

## Is Motivation always the Key? – Antecedents of Employee-Driven Digital Innovation

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### Abstract

*Understanding the factors that can explain innovation has received a lot of attention among researchers in the last decades. During the same period, different approaches to innovation have also seen the light of day, among them employee-driven innovation and digital innovation. In this study our aim is to look at a concept that merges these two types of innovation and see how motivation affects employee-driven digital innovation. In our research model we look at how intrinsic, social, and internalized extrinsic motivation affects employee-driven digital innovation, and how variables like strategy and organizational culture can act as explanatory and moderating variables.*

**Keywords:** Employee-driven digital innovation, Motivation, Strategy.

### 1. Introduction

Innovation is about the creation of products, services or processes through new ideas that challenge already known practices and can be viewed as a concept consisting of different dimensions (Haapasaari et al., 2018). Innovation can provide solutions to many of societies complex and interdisciplinary challenges, among these, digital transformation (Vial, 2019) and sustainability (Dao et al., 2011). There is therefore importance to gain insights into the variables that affects innovation on different levels to manage and facilitate innovation in desirable ways.

Research on employee-driven innovation (Høystrup, 2010) indicates a high potential for initiating, developing, and utilizing innovation by employees in organizations. Because of this employee innovative behavior has attracted attention from both academics and industries (Ruan et al., 2010), and seeks to build knowledge towards how ordinary employees can

contribute to innovation (Kesting and Ulhøi, 2010; Høystrup, 2012).

*Employee-driven innovation* defines how employees can contribute to idea creation and idea development in organizations without having innovation among their tasks in their job description (Høystrup, 2012). This approach to innovation can be viewed as a way to democratize (Fichman et al., 2014) the innovation process in organizations, by allowing employees, and event customers, to participate in the core of the innovation activities.

*Digital innovation* is another approach to innovation that has attracted recent research interest. According to Yoo et al. (2012) a condition for digital innovation is that the novelty of the ideas turned into new products, services and processes must rely on digitization. In other words, that information must be transferred from analog to digital as part of the innovation process (Yoo et al., 2012).

More research needs to be devoted towards both, employee-driven innovation, and digital innovation, as one seeks to understand more about the preconditions, how to facilitate and ultimately increase the effect of these types of innovation. This was pointed out as early as by Scott and Bruce (1994) who encouraged more research related to factors that motivate or enable innovative behavior of individuals and highlighted that this is critical to understand more about the innovation process. Since 2000, an increasing number of publications have looked at these issues studying employee driven innovation and intrapreneurship (Kesting and Ulhøi, 2010; Smith et al., 2012; Amundsen et al., 2014; Vassilakopoulou and Grisot, 2020). Echebiri et al. (2020) for instance added to this knowledge by investigating the relationship between employee-driven innovation and motivation. According to Høystrup et al. (2018) the managerial dimensions that impact employees' motivation to conceive, formulate and eventually develop innovative proposals must also be investigated further,

as innovation will also be influenced by the organization's strategies (Gagné, 2018) and culture (Hogan and Coote, 2014). Grant and Berry (2011) among others, emphasize that more empirical studies are also needed to understand how motivation affects innovation. Høyrup et al. (2018) add to this by claiming that knowledge regarding the managerial dimensions that impact employees' motivation to conceive, formulate and eventually develop innovative proposals remains limited.

The motivation for this research approach is based on the special characteristics of these two types of innovation concepts. Due to the complex and demanding situation in an employee's working life, with the increasing inclusion in the innovation processes and increasing degree of digital innovation in organizations, the concepts of employees' ordinary operations and (digital) innovation processes intervene.

Following the existing call for research in this field, we consider the two concepts of employee-driven innovation and digital innovation as being closely related and, therefore, creating the construct of *employee-driven digital innovation*, which can be defined as: "*The initiation, development and implementation of new digital products, services or processes originating from "ordinary employees"; or the use of digital tools to support employee-driven innovation processes*" (Opland et al., 2022). However, the question arises what existing organizational as well as intrinsic concepts are responsible and influence the level of an employee's involvement into those innovational processes. Following existing research in this field, we adopt a motivational model of proactive behaviors (Parker et al., 2010) to explain how three types of motivation affect innovation. Furthermore, due to its close interrelation on the organizational level, we added the concepts of strategy and culture to the research model. Thus, we formulated the following research question (RQ) for this study: *How do organization's strategy, culture, and individuals' motivations influence employee-driven digital innovation?*

