was assessed using data from an independent sample ( $N = 289$ ) that we randomly split in half. With one half of the data, we conducted a principal components analysis (PCA) using oblimin rotation in SPSS (version 26). We found that all eight of the technology approach items and all eight of the technology avoidance items loaded onto respective and distinct factors with no cross-loadings, as reported below. We then conducted a confirmatory factor analysis (CFA) using maximum likelihood estimation in Mplus (version 2.3) on the second half of the data. We allowed for certain error terms to be correlated within the same latent factor, when there was justifiable reason for a correlation to be present (e.g., close question proximity or similarly worded items). The results indicated that a two-factor model fit the data reasonably well ( $\chi^2(92, p = .000, n=145) = 159$ ; CFI = .95; TLI = .94, RMSEA = .07, BIC = 5549, AIC = 5370), thus providing further support for the discriminant validity of the items.

### Factor loadings of items measuring technology approach and avoidance

Measurement items	Factor 1	Factor 2
Factor 1: Technology approach		
1. I make an effort to be one of the first to learn about and try out new technology at work	.72	
2. I seek out projects at work where I can learn new technological systems	.79	
3. I offer to do other's work in new technological systems, so that I get more personal experience working with these technologies.	.66	
4. I initiate professional relationships with people outside of my immediate work group in order to advance my own knowledge and experience with new technologies.	.79	
5. I expand my work role by adding activities to my job aimed at helping others learn and use new technologies	.80	
6. I have, on my own initiative, organized special activities intended to help others learn and use new technologies	.76	
7. I take the initiative to ensure that colleagues' concerns and feedback on new technology systems are heard and addressed	.76	

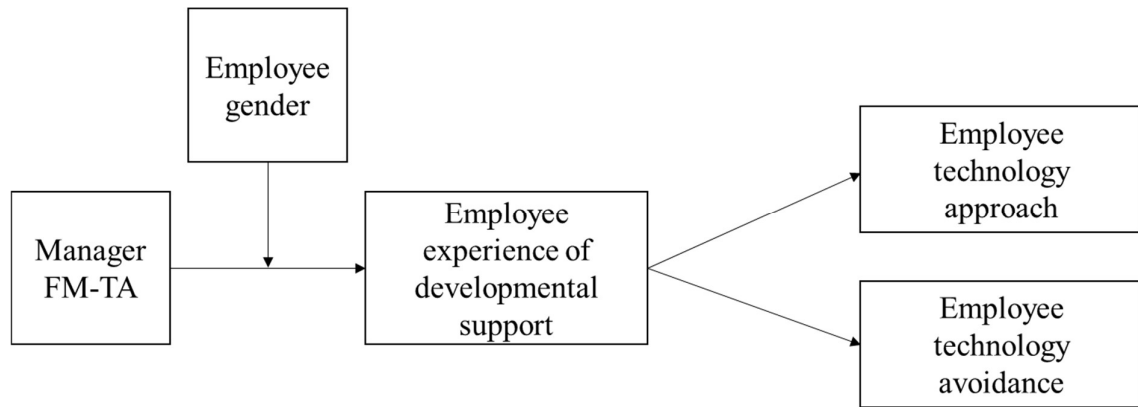
8. I actively initiate positive interactions with others at work, in an effort to increase learning and use of new technology	.71
Factor 2: Technology avoidance	
1. I make changes in the way I do my work that allows me to avoid using new technological systems	.86
2. I organize my work in a way that allows me to largely avoid interacting with new technologies	.91
3. I make changes in the way I interact with others at work so that I can avoid working with those who would require me to use new technologies	.88
4. I organize my work so as to minimize contact with people whose expect me to use new technological systems	.90
5. I come up with shortcuts that allow me to substantially reduce the time and effort I put into working in new technological systems	.75
6. I find ways to cut out tasks that require working with new technology, so that I can reduce the time/effort I put into working with these systems.	.90
7. I find ways to cooperate with others who can help do the work needed in the new technological systems, so that I don't have to work much with these systems myself.	.84
8. I find ways to coordinate work with others, so that they take those parts that requires working in new technological systems/ platforms, and I do other tasks	.83

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*Note.*  $n = 144$ . Extraction method was Principal Component Analysis; rotation method was Oblimin with Kaiser Normalization.

