Do Employees Stay Satisfied in Times of Digital Change? On How Motivation Aware Systems Might Mitigate Motivational Deficits

Frederike Marie Oschinsky[a] and Bjoern Niehaves[b]
Chair of Information Systems Research, University of Siegen, Kohlbettstrasse 15, 57072 Siegen, Germany

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Abstract: Fostering motivation seems a crucial parameter at the time of the global pandemic and far beyond. It helps master the challenge that employees spend up to half of their working time in an unproductive manner – especially when using technology. Against this background, Information Systems (IS) research started to design systems capable of supporting employees in enhancing their productivity and focus at work: attention aware systems. We follow up on the regarding design implications in current literature and similarly propose the development of motivation aware system to enhance employee motivation. We suggest to follow a mixed-method approach to study whether the development of these systems could be seen as a promising avenue. Also, we outline how to design such systems and point at possibilities for future research.

1 INTRODUCTION

Employees spend up to half of their working time in an unproductive manner – oftentimes using information technologies (IT) (Bennett & Naumann, 2005). Studies show that, since an increasing number of them works remotely, employees are diminishingly controlled by their colleagues and executives, and prevalently use their privately owned devices for professional purposes (Klesel et al., 2017). The Bring Your Own Device (BYOD) movement already led to the implementation of various organizational guidelines intended to regulate how employees use their private equipment. Nowadays, the ongoing global pandemic resulted in an even more urgent demand for strategies on how to use privately-owned devices when working outside the office. Because the companies' IT departments have only limited control over applications and downloads these days, it seems strikingly important to find ways to ensure the employees' productivity when using private IT.

Fostering motivation seems a crucial parameter to master this challenge. At the individual level, being motivated increases performance, well-being and creativity, while it minimizes misconduct and absenteeism (e.g., Baard et al., 2004; Zhang & Bartol, 2010). At the organizational level, a high level of motivation increases overall productivity and profitability, growth and competitiveness as well as customer satisfaction and retention (e.g., Noe et al., 2017). Thus, the interest in motivation principles is well-established and yet steadily increasing.

Doing research about motivational obstacles and drivers is fruitful, since it is imperative for organizations to create a motivating working environment so that employees remain willing to exploit their full potential and productivity. Against this background, Information Systems (IS) research already set focus and started to design systems capable of supporting employees in doing so: attention aware systems. These systems are able to detect a user's current attentional state, evaluate alternative attentional states and employ focus switch or maintenance (Roda & Thomas, 2006). Consequently, we see great potential for the development of specific systems capable of supporting motivational mechanisms: motivation aware systems. Technologies, in addition to allowing fast access to information and people, should be designed to mitigate against motivational deficits. Based on current literature and latest empirical evidence, we derive three research questions (RQs):

[a] https://orcid.org/0000-0002-2591-9860
[b] https://orcid.org/0000-0002-2682-6009

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RQ1: Which factors influence the motivation of employees in the working environment?

RQ2: Can the development of motivation aware systems be seen as a promising avenue to enhance employee motivation?

RQ3: How can a motivation aware system be designed?

To answer these questions, we seek to compile the current state of research and to shed light on the most important influences on employee motivation. With this research-in-progress paper, we will describe the theoretical foundation of such a system. Our work thereby merges existing knowledge of the fields of business administration, management, psychology and IS research (Chapter 2) to derive implications for design (Chapter 3). After concluding remarks about the benefit and limitation of our approach, possible ways of future research are shown (Chapter 4).

2 THEORETICAL BACKGROUND

Motivation is defined as the direction, intensity, and persistence of a will to execute a behavior towards or away from goals (Kanfer et al., 2008). Motivation is thus not an actual behavior, but the willingness to undertake it. It is substantial among the various antecedents of human behavior, which can be divided into four groups: Besides motivation, behavior is mostly affected by individual abilities, an enabling context and the social environment (Rosenstiel, 2007, p. 57). There are interactions between the antecedents of human behavior as they all depend on individual experience and subjective perception. However, we will focus only on motivation.

