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EMPLOYEE AUTONOMY AND ENGAGEMENT IN THE DIGITAL AGE: THE MODERATING ROLE OF REMOTE WORKING

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In the digitalization era, traditional organizational success factors have been called into question, so it is necessary to reconsider the established work patterns and find new ways to create sustainable value. Given the fact that, as bearers of knowledge, people are the key drivers of value, it is important to explore possible ways to improve their potential. The research study carried out in this paper is aimed showing that autonomy contributes to the development of employee engagement in the digital environment, especially so in remote working conditions. In that sense, the concept of employee engagement was explained, as a state of high vigor, dedication and absorption. Possible ways to improve engagement through increasing autonomy are pointed out as well. The empirical research has confirmed that autonomy has a positive effect on vigor and dedication as the engagement dimensions. The impact autonomy exerts on vigor is stronger in the employees working remotely in comparison with those who do not work remotely.

Keywords: autonomy, job design, employee engagement, remote working, digital environment, organizational design

JEL Classification: M20, M12, J28

INTRODUCTION

The psychological relationship employees establish with their jobs is a research field gaining in importance in the knowledge economy in the time of accelerated technological progress, when human capital is becoming an increasingly important driver of competitiveness. The development of the

sophisticated skills that lead to superior performance depends on a combination of complex organizational, intellectual, psychological, sociological and other factors.

In the era of knowledge, innovation and technological progress, a company's competitive advantage depends on the generation and implementation of new ideas, as well as the application of new technologies (Simić, Slavković & Ognjanović, 2020; Savović, Zlatanović & Nikolić, 2021). Since people are the key bearers of knowledge and capacity for innovation, modern

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organizations require high commitment, investment and energy from employees in order for them to create sustainable value in a highly dynamic environment. Frequent changes and strong pressures on people to quickly adapt to them performing increasingly complex and cognitively demanding tasks can lead to opposite effects. According to *Job Demands-Resources Theory*, demands can be perceived as challenges or obstacles which will imply a positive or a negative response from employees. Negative reactions are associated with overload, stress and burnout, whereas positive reactions are expected in the case when employees develop high engagement, i.e. vigor, dedication and absorption (Bakker & Demerouti, 2007).

Numerous factors form the circumstances in which employees' reactions will be shaped. One of the most important antecedents of engagement, however, is the organizational context, especially the way in which a job is designed. Previous research indicates an extremely important role of the workplace autonomy (Kahn, 1990; Saks, 2006; Christian, Garza & Slaughter, 2011; Shantz, Alfes, Truss & Soane, 2013; Radošević, Jelić, Matanović and Popov, 2018). Autonomy arises from a greater degree of decentralization, so it is inherent in modern structures, which are flatter, i.e. which have a smaller number of hierarchical levels. Such structures favor the development of innovation and the entrepreneurial capacity in the company (Erić Nielsen, Babić, Stojanović-Aleksić & Nikolić, 2019; Erić Nielsen, 2020). Freedom encourages creativity and makes it easier to adapt to change. In this context, new leadership models have been developed that support the idea that, under certain conditions, a part of power should be transferred to followers themselves, so that they and the entire organization can achieve an above-average performance (Stojanović-Aleksić, 2016).

This is especially significant in the digital age characterized by exponential changes not only in the development of technology, but also in the economy and society. Previous research has not sufficiently empirically examined the role of autonomy in such a specific context. Although the theory points to the benefits of autonomy both in terms of meeting

certain psychological needs and the general well-being of an individual, the digital environment is rarely considered as a context for examining the autonomy-engagement relationship. In conditions where the relationship between people and machines has become almost as important as interpersonal relationships, it is necessary to reconsider the traditional mechanisms of encouraging engagement and look for the new ways or mediating factors that can contribute to building long-term and sustainable employee engagement, which will contribute to their personal satisfaction, feeling better at work and in life, and also increase the company's productivity and innovation (Halbesleben, 2010; Christian *et al.*, 2011; Kwon & Kim, 2020).

Having in mind the importance of the problem area, the subject of the research done in the paper implies the relationship between the workplace autonomy and employee engagement in the digital environment. In this paper, the digital environment means the business environment in which ICT is intensively used in performing tasks. Accordingly, the main research goal is to determine whether and in what way autonomy affects employee engagement in the information technology (IT) sector, which is an example of an industry with pronounced digitalization.