We conducted a study with ordinary employees in both private and public organizations and applied Structural Equation Modelling (SEM) to test our hypotheses. Our aim is to contribute to the body of knowledge by extending the research on employee-driven digital innovation by examining how different types of motivation as well as organizational strategy and culture effect employee-driven digital innovation. The expected contribution to practice is an insight into the drivers for employees' motivation for contributing

The remainder of this paper is structured as follows. Section 2 contains the theoretical background

and the key constructs related to this study, section 3 explains the research model and hypotheses, followed by section 4, which contains the description of research methodology. Section 5 provides the results and analysis, while section 6 discusses the findings and 7 summarizes the contribution and the conclusion.

## 2. Theoretical background

### 2.1 Organizational elements

**2.1.1 Motivation.** Motivation is described by Ryan and Deci (2000) as a state of people who are energized and activated toward an end. Therefore, motivation is important in how employees' function and work towards goals and the productivity of an organization (Tremblay et al., 2009; Van den Broeck et al., 2013). Whereas unmotivated employees are likely to produce little effort in their jobs, low quality work and exit the organization if given an opportunity (Amabile, 1993). Contrarily, employees who feel motivated are likely to be persistent, creative, productive and deliver high quality work because of their work assignments (Amabile, 1993). Motivation can therefore act as an explanatory variable when considering employees' effort in organizations, whether it is related to their work tasks or other tasks, such as innovation.

Ryan and Deci (2000) point out that motivation is hardly a unitary phenomenon, because people have not only different amounts of motivation, but also different kinds. This is studied through the so-called self-determination theory (Ryan and Deci, 2000), which has been used to illuminate motivation in employee-driven innovation in earlier studies (Echebiri, 2020; Wang and Panaccio, 2020). They claim the most basic distinction within this theory is between intrinsic and extrinsic motivation. Intrinsic motivation is related to the intrinsic value of the work of each individual worker, and that workers are intrinsically motivated when they seek enjoyment, interest, satisfaction of curiosity, self-expression, or personal challenge in the work (Amabile, 1993; Grant, 2008; Gagné and Deci, 2005). Intrinsic motivation relates to the inherent satisfaction of doing an activity rather than for some separable consequence (Ryan and Deci, 2000). Social motivation (Ryan and Deci, 2000; Grant 2008; Grant and Mayer, 2009) relates to the desire to be involved in an activity that help others. Here the motivation to participate in innovation activities is rooted in that human beings are naturally inclined to be prosocial and seek relationships with others (Ryan and Deci, 2000). Extrinsic motivation is related to the individual workers desire to obtain an outcome that are apart from the work itself (Amabile, 1993; Gagné and Deci, 2005). Individuals are then

driven by separable rewards or other expected outcomes related to the output of their work assignments (Ryan and Deci, 2000).

Theories related to creativity and innovation are often built on motivational elements (Amabile, 1996). According to Ruan et al. (2010) innovative employees need to be motivated to protect and realize their ideas. Hammond et al. (2011) adds that research has shown a positive relationship between intrinsic and extrinsic motivation and innovation.

**2.1.2. Strategy.** Studies show that behavior within an organization is shaped by strategy (Gagné, 2018). This means that strategy is an important organizational element to consider when trying to influence the ability to innovate in an organization. The organization's strategies will help to give the organization direction (Gagné, 2018), both in the daily activities, but also in the ideation and creation processes leading to the development of what the organization will deliver of new products and services in the future. Innovation activities will subsequently be affected by the organization's strategies.

Within the research area employee-driven innovation, there is disagreement as to whether innovation activities initiated or influenced from above, e.g., from senior management, can be understood as employee-driven innovation. Høyrup (2012) argues that there is no mismatch between the organization's overall strategic direction and the bottom-up approach that employee-driven innovation represents.