2.1 Maslow's Pyramid

Maslow's Need Pyramid (1954) is as an early example of motivation theories. Instead of motif he uses the term need, because scientists in those years frequently talked about needs, drivers, and even instincts interchangeably. The author assumes that underlying needs drive behavior and states a hierarchical structure: At the lowest level, there are basic physiological needs (such as hunger). If these are satisfied, security needs (such as stability) are activated at the next level. They are followed by social needs (such as belonging) and needs for self-realization (i.e., self-esteem via respect and self-actualization via the pursue of inner talent) at the top. The assumption of levels and hierarchy implies that only when a lower need is satisfied, the upper one is activated. By properly identifying needs, Maslow presumes, people can be effectively motivated.

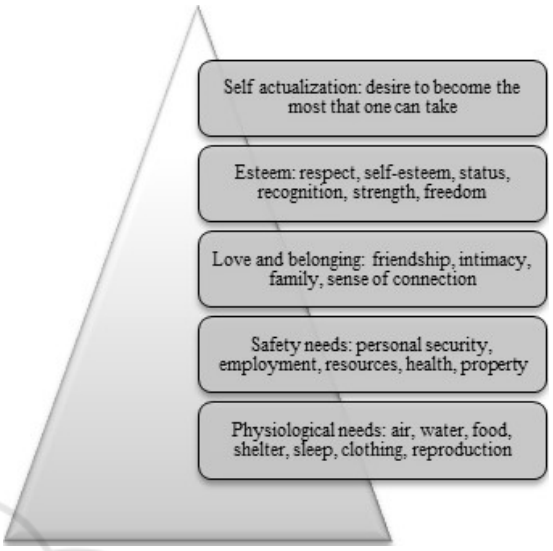

Figure 1: Maslow's Hierarchy of Needs.

Maslow's assumptions have successfully spread in theory and practice as a kind of motivation checklist. For instance, they explain why it is not purposeful to allow an employee to choose where to work (i.e., self-realization), if the social need for contact is not satisfied. However, empirical data rises doubt: Observations show people who trade their security for status or who risk their health for self-fulfillment. In addition, the importance of the needs can vary greatly depending on age and the stage of life (Gebert & von Rosenstiel, 2002). Maslow's theory lacks essential motifs such as power and does not include differences in culture (e.g., Stajkovic & Luthans, 1998; Winter, 2001; Steel, 2007). It does not show what motivational leadership or a motivational work environment should look like, how to design tasks or how to formulate organizational goals. Thus, we aim at finding a more promising approach.

2.2 Lewin's External Influences and Internal Influences on Motivation

Lewin considers external and internal influences on human motivation more systematically (1936). He describes behavior as a function of person and environment. External influences on employees' motivation are the design of a task (e.g., Bakker & Demerouti, 2007) or a company's incentive system (e.g., Stajkovic & Luthans, 2003). Other important

factors are team work, leadership and the organization itself in that it shapes the above aspects with its corporate culture. Internal influences on employees' motivation are the personality of the individual (e.g., Judge et al., 2007) and their ability to regenerate from work and stress (e.g., Sonnentag, 2003; Sonnentag et al., 2010). Other essential factors are self-efficacy, individual habits, optimism and self-regulation. Employee motivation arises from the interplay of environmental influences and characteristics and the traits and states of individuals.

2.3 Herzberg's Two-Factor Theory of Motivation

To find out whether the development of motivation aware systems can be seen as a promising avenue to enhance employee motivation, we take into account the vast psychological literature. For instance, Herzberg and his colleagues were interested in the external influences of why someone is motivated at work (1959). They moved away from studying general motives towards concrete aspects in the environment of employees. In their studies, they asked numerous employees from different branches and hierarchical levels about typical situations at work. Based on frequency lists, the researchers discovered an interesting pattern: They distinguished two factors a) dissatisfying 'hygiene factors', and b) satisfying 'motivators' (Herzberg, 1972). Against this background, they deduced that dissatisfaction and satisfaction represent two different dimensions, and not simply opposite poles of a single dimension.

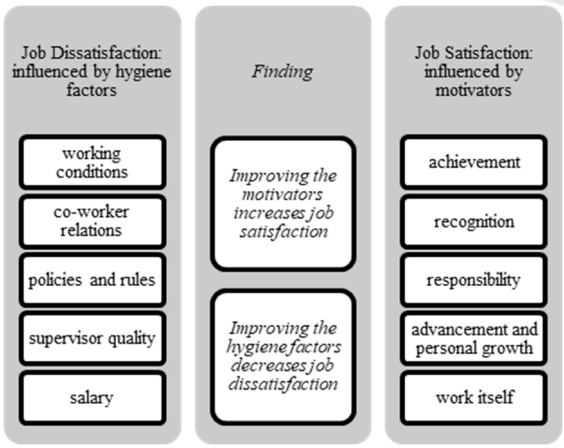

Figure 2: Herzberg's Two-Factor Theory of Motivation.

