



THE IMPACT OF DIGITAL TECHNOLOGIES ON EMPLOYEE ENGAGEMENT: CASE STUDY OF COMPANY "A" IN SERBIA

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Abstract:

The rapid and progressive advancement of modern digital technologies and tools, as well as their widespread application, have changed the working environment and working conditions. As a result, many concepts, methods, practices, and activities related to employee engagement must be reconsidered and adapted to the needs of the new workplace. This paper highlights the key changes in employee engagement caused by digital technologies. Obtained results from conducted case study in one IT company from Serbia showed that modern technologies enable remote work, flexible working hours, more challenging and interesting tasks, but also lead to a variety of challenges among which are technologically caused stress, over-reliance on technology, work-life conflict, and burnout syndrome. The findings presented in this paper can be useful for managers and leaders who want to build, improve, and nurture employee engagement in the digital age. Human resource managers also have valuable information on how to develop practices and methods for using digital technologies and tools in the best possible way, without negative effects and consequences on employee engagement.

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INTRODUCTION

Employee engagement has become a popular research topic in the fields of human resources, work psychology, organizational psychology, organizational behaviour, organizational dynamics, strategic management, leadership, and business practice (Lukić Nikolić, 2021). Previous engagement research concentrated on traditional work environments and organizations in which employees worked in offices five days a week for eight hours. The advancement and widespread application of modern digital technologies and tools such as Big Data, Real-Time Analytics, Internet of Things, 5G, Mobile Technology, ChatGPT, Blockchain, Cloud Technology, Virtual Reality, Augmented Reality, Additive Manufacturing, Robotic Process Automation, Artificial Intelligence, Machine Learning, Quantum

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Computing, Digital Twin, and API Based Integration have significantly altered the working environment and working conditions (Balakrishnan & Das, 2020; Ciarli *et al.*, 2021). For that reason, traditional approaches and methods are being repositioned and changed in order to become more intelligent and agile (Ćormarković, Dražeta, & Njeguš, 2022).

The aim of this paper is to investigate and analyze whether digital technologies impact employee engagement in for-profit organizations. The paper is organized as follows. The first title addresses the role and importance of employee engagement in for-profit organizations. The second title provides an overview of the major negative effects of employee over-engagement caused by constant availability via digital technologies. The third title represents the methodological approach applied in this paper. The fourth title is focused on discussion of research results regarding the impact of digital technologies on employee engagement in Company A from Serbia. Finally, the main findings, implications, limitations, and recommendations for future research are presented in conclusion.

LITERATURE REVIEW: EMPLOYEE ENGAGEMENT IN FOR-PROFIT ORGANIZATIONS

Employee engagement is difficult to define because it encompasses many different concepts from various scientific disciplines, among which are human resource management and organizational behavior. These concepts from these two disciplines are widely used to explain what employee engagement truly means and how it affects employee behavior and the overall functioning of the organization (Macey & Schneider, 2008a). Employee engagement, according to Kahn (1992), is much more than simply appearing and being present at work. It includes employees' physical, cognitive, and emotional energy at work. Some of the key characteristics of engaged employees include an ongoing and permanent state of mind that reflects continuous effort, a high level of energy and dedication, and ambition for growth and innovation (Cooper-Thomas, Xu, & Saks, 2018; Kwon & Kim, 2020; Smith & Bititci, 2017). For Robinson, Perryman and Hayday (2004), employee engagement is "a positive attitude held by the employee towards the organization and its values. An engaged employee is aware of the business context, works with colleagues to improve performance within the job for the benefit of the organization" (p. 2). Saks (2006) defines employee engagement as "a distinct and unique construct consisting of cognitive, emotional, and behavioral components associated with individual role performance" (p. 602).

Every for-profit organization wants to have engaged employees. Engaged employees propose new ideas, demonstrate enthusiasm while doing the job, take the initiative, try to improve their work, consistently exceed defined goals, are curious, encourage all team members to achieve above-average results, overcome obstacles, and remain goal-oriented (Albrecht, Breidahl, & Marty, 2018; Rasool *et al.*, 2021). Engaged employees are important for for-profit organizations because they give their all to complete all tasks, have positive energy, initiative, motivation, commitment, and a genuine concern for the organization's future. The positive impact of employee engagement on productivity and profit is perhaps the most important aspect of employee engagement for organizations. The majority of studies found that employee engagement has a positive impact on productivity and profitability (Kim & Ausar, 2018). Engaged employees put all their cognitive, emotional, and behavioral energy, which leads to higher productivity. Furthermore, the impact of employee engagement is connected to higher organizational outcomes, such as improved cost control, higher overall quality of products and services, and financial results (Maltseva, 2020; Young *et al.*, 2018).