Regarding autonomy, it is important to consider one of the relatively recent trends in organizational design which stands out in the digital environment and relates to remote working. Modern technology has enabled, and newer forms of organizational design have supported, the implementation of the idea that the physical location of work is not always important and that some work can be done outside the office at a location chosen by an employee (e.g. from home, the library, a park, a cafeteria). Recently, this trend has been developing even faster due to the Covid-19 pandemic, because of which some governments have even introduced an obligation for companies to enable their employees to work remotely, specifically from home (Pattnaik & Jena, 2020). This feature is certainly easier to apply to the jobs done on a computer and not highly dependent on the location/personal contact as is the case, among other jobs, in the IT sector. Although

remote working has its drawbacks related to isolation and reduced social interactions, research indicates the dominance of positive implications. The following can be mentioned amongst the most significant benefits of teleworking: lower costs (Thomson, 2008), a more pleasant environment in which an employee is more easily committed to performing complex tasks (Golden & Gajendran, 2019), greater satisfaction and responsible behavior, which leads to greater engagement (Anderson & Kelliher, 2009). The main advantage of working remotely should be a greater freedom of choice in terms of the place, time and manner of performing tasks. If autonomy is not provided to employees when they work remotely, the positive implications of this concept may not manifest themselves. Therefore, the specific research goal is to determine the moderating influence of remote working in the relationship between autonomy and employee engagement.

Both qualitative and quantitative methodologies are applied in the paper. According to the complex, dynamic and ambiguous nature of the considered phenomena, systemic thinking provides the base. The methods of analysis and synthesis, abstraction and concretization, as well as induction and deduction, are applied. When speaking about the quantitative methodology, the statistical method is used. The data were collected by conducting a survey and analyzed by various statistical techniques.

In addition to the introduction and the conclusion, the paper consists of the literature review, based on which the research hypotheses were developed, and an empirical research study, which served to test the hypotheses. Within the literature review, the essence of the engagement concept is clarified and the key factors influencing the development of employee engagement in modern companies are highlighted. Then, the role of job design as an engagement factor is elaborated and autonomy, as the key characteristic of job design whose effects on engagement are most pronounced in the digital business environment as well. The possible moderating effects of remote working are pointed out as the special circumstances in which the positive effects of autonomy on engagement increase. The research methodology

is explained, and the results are presented and discussed.

REFERENCES AND HYPOTHESES DEVELOPMENT

The concept of employee engagement

Engagement is a relatively new concept in the scientific literature. However, it has been known in managerial practice for decades. The most successful consulting companies all around the world set the improvement of employee engagement as one of the key goals, as a factor that increases profitability through increased productivity and employee and customer satisfaction (Schaufeli & Bakker, 2010). Research has later shown that engagement has a number of positive implications, both at individual and at organizational levels. From the positive psychology perspective, work engagement contributes to the individual's need to lead a life fulfilled in every possible aspect (Youssef-Morgan & Bockorny, 2014). Therefore, the employees who develop a high degree of engagement can be expected to be more satisfied. There are even certain indicators of better physical and mental health in highly engaged workers (Johns, 2012; Shuck, Ghosh, Zigarmi & Nimon, 2012). Engaged employees are generally more productive, and show higher creativity and proactivity. The organizations that manage to develop high employee engagement can also expect better financial results in the long run (Macey, Schneider, Barbera & Young, 2009). It is exactly this dual dimension which benefits from engagement (both for individuals and for the organization itself) that is believed to be making this phenomenon so significant.

The concept has received attention in the literature since W. Kahn (1990, 700) defined engagement as "the harnessing of organisation members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances". The author sees engagement as the complete involvement of

oneself physically, cognitively and emotionally in a job or work role. People establish a kind of symbiotic relationship with their job and it makes them happy.

There is a relatively high degree of agreement in the literature that engagement is a unique and distinctive motivational concept that can be described through the following three dimensions (Salanova, Agut & Peiró, 2005): vigor, dedication and absorption. Vigor refers to a high level of energy and willingness to put effort into work, regardless of potential difficulties. Dedication indicates high work inspiration, enthusiasm and a sense of pride for the tasks performed. Absorption implies complete immersion in work tasks and activities, as well as the difficulty that a person has to stop working.

The main specificity of the engagement concept, especially as a kind of a company's success indicator, is that it cannot be ordered and is very difficult to be directly controlled. It is created through building long-term relationships and the development of a pleasant working environment. Ever since the concept appeared until today, researchers have tried to determine all the relevant antecedents of engagement in order to find the most concrete and the most detailed answers to the question of how to build an engaged workforce. The literature review has identified certain engagement factors which can be classified into the two broad categories: individual and organizational factors.