The dimension of hygiene factors describes the work environment (e.g., the quality of relationships). Exemplary hygiene factors are leadership, working conditions, administration or payment. If the hygiene factors are favorable, there is no dissatisfaction – but they do not determine whether employees are motivated or not. The dimension of motivators focuses on the work itself (e.g., performance experience). Exemplary motivators are responsibility, recognition, the content of the task and perception of growth. This dimension determines whether there is dissatisfaction as it produces motivation – but only if hygiene factors have been optimized. According to Herzberg (1972), the opposite of dissatisfaction is thus not contentment but only the absence of dissatisfaction.

When we compare Maslow's Hierarchy of Need with Herzberg's Two-Factor Theory, we see that they overlap at some points. The basic psychological needs for safety and security as well as for belonging and love fit well with hygiene factors. Interpersonal relations, supervision, company policies and administration, salary, and working conditions are addressed. The needs on a higher hierarchy (i.e., esteem and self-actualization) are accompanied by Herzberg's motivators. They illustrate achievement, recognition, responsibility, advancement and work as a value for itself. Bearing this insight in mind, four states can be discriminated from each other. Transitions are fluent, but the states pinpoint the central idea that in the case of dissatisfaction, motivation goes nowhere.

The condition of the hygiene factors is bad; motivators are low.

The employees are dissatisfied and there is nothing that could motivate them in the short term. This likely results in high turnover, low attendance and low performance.

The condition of the hygiene factors is bad; motivators are high.

Although the employees like their job, a bad working environment suffocates the joy of work. Inefficient administration and bureaucracy, a bad relationship with the leader or team constantly demotivate.

The condition of the hygiene factors is good; motivators are low.

The employees are in a great environment, with a great boss, nice colleagues and well-organized processes. Unfortunately, the task offers no fun at all.

The condition of the hygiene factors is good; motivators are high.

The employees find themselves in an optimal environment, are satisfied and have a dreamlike job, which really motivates. This stage is where sustainable motivation comes about.

The empirical investigation in a concrete context for a specific target group (i.e., employees) provides meaningful categories. This is why the two-factor theory has also been applied in IS research. For instance, Cenfetelli (2004) found out that the rejection to use IT is best predicted by inhibitors (i.e., hygiene factors) that discourage usage when present, but do not necessarily favor usage when absent (see also Bhattacherjee & Hikmet, 2007; Hsieh et al., 2014). Next, the results are much more manageable and useful for practical purposes than, amongst others, Maslow's Pyramid. With Herzberg's change of perspective, companies and executives were given more concrete advice to promote employee motivation. Moreover, looking at the four states, we see that the lower the motivators, the higher the potential of applying motivation aware systems.

3 TOWARDS DESIGNING MOTIVATION AWARE SYSTEMS

Understanding how our brain works gives us important clues about how to increase employee motivation. For designing motivation aware system, we again dive into psychological literature as it reveals that human affect optimization is associated with the release of substances in the brain (e.g., endorphins for positive feelings and cortisol for negative feelings) and that specific physical reactions are linked to their release (e.g., an increase in heartbeat) (see also Kuhl, 2001). Events in the environment or in one's own body are registered by the limbic system, which in turn activates behavior-controlling centers. Thus, the measurement of specific brain substances, limbic system activity and physical reaction make it possible to draw conclusions on a person's state of affect quite reliably (Roth, 2017). This insight is very valuable when it comes to designing a motivation aware system. Again, we are aware that research stemming from neuroscience, psychology, and medicine already address bodily responses of humans, whose insights open a promising avenue for future studies. On top of that, in our own follow-up studies, we will put this work in the perspective of the design science process, so that our next steps become prominent. In addition, this will help understand our work's relation to the current body of knowledge and empirical evidence.