**2.1.3 Culture.** The behavior within the organization is also shaped by culture (Hogan and Coote, 2014). Organizational culture can be defined as the environment in which people work and it influence how they think, act, and experience work (Warrick et al., 2016). Hogan and Coote (2014) claim that organizational culture will affect the ability to innovate and operationalize it as beliefs, values, attitudes, behaviors and practices within a group. Amabile (1996) support this by linking creativity and innovation. Thus, the culture of the organization can be the gearbox that increases or decreases the speed of the ability to innovate. The organizational culture defines in many ways what is to be considered valuable and desirable in an organization, and therefore has a strong influence on behavior and ability to innovate.

## 2.2 Employee-driven digital innovation

Employee-driven innovation has emerged as a new approach in a myriad of innovation concepts, such

as open innovation (Bogers et al., 2017) and digital innovation (Yoo et al., 2010; Ciriello et al., 2018). Kesting and Ulhøi (2010) refers to employee-driven innovation as the generation and implementation of new ideas, products and processes originating from a single employee or the joint efforts of two or more employees who are not assigned to this task. Kesting and Ulhøi (2010) and Høyrup (2012) use the term “ordinary employees” as a nuance of the concept related to employees in this definition. By this we understand that employee-driven innovation is initiated and implemented by employees who cannot be said to have innovation as one of the activities associated with their daily responsibilities. The underlying assumption is thus that “ordinary employees” possess an innovation potential that can be made visible, recognized, and exploited to the benefit of both the organization and its employees (Kesting and Ulhøi, 2010). Antecedents of employee-driven innovation is described as management support, autonomy, collaboration, and organizational norms of exploration (Smith et al., 2012). This form of innovation is positively associated with higher levels of management support, higher levels of intra-organizational support in form of resource allocation, higher levels of distributed authority, inclusion of collective rewards and lower power distance, and legislative regulation of employee representation in management (Kesting and Ulhøi, 2010).

However, the age of digital innovation and digital transformation is considered by many researchers as a reason for new theories (Hinings et al., 2018). The term “digital” can be understood as the conversion from mainly analog information into the binary language understood by computers (Fichman et al., 2014). Digital innovation has been strongly influenced by technological development and the digitalization wave. Nambisan et al. (2017) defines digital innovation as the use of digital technology in the process of innovation, or describe, fully or partly, the outcome of innovation. According to Fichman et al. (2014) any digital technology that is new to an organization and requires significant change qualifies as an innovation for that organization. The most common characteristics of the digital technologies, namely malleability, homogeneity, and transferability (Hinings et al., 2018) affects employee’s ability to participate in digital innovation.

## 3. Research model and hypotheses

We build on work from Echebiri (2020) on employee-driven innovation and its relation to individuals’ motivation when developing our research model and present our hypotheses. Thus, we develop

a research model based on theory related to innovation management and propose that organizational strategy and culture along with different types of motivation influence employee-driven digital innovation.

According to Gagné (2018) strategy aligns the efforts of the different parts of the organization towards a common goal, and Dogan (2017) claims that a strategic perspective on innovation is important in order to create value.

We therefore propose H1a, H1b, H1c and H1d (Fig. 1) as our first hypotheses:

H1a: Strategy is positively associated with intrinsic motivation.

H1b: Strategy is positively associated with social motivation.

H1c: Strategy is positively associated with internalized extrinsic motivation.

H1d: Strategy is positively associated with employee-driven digital innovation.

Motivation is crucial to the behavior of individuals in organizations and can be associated with innovation (Amabile, 1996) as it can impact their contribution to develop new products and services as well as improvements in processes and business models. Based on the study by Rahrovani and Pinsonneault (2020), intrinsic motivation to innovate relates to inherent interest and desire (Amabile, 1993; Ryan and Deci, 2000; Gagné and Deci, 2005; Grant and Berry, 2011); social motivation (also known as prosocial motivation) to innovate relates to a desire to change the way one works and improve work performance of others (Ryan and Deci, 2000; Grant, 2008; Grant and Mayer, 2009) and internalized extrinsic motivation to relates to internalization of external benefits (Amabile, 1993; Ryan and Deci, 2000; Gagné and Deci, 2005; Parker et al., 2010).

We therefore propose H2a, H2b and H2c (Fig. 1) as our second hypotheses:

H2a: Intrinsic motivation is positively associated with employee-driven digital innovation.

H2b: Social motivation is positively associated with employee-driven digital innovation.

H2c: Internalized extrinsic motivation is positively associated with employee-driven digital innovation.