Individual factors refer to the different concepts related to an individual's personality, such as personal resources and the personality characteristics. According to job demands-resources theory, the personal resources that stand out as the key engagement factors are as follows: self-efficiency, i.e. a personal belief in one's own ability to effectively respond to the demands of different situations, and optimism, which reflects a person's view of the world or the belief that things will go in the desired direction, which increases their enthusiasm and desire to invest themselves in the work role (Crawford, Rich, Buckman & Bergeron, 2014). In addition to personal resources, there are certain personal characteristics that affect engagement, although the evidence for this

assumption is not firmly theoretically grounded, nor is it empirically proven. Certain studies have shown that the characteristics including conscientiousness, proactivity and positive affect are positively correlated with engagement (Saks & Gruman, 2014). Also, some empirical data suggest that openness and extroversion are the most significant engagement factors among the characteristics that make up the Big Five group (Wollard & Shuck, 2011). Bearing in mind the importance of personal characteristics as a factor of organizational behavior, as well as the behavior and life of people in general, there is a great lack of research in these issues in the literature.

The organizational factors of employee engagement can be found at the level of work, a group/team and the organization as a whole. The following are amongst the most important: job characteristics, leadership, organizational justice and organizational support. Job characteristics are considered to be the most significant factors influencing employee engagement. Although all job characteristics can affect engagement the following can be highlighted based on the results obtained in the existing empirical research: autonomy, job complexity, problem solving, task variety, feedback from others, person-job harmony, development opportunities, social support (Crawford, LePine & Rich, 2010; Christian *et al*, 2011).

The importance of job design for engagement development

Job design is a system that organizes the performance of a particular job (Sinha & Van de Ven, 2005, 390). There are many properties that can describe a job, but one of the most comprehensive classifications singles out the three basic dimensions (Morgeson & Humphry, 2006), namely the task dimension, which describes the structure of the tasks that make up a job (the structural dimension); the knowledge dimension, which contains the characteristics that knowledge requires to perform tasks (the cognitive dimension) and the dimension that describes social interactions at work (the social dimension). The structural dimension includes the following characteristics: the autonomy, variety, significance and identity of tasks, as well as

job feedback. The cognitive dimension includes job complexity, information processing, problem solving, skill variety and specialization. The social dimension refers to social support, work interdependence, interactions and feedback (Morgeson & Humphry, 2006). In addition to the three basic work dimensions, job design also includes the context dimension (ergonomics, physical working conditions, etc.), as well as the characteristics of workers themselves. In this paper, the focus is on the aforementioned three basic work dimensions.

The initial, theoretical-methodological basis for considering the relationship between job design and employee engagement is set by *Job Demands - Resources Theory*, which starts from the question why some people are exhausted from work while others feel enthusiastic and energetic at work. It seeks an answer to this question in the concept of job design. The theory is an extension of the job demands-resources model set by E. Demerouti, A. B. Bakker, F. Nachreiner and W. B. Schaufeli (2001) and further developed by A. B. Bakker and E. Demerouti (2007). The researchers identified the limitations of the existing employee well-being and workplace stress models (the demand-control model and the investment and reward balance model) that were too simplistic and static because they dealt with a limited number of variables and did not apply to all people or activities. To overcome the perceived limitations, the job demands-resources model encompassed a wide range of variables. It is based on the assumption that each occupation could have specific risk factors associated with stress at work and engagement, and these factors can be divided into the two general groups called demands and resources.

Job demands are "...those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs ... (e.g. work pressure, an unfavorable physical environment, and emotionally demanding interactions with clients)" (Bakker & Demerouti, 2007, 312). Although demands do not necessarily have to be negative, they always require

an additional effort to be made. Sometimes, if an employee is unable to respond to a demand, it may lead to negative consequences, such as stress, burnout and health problems. Demands can be classified into challenges (e.g. work responsibilities, deadlines, workload) or hindrances (e.g. an emotional/affective conflict, the organizational policy) (Crawford *et al.*, 2010). Therefore, the relationship between job demands and engagement depends on the type of demands, so challenges are positively associated with engagement, and hindrances are negatively associated with engagement.