Employees who are engaged are more likely to be open to new experiences and changes. Positive employee behavior and emotions show that the organization has devoted employees who are ready and willing to embrace meaningful change (Men, O'Neil, & Ewing, 2020). As a result, employee engagement may be important in organizational change and transformation. The appropriate psychological state and behavior necessary for successful change management are fostered by employee engagement (Akingbola, Rogers, & Intindola, 2023). Additionally, employee engagement is also critical in increasing organizational capacity for innovation and corporate social responsibility (Chaudhary, 2017). This characteristic is particularly important in the digital age. Employees who are engaged are more ready to use their maximum efforts to enhance and increase organizational innovation. As a result, every organization's goal is to have engaged employees as the foundation for their future growth and development.

RESEARCH BACKGROUND: THE IMPACT OF DIGITAL TECHNOLOGIES ON EMPLOYEE ENGAGEMENT

Existing research on the concept of engagement focused on full-time employees in traditional organizations where they physically came to work five days a week for eight hours. The advancement of modern technology and its increasingly widespread application have enabled and stimulated numerous changes in the way people work and conduct business, and consequently in employee engagement (Duque *et al.*, 2020).

One of the most noticeable changes is the increase in *remote working*. Employees can work from any location where they have a personal computer and the Internet. Remote work became especially popular during the Covid-19 pandemic at the beginning of 2020, when it was necessary to ensure adequate physical distance and preserve employees' health and safety (Savić & Dobrijević, 2022). When the nature of the work permitted, many organizations incorporated remote work (Krstić, Tomanović, & Stanojević, 2022). Employees were confronted with new circumstances that required them to adapt quickly - a desk, chair, computer, a good Internet connection, becoming accustomed to working with other family members, and adjusting to new modes of communication and software tools. Employees who were engaged devoted themselves to work tasks and activities to a greater extent, feeling an added responsibility to work more intensively and be of service to the organization in these sudden and unexpected circumstances. According to research, engaged employees worked longer and harder while working remotely (Lonska *et al.*, 2021; Tzoraki *et al.*, 2021), increasing the risk of burnout syndrome or work-life conflict. Employees who work remotely face an additional challenge in that they do not have direct contact with the organization or their colleagues, which leads to feelings of isolation, loneliness, less importance, and belonging (De-la-Calle-Durán & Rodríguez-Sánchez, 2021). The situation is more complicated by the lack of direct "face-to-face" communication, as well as the lack of approved activities for building and improving employee engagement during remote work. Given the social nature of organizations, employee needs can only be met through interaction with co-workers during remote working (Anakpo, Nqwayibana, & Mishi, 2023). There is a growing need for frequent and open communication, as well as meetings where all participants will turn on their cameras, giving the impression that they are all gathered in the same place.

The second change is the disappearance of boundaries between private and working time, resulting in a *work-life conflict*. Employers and managers enthusiastically embraced modern technologies because they saw them as a valuable tool for coordination, control, decision making, and reporting. However, numerous negative consequences began to emerge over time. To begin with, when employees finish



their official working hours, they have less free time, they frequently feel like they are under surveillance and control, they are constantly available to their employers, and thus they cannot truly get away ("switch off") from their work and devote themselves to their private life.

The third change is reflected in *job insecurity* because of advances in machine learning, artificial intelligence, and robotics, which have resulted in the automation of routine, repetitive, and highly standardized tasks. The rise in job insecurity is influenced by a variety of factors, the most important of which are modern technologies that stimulated the automation of most routine jobs and activities (Ghani *et al.*, 2022; Nam, 2019). Automation and the replacement of people with machines is desirable and useful in all jobs that are hazardous to people's health and safety, as well as in physically demanding jobs (Breque, De Nul, & Petridis, 2021). According to a study in which 352 artificial intelligence experts participated, there is a 50% chance that machines will replace humans in all jobs within the next 45 years (Grace *et al.*, 2018). Some employees who are afraid of losing their jobs become more engaged, forcing themselves to increase the volume and quality of work in order to keep their current position in the organization or, if that is not possible, to move to some another position. On the other hand, there are employees who are overwhelmed by despair and hopelessness, and their engagement declines as a result.