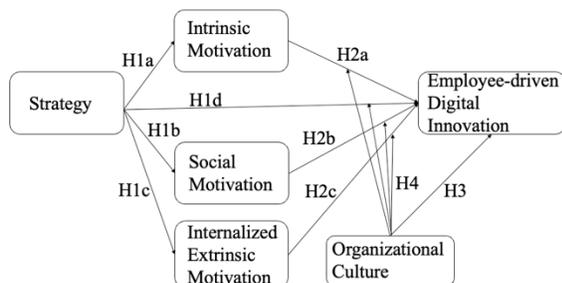


Figure 1. Research model and hypotheses

Organizational culture has been established as a variable that affects employee behavior (Hogan and Coote, 2014), and employee-driven innovation (Smith et al., 2008; Amundsen et al., 2014). Smith et al. (2008) argues that the explicit and implicit norms in organizations will affect to which degree employees seek involvement in innovation activities. Organizational culture is therefore proposed to be a moderating variable to how motivation affects employee-driven digital innovation.

We therefore propose H3 and H4 (Fig. 1) as our third and fourth hypothesis:

H3: Organizational culture is positively associated with employee-driven digital innovation.

H4: Organizational culture positively moderate the relationship between motivation and employee-driven digital innovation.

## 4. Research methodology

### 4.1 Data collection and measurements

The data in this study was gathered through accessing a diverse range of ordinary employees in both private and public organizations. We contacted these respondents using our network, more specifically through LinkedIn and e-mail from March to August 2021. This process of recruitment led to 115 respondents answering our online questionnaire completely, and all 115 answers were included in the analyzed dataset. It was stated in connection with the study that three gift cards would be drawn between the participants after the study, that participation in the study was voluntary, that the answers given would be confidential and that the participants could also withdraw their participation after the study. Permission was obtained for the processing of personal data from the Norwegian Centre for Research Data, and the participants accepted a statement of consent before completing the questionnaire.

The sample of respondents consisted of 41,7% men and 58,3% women. 61,7% of the respondents were holders of a master's degree or higher education. The age groups were almost evenly distributed between 20 and 60 years. 65,2% of the respondents worked in private organizations. A large preponderance of respondents worked in organizations with more than 30 employees (82,6%), and most respondents had worked in their organization between 2 and 4 years (31,3%).

The questionnaire for the study was originally drafted in English and derived mainly from previous studies on employee-driven innovation (Echebiri, 2020) and proactive innovative behavior (Rahrovani and Pinsonneault, 2020), and modified to fit the nature of

this study by adapting constructs related to employee-driven digital innovation (Tab. 1). The questionnaire was then translated into Norwegian. This process was done by the first author, and subsequently approved in a pre-study with different researchers in the similar or closely related research areas. We used a seven-point Likert's scale (1 for low agreement, and 7 for high agreement) to measure all constructs except from the background questions.

**Table 1. Motivational constructs used in the study.**

Construct	Definition	Source
<b>Intrinsic motivation</b>	Desire to use energy on creative use of the digital based on self-interest and joy.	Venkatesh et al. (2003), Rahrovani & Pinsonneault (2020).
<b>Social motivation</b>	Desire to use energy on the creative use of the digital to help and benefit others.	Grant and Berry (2011), Rahrovani & Pinsonneault (2020).
<b>Internalized extrinsic motivation</b>	External benefits and unforeseen circumstances that are internalized as values in the creative use of the digital.	Hess et al. (2005), Rahrovani & Pinsonneault (2020).

## 4.2 Data analysis

The analysis of this study was done through partial-least-square, structural-equation model (PLS-SEM) to analyze the data and contrast the hypotheses. The structural equation model provides the opportunity to measure unobservable variables with indicators and allows working with formative constructs (Ringle et al., 2015). SmartPLS is a beneficial tool which is used in management science to calculate, create, and validate models, and works well for smaller sample sizes and works well in less theoretically developed domains (Hair et al., 2014). In the analysis of the data, we used the SmartPLS 3.3.3 software tool (Ringle et al., 2015).

## 5. Results

Smart PLS simultaneously assesses the psychometric properties of the measurement model and estimates the parameters of the structural model (Yesil and Sozbilir, 2013).