Job resources are defined as "those physical, psychological, social, or organizational aspects of the job that are either/or: functional in achieving work goals; reduce job demands and the associated physiological and psychological costs; stimulate personal growth, learning, and development" (Bakker & Demerouti, 2007, 312). Resources are not exclusively focused on dealing with demands, but also have a motivational role. Internal motivational factors come from the resources that encourage employee personal growth, whereas external motivators come from the resources that are the key instruments for achieving work goals. Job resources can be found at the organizational level, in interpersonal and social relationships and at the job design level as well. Some examples of work-level resources are autonomy, creative tasks, support from superiors and colleagues.

According to Job Demands-Resources theory, stress and burnout will occur when demands are high and available resources are low. However, resources can mitigate the negative effects of a demand (Bakker, Demerouti, Taris, Schaufeli & Schreurs, 2003) and encourage motivation and engagement.

Autonomy as a factor of employee engagement in the IT sector

Autonomy can be understood as "the freedom an individual has in carrying out work" (Humphrey, Nahrgang & Morgeson, 2007, 1333) or as the extent to which work allows for the individual's freedom, independence and discretion with regard to the

choice of work order, working methods and decision-making (Morgeson & Humphrey, 2006). Autonomy, therefore, has four aspects, which relate to:

- work order planning,
- method selection,
- work site selection, and
- general job decision-making.

It can be real and perceived. Real autonomy refers to the actual degree of the freedom granted to an employee to decide on the organization of their work. Perceived autonomy implies the degree to which an employee believes they have the freedom to organize the work independently. Both real and perceived autonomy are thought to affect engagement. According to self-determination theory, the need for autonomy is one of the three key prerequisites for the development of engagement, in addition to the needs for competence and relatedness (Ryan & Deci, 2000).

In the digital age, there are numerous changes in job design. Some jobs are no longer performed by people, but by machines instead. This includes the jobs that require certain intellectual efforts, for the needs of which artificial intelligence is applied. There are also changes in traditional job characteristics and the emergence of completely new jobs and tasks as well. The key change is reflected in the fact that technology has enabled the faster and easier collection and processing of large amounts of data, which simultaneously makes some tasks simpler and others more complex. This implies changes in the design of the jobs related to increasing the number of the tasks that one person can perform and increasing their complexity, too. In a complex and uncertain environment, the limitations concerning the mental capacity of each individual as a decision-maker, as well as access to a large amount of information (Nikolic, 2018), are becoming more pronounced, so authority must be delegated in order to avoid mistakes in the decision-making process.

On the other hand, the modern competitive environment requires that organizations be highly agile and innovative in order to survive and develop (Crocitto & Youssef, 2003; Tallon & Pinsonneault, 2011; Teece, Peteraf & Leih, 2016). At the job level, this requires facing challenges and doing creative tasks. It is believed that, with increasing autonomy, employees can successfully respond to these demands. Specifically, autonomy contributes to employees' creativity and responsiveness provided that employees have adequate knowledge and experience, as well as the passion for the job (Liu, Chen & Yao, 2011; Chang, Huang & Choi, 2012).

Recently, positive implications of the job crafting have been pointed out. The concept implies a very high level of autonomy, employees' complete freedom to adjust the way they do work at their own discretion, taking into account both personal and organizational needs. This includes changes in the job structure, relationships with other jobs, cognitive requirements, and so on. (Wrzesniewski & Dutton, 2001). Research has shown that such a high degree of freedom can have an extremely strong motivational potential, which also leads to better performance (Bakker, Tims & Derks, 2012; McClelland, Leach, Clegg & McGowan, 2014).

Although most contemporary research studies highlight the important role of autonomy in improving individual performance, satisfaction, innovative behavior, and the passion for the work they do (Kahn, 1990; Saks, 2006; Shantz *et al*, 2013; Spiegelaere, Van Gyes & Van Hootegem, 2016; Zhang, Jex, Peng & Wang, 2017), there are also opposing views that indicate the "dark side" of autonomy, believing that it encourages or at least enables the unethical behavior of the individuals who discretionary decision-making rights are delegated to (Lu, Brockner, Vardi & Weitz, 2017). However, even these authors point out the fact that the effect of autonomy on unethical behavior is weaker in the individuals who rated autonomy as a business resource very important to them personally. Since the digital working environment, especially in the case of remote working, provides high autonomy

and low control, it is important to find out whether autonomy has positive or negative consequences in this kind of environment. By examining the effects it has on engagement, it can be assessed whether autonomy has positive implications or not.