The fourth change follows from the third, and it is reflected in the *complex work tasks* that employees perform. The goal of automation is to free employees from routine, monotonous, repetitive tasks (Siderska, 2020). On that way, employees gain time and freedom to devote to tasks that require knowledge and skills that automation systems and technologies cannot (yet) master - creative and analytical thinking, complex problem solving, caring for people, new ideas and proposals, and innovations (Beer & Mulder, 2020; Pedota & Piscitello, 2021). Employees frequently discover that their work was exhausting and boring after the process of automation, and that they can now devote themselves to more creative and challenging jobs that carry a higher degree of responsibility, as well as the opportunity to use their talents (Fantina, Storozhuk, & Goyal, 2022; Smids, Nyholm, & Berkers, 2020). Employees are encouraged to become more engaged by performing meaningful, stimulating, and challenging tasks. Furthermore, automation can improve working conditions, work-life balance, and employee commitment to activities that add value to the organization (Chugh, Macht, & Hossain, 2022).

The fifth change refers to the possibility of more comprehensive and precise *employee engagement measurement and analysis*. Although, at first glance, it appears that managers cannot measure and control employee engagement with certainty due to remote working, flexible working hours and the fact that remote employees are "far from the eyes", the situation is actually quite different. Technological advancements and modern tools have resulted in new methods and types of measuring and analyzing employee engagement (Curtin, 2022). Modern applications and tools are considered as readers of employee's minds (Burnett & Lisk, 2019). Traditional methods of polling and interviewing employees are clearly insufficient in the digital age, especially given that employees want to express their experiences, opinions, and comments on various social and professional networks and portals. Modern technological solutions allow for the real-time collection of all available data from various sources, as well as their faster processing, analysis, and visual presentation (Burnett & Lisk, 2019). Managers have data-driven insight into all the segments that need to be improved in order to build, improve, and nurture employee engagement.



METHODOLOGY

In this paper the following research question (RQ) was imposed: What effect do digital technologies have on employee engagement?

In order to answer the imposed research question, a case study was conducted in one company from IT industry, which will further be referred to as Company A. The purpose of a case study is to examine and evaluate a single phenomenon considering its unique social, cultural, and economic environment (Yin, 2014). The ability to examine some unusual, uncommon, and abnormal occurrences and processes makes the case study crucial in the fields of management and social sciences (Tight, 2017). The case study technique suggests using numerous data sources, both secondary and primary, in order to provide a comprehensive analysis and examine the phenomenon from a variety of perspectives (Gerring, 2017). In this study, both primary and secondary data were used for analysis and conclusions. To highlight the general state of human resource management, company reports about employee engagement and satisfaction surveys were examined. After that, interview techniques were used to acquire primary data. The interview was semi-structured with the following set of questions (Q):

Q1: Interviewee's level of education

Q2: Interviewee's age

Q3: Interviewee's job position

Q4: Do digital technologies and tools have any beneficial effect on engagement? Describe those effects.

Q5: Is there any negative impact of digital technologies and tools on engagement? Describe those impacts.

The key questions were posed to the interviewees regarding their attitudes and experiences with the digital technologies they use at work and how those technologies affect their engagement. Throughout the interview process, there were additional questions that requested the interviewee to elaborate on certain details or provide examples of their responses.

Interviews were conducted with one-third of the employees (ten employees) who were available to participate in this study. The interviewees were diverse in terms of position (technical support, programmers, project managers, consultants), experience, and gender. They were marked as I1, I2, I3, ..., I10.

Interviews were conducted during February 2023. Responses from each interviewee were written down and after interviews organized and grouped into positive and negative categories.

RESEARCH RESULTS AND DISCUSSION

Company A's primary business is the development of customized software solutions, and its operations are primarily focused on modern communication and collaboration tools. The company has 30 full-time employees and has been operating in Serbia, Belgrade for a decade. Employees are on average 24 years old, indicating a younger employee structure. All employees have completed faculties, bachelor or master studies, indicating a high educational level. The majority of employees are men. By analyzing the documentation from the human resources department, it is logical to conclude that the company cares about its employees. It organizes teambuilding events at least once a year in which all employees participate. The results of a yearly survey conducted by the human resources department show a high level of employee satisfaction and engagement for 2020, 2021 and 2022.



Results from conducted interviews in Company A are presented in tables 1 and 2. Table 1 presents results showing positive impacts of digital technologies on employee engagement.

Table 1. Positive impacts of digital technologies on employee engagement.