### 5.1 Measurement model

The constructs we have used in this study were evaluated in terms of reliability and validity. We tested

the reliability by using Cronbach's alpha indicator, which requires a value higher than 0.7 on every item (Christmann and Van Aelst, 2006). Table 2 shows a reliability on every item in the model higher than the threshold of 0.7. For testing the validity, we used convergent and discriminant validity. According to Fornell and Larcker (1981) testing of validity requires that average variance extracted (AVE) is greater than 0.5, that the correlation between the different variables in the model does not exceed 0.8 and that the square root of each factors AVE is larger than its correlations with other factors. Table 2 shows that the convergent validity using AVE in the study is greater than 0.5 for every item.

**Table 2. Descriptive statistics and correlations of latent variables.**

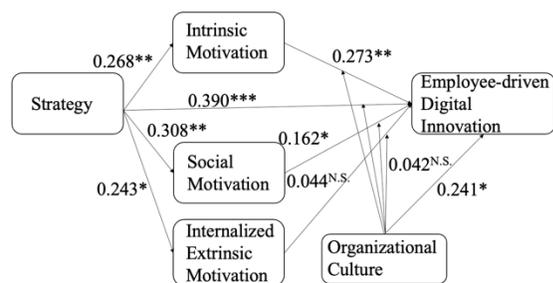
	Mean (SD)	CR	AVE	1	2	3	4	5	6
1	3.4 (.1)	.9	.8	.9					
2	5.2 (.3)	.9	.6	.5	.7				
3	2.8 (.6)	.9	.9	.1	.4	.9			
4	2.7 (.7)	.9	.8	.0	.5	.6	.9		
5	3.6 (.1)	.9	.8	.1	.5	.6	.7	.9	
6	3.4 (.1)	.9	.8	.7	.7	.2	.3	.3	.9

1: Culture, 2: EDDI, 3: Internal, 4: Intrinsic, 5: Social, 6: Strategic

Table 2 also shows that the discriminant validity in terms of checking whether items measured the construct or other ones was verified because the square root of the average variance extracted (AVE) for each construct was higher than the correlations between it and all other constructs. This means that our results provide a satisfying empirical support when it comes to reliability and the convergent and discriminant validity of the constructs in our model.

Multicollinearity issues (O'Brien, 2007) are examined along with the potential common method bias by utilizing the Harman's single factor test (Podsakoff et al., 2003). The variance inflation factor (VIF) for each variable is below the value of 3, indicating that multicollinearity is not an issue. The results suggest that common method bias is not a problem, since the first factor did not account for the majority of the variance and no single factor occurred from the factor analysis.

## 5.2 Structural model



Note: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , N.S.: Non-Significant

**Figure 2. Results of PLS analysis**

Figure 2 presents the results from the PLS analysis. The test of the significance of the paths were done by using a bootstrap resampling procedure. We found that intrinsic and social motivation have a positive effect on employee-driven digital innovation, while internalized extrinsic motivation has no effect on it, thus confirming H2a and H2b, and rejecting H2c. Strategy has a positive effect on all types of motivation, confirming H1a-H1c. Strategy also has a positive direct effect on employee-driven digital innovation (H1d). Organizational culture has a positive direct effect on employee-driven digital innovation (H3 confirmed), however it does not moderate the relations among strategy and motivations with employee-driven digital innovation (H4).

## 6. Discussion

The aim of this study is to generate knowledge about how different types of motivation (i.e., intrinsic motivation, social motivation, and internalized extrinsic motivation) influence employee-driven digital innovation along with the moderating factors of organizational strategy and culture.

### 6.1 Strategy and motivation

Our findings show that strategy has a positive effect on all the three types of motivation (H1a, H1b and H1c) and employee-driven digital innovation (H1d). Strategy is key in an organizational context for setting direction when it comes to how to reach the common goals of the organization (Gagné, 2018). Our findings show that pursuing a clearly defined strategy can increase individuals' motivation. The fact that employees experience that innovation is an activity that is valuable to spend time on in the organization seems to increase the motivation to participate in this type of activity. It is the management that prioritizes

which activities are seen as important, and this is often expressed through the organization's goals and strategies. By signaling that innovation is valued through including it in their strategies, organizations can increase the motivation associated with these activities for their employees. This finding can be interpreted to correspond with previous research which shows that managerial support is important when it comes to employee-driven innovation (Smith et al., 2012). The strategies are developed by the management, often also in collaboration with the employees, and it may therefore seem natural that strategic anchoring related to innovation will appear as management support for the employees. Dobni (2010) also underlines the connection between strategy and innovation in private organizations.