In the employees who work with information and communication technologies (ICT), autonomy has proven to increase job satisfaction, because it provides them with the opportunity to make the most of their capacities (Madanagopal & Thenmozhi, 2015). These are usually complex jobs which require using various skills and the constant collection and processing of new information, given the fact that technology is advancing and competition is fierce. Jobs are based on the maximum use of knowledge and the freedom and flexibility make it easier. Therefore, it can be expected that, in addition to greater job satisfaction, employees will be able to achieve better results. ICT work is mostly done by the professionals who are narrowly specialized, so it is not expected that strict control or any mechanism based on issuing orders and top-down communication will be able to generate good results, because the individuals who do the work are the ones who know the job requirements as well as the ways how to respond to them.

Therefore, the first research hypothesis was developed:

H1: Autonomy has a positive influence on employee engagement in the digital environment.

The moderating effect of remote working

Remote working is a situation in which the usual office space is not the central location from which the employee performs his/her tasks. The individual, therefore, works in a particular remote location and maintains communication with the rest of the organization through ICT (Bailey & Kurland, 2002; Pattnaik & Jena, 2020). In the last year, the COVID-19 pandemic has accelerated the digital transformation of many organizations, which includes, among other things, greater reliance on remote working. This change has found many workers unprepared to

adapt to new circumstances and continue to achieve high performance while simultaneously preserving personal well-being. In that sense, the research in engagement as a condition reflecting a good feeling at work and high productivity, as well as the factors that accelerate its development, has become increasingly important.

At first glance, there is naturally greater freedom in the remote workplace in terms of flexibility in organizing their daily tasks. On the one hand, that is true. However, there are certain obstacles, such as the difficulty of maintaining a work-life balance, especially if people choose their family home as a place to work from. Working from home requires a balance between home and family responsibilities, as well as work responsibilities, which challenges autonomy. Research has confirmed that duties towards the household and the family restrict freedom when working from home (Manzo & Minello, 2020). On the other hand, the freedom of choice in terms of the location, time and manner of working in teleworking conditions helps employees to establish a balance and motivates them (Kossek, Lautsch & Eaton, 2009).

It is important to emphasize the fact that remote working does not always mean high autonomy. Thus, autonomy is an important precondition of engagement in remote working, perhaps even more important than in the regular office workspace. In a nonremote workplace, there are other possible antecedents of engagement, such as social characteristics of work (e.g. good interpersonal relationships, the perception of belonging to a group/team, feedback from supervisors and others) (May, Gilson & Harter, 2004; Bakker & Demerouti, 2007; Bakker & Bal, 2010). On the other hand engagement in remote working will depend on a small number of possible incentives, among which autonomy stands out as potentially the most important given its dominant role in regular conditions (Christian *et al*, 2011). Thus, the second research hypothesis reads as follows:

H2: The impact of autonomy on employee engagement in the digital environment is stronger if employees work remotely.

Research model

According to the formulated hypotheses, a research model was developed that shows the relationships between the variables (Figure 1).

METHODOLOGICAL FRAMEWORK OF THE EMPIRICAL RESEARCH

Data collection and processing

In order to test the hypotheses, an empirical research study was conducted using the survey method. The data were collected from a sample of 158 respondents employed in the IT sector in the territory of the Republic of Serbia from the end of 2020 to the beginning of 2021. A questionnaire based on the existing, well-established measurement scales adapted for the needs of the research study was used as a data collection instrument. Autonomy was measured using the three items related to job scheduling autonomy, decision-making autonomy and the choice of the working methods. The items were based on the comprehensive

job design questionnaire developed by F. P. Morgeson and S. E. Humphrey (2006). The broadly used UWES-9 scale was used to measure employee engagement. It includes the following three dimensions: vigor, dedication and absorption (Schaufeli & Bakker, 2003). The scales were translated into Serbian. Both scales are seven-point scales.

Data processing was performed using the Social Science Statistical Software (SPSS) 25.0 and AMOS 24.0. The sample structure was analyzed using descriptive statistics. To test the reliability of the measurement scales, Cronbach's alpha coefficient was applied, after which confirmatory factor analysis was carried out. The hypotheses were tested using Structural Equation Modeling (SEM).