Positive impacts	Interviewees
Remote working	I1, I3, I2, I5, I6, I7, I9, I10
The ability to view critical information in real time	I1, I2, I3, I4, I7, I8, I9, I10
The ability to keep up with everything that is going on in company	I3, I5, I7, I8, I9
The ability to react quickly in the event of a problem	I2, I5, I7
The ability to easily communicate with colleagues	I1, I5, I10

I - Interviewee

Most interviewees (80%) stated that the main positive impacts of digital technologies are remote working and ability to view critical information in real time. After that, majority of interviewees (50%) stated that positive impact of digital technologies is the ability to keep up with everything what happens in company. Digital technologies provide numerous opportunities for employees, such as remote working, simple information exchange, the ability to respond quickly, and easy contact with colleagues. This allows employees to reach a balance between their professional and private life. In that sense, it is interesting to mention some of the personal feelings of employees regarding benefits of digital technologies which positively impacted their engagement.

"I wanted to offer my help and support to a member of my family who had surgery last month. My boss gave me permission to work from home for two weeks. As a result, I was able to complete my work tasks while also being available if anything was required during recovery of my family member, which made me very happy and satisfied." Interviewee 1, 35 years old.

Beside positive, there are also some negative impacts of digital technologies on employee engagement. In table 2 negative impacts of digital technologies which interviewees stated during interviews are presented.

Table 2. Negative impacts of digital technologies on employee engagement.

Negative impacts	Interviewees
Having the impression that I am always on the job	I1, I2, I3, I4, I7, I9, I10
Being unable to turn off after working hours (Not being able to get away from work after working hours)	I3, I5, I7, I9, I10
Constant mobile phone notifications	I2, I5, I7, I9, I10
Stress and frustration when I see some problems after working hours	I4, I6, I9, I10
The ability to easily communicate with colleagues	I1, I5, I10

I - Interviewee



The most concerning fact is that 70% of interviewees stated that they have the impression that they are always on their jobs, without ability to switch off after working hours. Furthermore, 50% of respondents stated that they receive mobile phone notification all the time and that they are unable to get away from work due to digital technologies and tools. Numerous studies have found that engaged employees can become overly reliant on technology, becoming overburdened with information and notifications, and thus becoming vulnerable to a new type of stress known as "technology-induced stress" (Marsh, Perez Vallejos, & Spence, 2022). Practice has shown that over-engagement can have a number of negative consequences not only for employees, but also for organizations (DuBrin, 2019). According to some authors, employee engagement is the polar opposite of burnout (Maslach & Leiter, 1997; Lemon, 2019). Unlike engagement, which implies attachment, commitment, positive energy, and positive employee outcomes, burnout syndrome is characterized by physical and/or psychological exhaustion, loss of energy, depersonalization, cynicism, mental distance from the work, a sense of inefficiency, and a lack of accomplishments (Gonzalez-Roma *et al.*, 2006; Taris, Ybema Fekke, & Van Beek, 2017). However, Macey and Schneider (2008b) pointed out that people cannot work at full capacity all of the time; they must rest ("reset," "recharge") in order to maintain their long-term health and well-being. High engagement can cause an employee to become "obsessed with work" and work compulsively, causing stress in the long run. The negative effects of workplace stress are reflected in decreased productivity, satisfaction, motivation, absenteeism, and turnover rate. Furthermore, stress can cause anxiety, tension, depression, frustration, insomnia, headaches, feelings of heat or chills, flickering eyes, noise in the ears, change in appetite, lethargy, apathy, increased blood pressure, tachycardia, and other health problems (Britt & Jex, 2015; Hämmig & Vetsch, 2021).

Engaged employees have trouble untangling after work and forgetting about it. Receiving notifications on their phones throughout the day has a negative impact on their health and causes stress. This is demonstrated by one interviewee from Company A, who stated the following:

"When I see a problem on the phone after working hours that will be waiting for me the next morning, I feel frustrated. That day is already ruined for me because I begin to consider how I will solve the problem."
– Interviewee 4, 27 years old.

Work-life balance is critical for employee well-being, commitment, productivity, and engagement, and it implies good functioning at work and in their personal lives, as well as a sense of accomplishment in both areas (Rodrigues da Costa & Correia Loureiro, 2019; Lee, Rocco, & Shuck, 2020). Employees require a "digital detox" from their phones, tablets, computers, and all the notifications they receive through them (Cole & Higgins, 2021, p. 47). Policies and approaches that restrict employees' access to business applications and tools after working hours would help ensure that employees can clearly distinguish between their personal and professional lives. Similarly, a prohibition on sending emails and messages, as well as making calls outside of working hours, would greatly improve the situation. One approach is to establish a practice of "preferred time and means of communication," in which employees who work remotely would state (announce) the time and means of communication (email, phone call, video call) that they consider ideal (Larson, Vroman, & Makarius, 2020). It is essentially the alignment and harmony between several different roles that an individual performs (Haar *et al.*, 2014), as well as the individual's perception that his activities at work and in his private life are compatible and promote his development. Employees who are overly engaged spend less time with their families and friends, have fewer social contacts, and have a less active social life. Disruption of the balance between work and personal life can lead to stress and dissatisfaction among employees, resulting in their disengagement (Iddagoda & Opatha, 2020).