However, if we return to the study by Smith et al. (2012), we see that managerial support has been highlighted as a variable that influences employee-driven innovation. Previous studies of public organizations, like Opland et al. (2021), have shown that this is not only related to local management support, but also to support from senior management.

### 6.2 Intrinsic motivation and digital innovation

In our findings intrinsic motivation has a positive effect on employee-driven digital innovation (H2a). This is a relationship that has not been identified earlier to our knowledge, despite that Smith et al. (2012) identified autonomy as an antecedent of employee-driven innovation. Autonomy as a factor can be interpreted to be a relation between employee-driven innovation and motivation. The other three variables being management support, cooperation, and organizational norms for exploration (Smith et al., 2012). Creativity can also be seen as a skill and organizational norm that connects employee-driven digital innovation with intrinsic motivation, since high intrinsic motivation results in high-quality learning and creativity (Ryan and Deci, 2000). This is also supported by previous research results that claim that creativity and innovation are often built on motivational elements (Amabile, 1996). The question is whether intrinsic motivation enables creativity which in turn leads to innovation, or whether norms in the work environment that facilitate exploration make employees creative and innovative by creating an intrinsic motivation?

This can be elucidated by looking at the work of Reibenspiess et al. (2019), as they studied public organizations and employee-driven innovation. They suggest that employee-driven innovation in public

organizations is dependent on “innovation champions”. These are individuals that move beyond the confines of their assigned work to be innovative (Reibenspiess et al., 2019). Employees are described as having a special interest in being creative in the organization, participate in development and innovation, and who are inspired and driven by an inherent desire to innovate. Their experience of “innovation champions” relates to employees driven by intrinsic motivation (Reibenspiess et al., 2019). Other studies of employee-driven digital innovation in public organizations supports this finding, identifying individuals who constantly had a development focus, either for the organization or services they provided to their users, when performing their daily work tasks (Opland et al., 2021). Creativity thus seems to be linking employee-driven digital innovation and intrinsic motivation.

The same argument can be used in relation to employees' autonomy (Smith et al. 2012) since it will require a certain degree of freedom and “space” in everyday work if one is to be able to have the opportunity to be creative and innovative.

Reibenspiess et al. (2019) concluded that solely offering innovation time is not a silver bullet to foster employee-driven innovation, and thus say that just freeing up time does not mean that one will achieve innovation. Several companies have deliberately placed emphasis on creating arenas for innovation activities that can be said to be linked to employee autonomy, e.g., innovation time off and hackathons (Tirabeni and Soderquist, 2019). Thus, we argue that close links exist among creativity and autonomy, which are key antecedents of employee-driven innovation, and intrinsic motivation, which can be perceived as the catalyst for creating this form of innovation. Intrinsic motivation and creativity can even become so strong that innovation can take place in organizations despite the lack of space and management support, in which case it will take place in secret (Bäckström and Lindberg, 2019). This may be due to employees who are really driven by intrinsic motivation to pursue their ideas, or that the organization has no desire to allow employees to be extensively innovative.

### **6.3 Social motivation and digital innovation**

Our findings also show a positive effect of social motivation on employee-driven digital innovation (H2b). Smith et al. (2012) argued that cooperation is a factor that characterizes employee-driven innovation. The innovation process has several steps (Žižlavský, 2013), with a large amount of research focusing on idea generation (Opland et al., 2022). Some of these

steps might benefit from social interaction. The ability to share ideas, further develop them and draw inspiration from others are crucial to employee-driven innovation. Innovation activities, such as hackathons, are about cooperation and are important means of boundary spanning, both internally and externally within organizations (Tirabeni and Soderquist, 2019). The emergence of innovation concepts like open innovation (Borgers et al., 2017) and employee-driven innovation (Høytrup, 2010) challenges the assumption that innovation takes place in closed spaces with a limited group of people. Innovation is in many contexts seen as a social activity. Being part of an innovative and vibrant work environment can stimulate your own creativity and motivation as well. Seeing others being innovative can increase the motivation to develop own ideas, and also increase the belief that the ideas can be of value to the organization. Many organizations face several interdisciplinary complex problems, such as sustainability (Dao et al., 2011), which cannot be solved alone by individuals in the organizations, but where different competencies and skills must interact to find innovative solutions. Contributing to good solutions for customers and users of products and services can be as important in triggering this social motivation as the innovation activities themselves (Amabile and Pratt, 2016).