The sample

The results of the demographic structure analysis are shown in Table 1. The sample is dominated by the male respondents (55.7%) in comparison to the female respondents (42.4%) and those who did not want to declare/answer (1.48%). The largest number of the respondents are between 20 and 30 years old (44.9%)

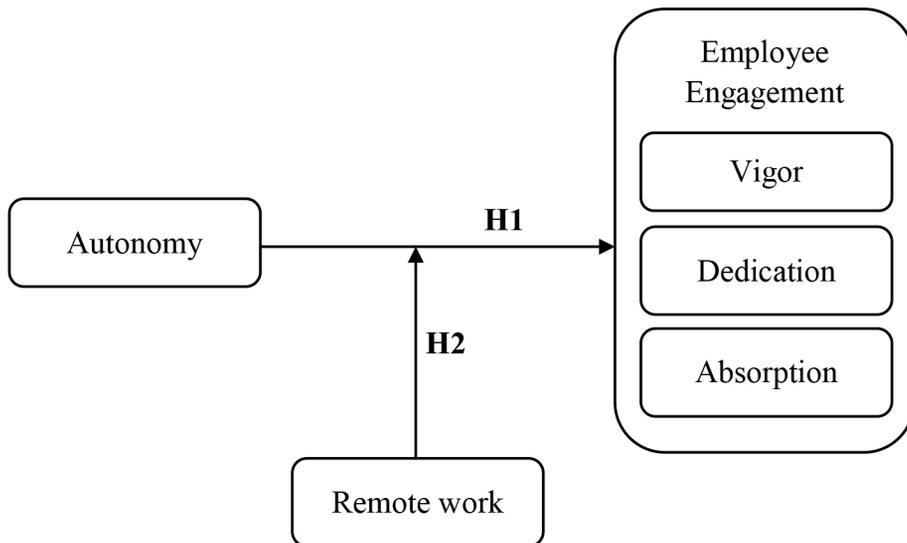


Figure 1 The research model

and the fewest respondents are classified into the 61-70-years-of-age category (0.6%). According to their education, the respondents with a university degree predominate (47.5%), whereas the smallest number of them has are with a PhD (0.6%).

Table 1 The demographic structure of the sample

Gender	Number	Percentage
Male	88	55.7 %
Female	67	42.4 %
I do not want to declare / Data is missing	3	1.9 %
Age	Number	Percentage
20-30	71	44.9 %
31-40	68	43.0 %
41-50	12	7.6 %
51-60	2	1.3 %
61-70	1	0.6 %
Data is missing	4	2.5 %
Education level	Number	Percentage
High school	29	18.4 %
College	16	10.1 %
Bachelor's degree	75	47.5 %
Master's degree	37	23.4 %
PhD/doctoral degree	1	0.6 %
Data is missing	0	/
Total	158	100%

Source: Author

RESULTS AND DISCUSSION

The reliability of the scales and the common method bias

The reliability of the scales was tested by Cronbach's alpha coefficient (Table 2). All the coefficients are

above the threshold of 0.7 (Nunnally, 1978), which makes them highly reliable for further analysis.

Table 2 The reliability of the scales

Scale	Cronbach's alpha	Number of items
Autonomy	0.760	3
Engagement - the whole scale	0.916	9
Vigor	0.913	3
Dedication	0.826	3
Absorption	0.706	3

Source: Author

Harman's single factor test was applied in order to test the common method bias. The results showed that the total variance for a single factor was less than 50%, namely 48.51%. Therefore, the common method bias should not be affecting the data.

Structural equation modeling

In order to test the model validity, confirmatory factor analysis (CFA) was conducted. After removing the items with low factor loadings, below 0.6 (two out of the three items on the Absorption scale), the whole Absorption scale was removed from further analysis because a single item left is all but sufficient to meet the criteria for the CFA. The value χ^2/df is 2.067, which is below the threshold 3 (Carmines & McIver, 1981). The values CFI = 0.973, IFI = 0.973, TLI = 0.957 and GFI = 0.936 are above the threshold 0.90 (Byrne, 1998). RMSEA is 0.082, which is below 0.1. The model also shows the satisfactory values of composite reliability (CR), above 0.6 (Bagozzi & Yi, 1988), and the average variance extracted (AVE), above 0.5 (Fornell & Larcker, 1981). Table 3 shows the results of the CFA.