One important clue is that rewards at work must have some degree of uncertainty. They must be an exception, which can be implemented as a feature in a motivation aware system. Another important clue is that habits carry reward in themselves. It is fun to do things quickly, accurately and effectively. The more tasks are practiced and established, the less emotional effort is required to carry out an activity. To hold on to the proven conveys the feeling of security and competence and reduces fear and skepticism. Motivation aware systems can detect the necessity to do automated things at work. This can greatly increase to feel comfortable work and thus, enhance employee motivation.

To answer our RQs, we suggest to follow a mixed-method approach: To elaborate on RQ1 and RQ2, we will send a survey to 350 small, medium-sized and large companies in (left out for review). If the results are promising, a second survey is planned abroad, taking into account cultural features. To elaborate on RQ3, we will do both a systematic literature review and expert interviews to get an idea of how the insights about attention aware systems can stimulate the design of motivation aware systems (e.g., Which measurement methods could be used to measure motivation?). In the end, we plan to do focus group interviews to discuss the preliminary findings and to draw conclusion on how to refine our study. Data analysis will be in line with data collection either in the form of quantitative (i.e., structural equation modeling) or qualitative analysis (i.e., content analysis). The results will be interpreted and discussed in an interdisciplinary team.

4 DISCUSSION

At this point, we do not at all claim completeness or generalizability as we have only deduced our approach theoretically. Against this background, we want to address a few critical factors of our work so far and present ways for future research: First, literature shows that job satisfaction can be partly innate and not externally determined (Hahn et al., 2016). Moreover, the widely assumed positive linear relationship between job satisfaction and motivation seems not to exist (Bowling, 2007). For instance, job satisfaction can rise from achieving own goals without meeting organizational goals. Future research can offer a more differentiated perspective and take into account important confounding factors such as openness to career moves (e.g., working one's way up with job shopping). Moreover, it will be interesting to study whether motivational deficits really persuade employees to change jobs.

Being a research-in-progress paper, our work still lacks clarity and empirical insight. Against this

background, future research is invited to come up with narrower research question to approach the broad research question mentioned in this manuscript. On top of that, they can acknowledge that working environments may differ greatly between different jobs and domains. The ongoing debate of establishing 'new work' in a post-pandemic world highlights the need for more focus and unerring conceptualization.

Furthermore, future studies can consider additional system design options when it comes to the question of how motivation aware systems can increase employee motivation. For example, the differentiation into hedonic and utilitarian systems could have explanatory power (van der Heijden, 2004). On top of that, future work can address the very close relationship between motivation and self-efficacy (Bandura & Wessels, 1997). Self-efficient employees tenaciously pursue their goals (persistence) and estimate what effort is worthwhile for which task (reality orientation). They feel quite satisfied and capable and make the important experience that the pursuit of self-determined goals is a reward in itself. In this respect, looking at the correlation of employee motivation and self-efficacy opens the door for interesting insights.

In addition, applying Herzberg's Two-Factor Theory of Motivation offers several pitfalls. First, the four states are still abstract. The author focused on essential aspects in the environment of employees, but still did not show what motivating leadership or motivating work tasks exactly look like. In addition, the distinct assignment as a hygiene factor or motivator is narrow. Among others, leadership is categorized as a hygiene factors, but has been shown to be a powerful motivator that can do much more than simply not demotivating employees (e.g., Aryee et al., 2012; Avolio, 2011; Bass & Riggio, 2006). On top of that, the generalization and validity of motivators and hygiene factors are vague. Depending on the situation, the meanings change. For example, salary can become more significant during an economic crisis. The meanings vary between subjects (e.g., Minton et al., 1980). Next, the motivators themselves are somehow delusive, since people are more likely to seek the reasons for success in themselves, but attribute the reasons for failure to external factors to protect their self-esteem (e.g., Mezulis et al., 2004). Finally, we are aware that the mentioned theories are still basic and that researchers have built on them for many years. In particular, the technology adoption literature published technology-related findings such as the Motivational Technology Acceptance Model by Davis's lab.

However, in a constantly changing working environment, we see great potential in researching factors that are related to employee motivation, using the application of motivation aware systems as a contemporary example. Future research can show how to design such systems in more detail, study whether they really motivate to achieve higher performance and provide a deeper analysis of relevant related approaches. Based on these future insights, conclusions can be drawn on how employees can stay motivated during the global pandemic and in times of continuous change and digital transformation.

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