**Figure 1**

*Conceptual Model*



**Table 1***Results of the confirmatory factor analyses*

Model	$\chi^2$	<i>df</i>	<i>p</i>	CFI	TLI	RMSEA	BIC	AIC
Four factor model <sup>a</sup>	455	305	.00	.96	.95	.05	9344	9022
Three factor model <sup>b</sup>	1065	308	.00	.80	.77	.12	9938	9626
Two factor model <sup>c</sup>	1281	310	.00	.74	.71	.13	10144	9838
One factor model <sup>d</sup>	2056	311	.00	.54	.48	.17	10913	10611

*Notes.* <sup>a</sup>Model specified such that items measuring employees' experienced developmental support, self-efficacy, technology approach, and technology avoidance were assigned to four respective factors.

<sup>b</sup>Model specified such that items measuring employees' technology approach and technology avoidance were assigned to a single factor.

<sup>c</sup>Model specified such that items measuring experienced developmental support and self-efficacy and employees' technology approach and technology avoidance were assigned to two single factors, respectively.

<sup>d</sup>Model specified such that items measuring all four variables were assigned to a single factor.

**Table 2***Descriptive statistics and correlations of study variables*

Variable	Mean	SD	1	2	3	4	5
1. Manager FM-TA	2.16	0.57	(.71)				
2. Developmental support <sup>a</sup>	3.83	0.70	-.26**	(.95)			
3. Self-efficacy <sup>a</sup>	4.14	0.60	-.12	.16*	(.86)		
4. Technology approach <sup>b</sup>	3.03	0.76	-.18*	.31**	.40**	(.91)	
5. Technology avoidance <sup>b</sup>	1.74	0.68	-.01	-.12	-.38**	-.27**	(.93)
6. Gender <sup>c</sup>	0.46	0.50	.01	-.04	-.12	-.10	-.12

Notes.  $N = 185$ . Pearson's bivariate correlation coefficients ( $r$ ) are reported for all but Gender. Point-biserial correlation coefficients ( $r_{pb}$ ) are reported for Gender. Cronbach's alpha for each measure is provided in parentheses.

<sup>a</sup>Employee-rated, time 1.

<sup>b</sup>Employee-rated, time 2.

<sup>c</sup>Gender coded as male=0, female=1.

\*  $p < .05$ , \*\*  $p < .01$ .

**Table 3**

*Regression model results for Hypotheses 1 and 2: dependent variable employees' experience of developmental support*

Variable	Model 1			Model 2		
	Estimate	<i>SE</i>	<i>p</i>	Estimate	<i>SE</i>	<i>p</i>
Intercept	4.503	.174	<.001	4.262	.184	<.001
Manager FM-TA	-0.314	.077	<.001	-0.187	.082	.023
Gender				0.520	.298	.081
Manager FM-TA x Gender				-0.266	.141	.059
<i>R</i> <sup>2</sup>	.065			.078		



**Table 4***Regression model results for Hypotheses 3 and 5: dependent variable technology approach*

Variable	Model 1			Model 2		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Intercepts						
Developmental support	4.503	.174	<.001	4.262	.184	<.001
Technology approach	.437	.408	.285	.460	.413	.265
Technology approach on						
Developmental support	.262	.090	.004	.256	.092	.005
Self-efficacy	.445	.080	<.001	.446	.081	<.001
Manager FM-TA	-.099	.085	.247	-.100	.085	.243
Developmental support on						
Manager FM-TA	-.314	.077	<.001	-.187	.082	.023
Gender				.521	.298	.081
Manager FM-TA x Gender				-.266	.141	.058
Manager FM-TA → Developmental support →						
Technology approach	-.082	.034	.016			
Manager FM-TA → Developmental support →						
Technology approach; Gender = Male				-.048	.027	.071
Manager FM-TA → Developmental support →						
Technology approach; Gender = Female				-.116	.052	.026
<i>R</i> <sup>2</sup>	.218			.214		

**Table 5***Regression model results for Hypotheses 4 and 6: dependent variable technology avoidance*

Variable	Model 1			Model 2		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Intercepts						
Developmental support	4.503	.174	<.001	4.262	.184	<.001
Technology avoidance	4.050	.364	<.001	4.031	.367	<.001
Technology avoidance on						
Developmental support	-0.076	.064	.237	-0.074	.066	.259
Self-efficacy	-0.447	.065	<.001	-0.444	.066	<.001
Manager FM-TA	-0.099	.084	.242	-0.100	.084	.234
Developmental support on						
Manager FM-TA	-0.314	.077	<.001	-0.187	.082	.023
Gender				0.520	.298	.081
Manager FM-TA x Gender				-0.266	.141	.059
Manager FM-TA → Developmental support → Technology avoidance	0.024	.022	.268			
Manager FM-TA → Developmental support → Technology avoidance; Gender = Male				0.014	.014	.337
Manager FM-TA → Developmental support → Technology avoidance; Gender = Female				0.034	.032	.286
<i>R</i> <sup>2</sup>	.166			.164		