Research results presented in tables 1 and 2 showed that digital technologies can have both positive and negative effects on employee engagement. It is technology that provides numerous opportunities, and it is up to individuals to decide how to use it. The primary goal is to maximize its advantages and opportunities while minimizing its disadvantages and threats to the greatest extent possible. Human resource managers are developing a comprehensive plan to mitigate the negative effects of digital technologies on employee engagement. Employees, on the other hand, should change themselves and learn how to switch off after working hours.

CONCLUSION

Contemporary digital technologies and tools have brought about numerous changes in the way people work, which has an impact on their engagement. It is certain that current trends in remote work, flexible working hours, work-life balance, and increasingly challenging and complex work tasks will continue to be appealing in the future of work. While the digital technologies and tools allow employees to choose where, when, and how they work, they also present them with challenges such as providing adequate working conditions, work-life conflict, the absence of direct interaction and communication with colleagues, and a deeper connection with the organization and its values. In depth understanding of the above-mentioned implications of the digital age on the concept of employee engagement is a must for organizations' long-term success, development, and growth.

Results obtained in this paper show that digital technologies can have both a positive and negative impact on employee engagement. Presented results can be useful for organizational managers and leaders who want to build, improve, and nurture employee engagement in the digital age. Furthermore, the findings in this paper can be useful to human resource managers in becoming acquainted with the potential negative effects of digital technologies on employee engagement and attempting to overcome their appearance. Human resource managers can develop practices and methods for using digital technologies in the best possible way with an appropriate and planned approach. The entry of younger generations into the labour market, who have grown up surrounded by modern technologies, will increase the prevalence of remote work, flexibility in working hours, and the need for a work-life balance. Given the importance and role that engaged employees play in the operations and functioning of organizations, it is clear that this is not one of the nice and desirable activities that managers will undertake, but rather a necessary and unavoidable activity.

The conducted research is accompanied by certain limitations. One of them is that the case study was only conducted in one company and encompassed only ten employees. The obtained results cannot be generalized due to the small number of participants and the fact that the observed company is from a single industry – IT, which is at the forefront of using digital technologies. Another limitation is the interview technique, which is not always completely objective. More respondents from more companies and industries should be included in future research on this topic. Furthermore, it will be beneficial to conduct a questionnaire in order to obtain results that are more objective. Future studies on this subject should focus on new technical developments like workplace robots and robotic process automation and how they affect employee engagement. New approaches and trends in the process of developing and nurturing employee engagement may be expected in the future as a result of new technologies, particularly as new generations enter the labor market.



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UTICAJ DIGITALNIH TEHNOLOGIJA NA ANGAŽOVANOST ZAPOSLENIH: STUDIJA SLUČAJA KOMPANIJE "A" U SRBIJI

Rezime:

Brz i progresivan razvoj savremenih digitalnih tehnologija i alata, kao i njihova masovna primena, uslovlili su brojne promene u radnom okruženju i radnim uslovima. Posledično, mnogi koncepti, metode, prakse i aktivnosti angažovanosti zaposlenih su morali da se promene i prilagode potrebama novog radnog okruženja. U ovom radu je ukazano na uticaj digitalnih tehnologija na angažovanost zaposlenih. Dobijeni rezultati sprovedene studije slučajeve u jednoj IT kompaniji u Srbiji pokazali su da savremene tehnologije omogućavaju rad na daljinu, fleksibilno radno vreme, izazovne i interesantne radne zadatke, ali da su isto tako dovele do brojnih promena među kojima su tehnološki uzrokovan stres, prevelika zavisnost od tehnologije, narušenost ravnoteže između posla i privatnog života i efekat sagoravanja. Rezultati mogu poslužiti menadžerima i liderima koji nastoje da izgrade, unaprede i održe angažovanost zaposlenih u digitalnom dobu. Menadžeri ljudskih resursa takođe imaju na raspolaganju vredne informacije o tome kako da na najbolji način primene digitalne tehnologije i alate, a da izbegnu negativne efekte po zaposlene i njihovu angažovanost.

Ključne reči:

digitalno doba,
digitalni biznis,
profitne organizacije,
rad na daljinu,
ljudski resursi.

JEL klasifikacija:

O15, O33, J28.