### **6.4 Internalized extrinsic motivation and digital innovation**

In our findings we show that internalized extrinsic motivation does not have an effect on employee-driven digital innovation (H2c). External benefits to stimulate activity do not influence employee-driven digital innovation, while intrinsic and social motives are linked to the individuals who engage in these activities and processes. Several motivational theories deal with the distinction between internal and external motivation, such as the two-factor theory of job satisfaction introduced by Herzberg (Herzberg, 1974; Bygrave, 2020). External rewards or benefits, often associated with incentives to stimulate activities like innovation, can thus be seen as Herzberg's “hygiene” factors: that is they do not create motivation if they are present, but create dissatisfaction if they are absent. We may assume from our data that one cannot stimulate employee-driven digital innovation via internalized extrinsic motivation such as bonuses. Herzberg's “motivator” factors on the other side appears to have similarities with intrinsic motivation. This has of course practical implications for organizations and managers. If they want to stimulate this type of activity, it seems from our empirical findings that the path goes through stimulating the

employees' intrinsic motivation, as well as facilitating that innovation activities in these contexts take place together with others or in arenas that create collaboration and social interaction which triggers social motivation.

## 6.5 Organizational culture and digital innovation

Our last finding shows that while organizational culture has a positive effect on employee-driven digital innovation (H3) it does not moderate the relation among the independent variables of strategy or motivation and employee-driven digital innovation (H4). The direct effect on employee-driven digital innovation substantiates the finding from Smith et al. (2012) in relation to organizational norms for exploration. Organizational norms for exploration can be understood as creating an organizational culture for unleashing creativity and creative will in the organization, or at least enable “spaces” in daily work activities for being creative. An organizational culture that builds on employee-driven digital innovation is crucial because culture is a very strong behavioral influence in organizations (Hogan and Coote, 2014). However, we were surprised that organizational culture was not a moderator in the examined relations.

## 7. Conclusions and implications

Our findings reveal positive effects of intrinsic and social motivation on employee-driven digital innovation, with contributions for researchers in the area and practitioners who aim to facilitate employee-driven digital innovation in their organizations.

As theoretical contribution, we extend previous knowledge related to employee-driven innovation and motivation and build on knowledge about what affects employee's behavior in digital innovation activities in organizations. We, thereby, specifically focus on the timely topic of implementing digital transformation in companies and how employees can be involved into the process of driving digital innovation within companies. Thus, we answer the call for research in this field by Grant and Berry (2011) and Høyrup et al. (2018) and extend existing knowledge in the research area from Smith et al. (2008) and Echebiri et al. (2020). This in turn forms the basis for new research questions in the area that might be explored, to generate more knowledge about how these factors affect each other.

Practical contributions can be found in the analysis of empirical data, which was able to reveal that the prerequisites for success with employee-

driven digital innovation are as great in private organizations as in public organizations (Opland, et al., 2022; Vassilakopoulou et al., 2022). This means that practitioners should focus on intrinsic and social motivation when facilitating employee-driven digital innovation.

We also see from our findings that strategy and culture is both positively associated with employee-driven digital innovation, and that strategy is positively associated with all motivational variables in the study. However, organizational culture does not have a moderating effect on motivation or strategy.

As with every research, our approach has limitations. First, the relatively low number of respondents (115) might have influenced the results of the study. In addition, 83 % (95 out of 115) of the respondents were from Norway, which could cause a cultural bias to our results. Therefore, as a future research approach, we are planning on conducting an international study with a higher number of participants in a quasi-experimental setting to draw further conclusions about the direction of relationships between the variables. Furthermore, to better understand causality a configurational perspective can be taken by applying fuzzy set qualitative comparative analysis (fsQCA) (Ragin, 2008; Pappas & Woodside, 2021). By investigating the necessity and sufficiency of the factors as conditions for the occurrence of employee-driven digital innovation, we can explain the outcome by different sets of variables instead of solely focusing on the additive effects and unifinality of regression-based approaches.

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