Since the model is valid, it is possible to proceed to the hypotheses testing. The results (Table 4) show

Table 3 Confirmatory factor analysis (CFA)

Items	Factor loadings	AVE	CR
Autonomy		0.516	0.761
The job allows me to make my own decisions on how to schedule my work.	0.66		
The job allows me to make a lot of decisions on my own.	0.76		
The job allows me to make decisions on what methods I use to complete my work.	0.73		
Vigor - 1st dimension of engagement		0.793	0.920
At my work, I feel bursting with energy.	0.91		
At my job, I feel strong and vigorous.	0.91		
When I get up in the morning, I feel like working.	0.86		
Dedication - 2nd dimension of engagement		0.608	0.820
My job inspires me.	0.88		
I am enthusiastic about my job	0.81		
I am proud of the work that I do.	0.63		

Source: Author

Table 4 Testing the direct impact of autonomy on employee engagement

Relation	Standardized estimate (β)	Estimate (B)	Statistical significance (p-value)
Autonomy → Vigor (1 st dimension of Engagement)	0.887	1.368	0.000***
Autonomy → Dedication (2 nd dimension of Engagement)	0.890	1.085	0.000***

***p<0.001

Source: Author

that autonomy has a statistically significant positive influence on two out of the three engagement dimensions.

After this, the second research hypothesis is tested. Specifically, whether remote working has a moderating impact on the relationship between autonomy and engagement (vigor and dedication) or not is examined. Two groups of employees are

identified in the sample, namely those who state that they never work remotely (n1 = 42) and those who work remotely at least once a week (n2 = 116). A comparison is made to determine the statistically significant differences between the two groups in terms of the impact of autonomy on their engagement. Invariance testing (Table 5) shows there are statistically significant differences (p = 0.078 < 0.1).

Table 5 Invariance testing in the models

	χ^2	df
Unconstrained model	171.913	48
Constrained model	177.015	50
Difference	5.102	2
p-value	0.078*	

*p<0.1

Source: Author

A regression coefficient comparison test is then conducted to examine whether there are statistically significant differences in the impact of autonomy on engagement between the group of the respondents working remotely and those not working remotely (Table 6).

A statistically significant difference in terms of the impact of autonomy on vigor is found in the analysis of the moderating impact of remote working. Specifically, the positive impact of autonomy on vigor is stronger when employees work remotely ($\beta = 1.002$) than when they do not ($\beta = 0.758$). When the impact of autonomy on dedication is concerned, no statistically significant difference is identified.

Discussion

The results have shown that autonomy has a positive impact on employee engagement in the digital environment, namely on its two dimensions: vigor and dedication. The impact on the dimension of

absorption was not tested, because it became clear during the CFA that that subscale did not meet the conditions for a further analysis. Therefore, Hypothesis 1 is partially supported. The result is complementary to the previous research (Saks, 2006; Christian *et al*, 2011; Shantz *et al*, 2013) and indicates that an increase in employee engagement can be expected if autonomy is increased. Unlike the previous research done in various industries, the findings this research has come to are closely related to the information and communication industry, mainly the companies that deal with ICT. These are the activities in which employees' and the entire organization's innovation, responsiveness and proactivity are the key success factors, and autonomy makes it easier for them to achieve these performances.

It can also be concluded that remote working moderates the impact autonomy exerts on vigor as the engagement dimension, so Hypothesis 2 is partially supported. In this way, the relevant role of autonomy in modern organizations is once again confirmed, which was also emphasized in the previous research (Christian *et al*, 2011), but the step forward made in relation to the previous research refers to the remote working context. This means that autonomy is an even more significant factor of employee engagement in the remote workplace than in the office, at least in terms of vigor. For the people who work remotely, the freedom to choose the exact workplace, the exact methods of work and the exact worktime has proven to be even more important than in regular conditions, given the specifics and the limiting factors of remote working, such as family responsibilities, limited

Table 6 The moderating impact of remote working

Influence	β – no remote working	β – remote working	$\Delta \beta$	p-value of difference
Autonomy → Vigor (1 st dimension of Engagement)	0.758***	1.002***	-0.244	0.042**
Autonomy → Dedication (2 nd dimension of Engagement)	0.958***	0.906***	0.052	0.414

*** p<0,001 **p<0,05

Source: Author

resources, isolation from other colleagues, a reduction in interpersonal interactions, and a lack of social support sometimes.

CONCLUSION

The paper provides insights into the mutual relationships between autonomy, as one of the most important structural features of work, employee engagement and remote working in specific conditions such as the modern, digital environment, especially characteristic of the companies dealing with ICT, as well as many others going through the digital transformation process in order to adapt to the contemporary economic order and the so-called Industry 4.0.

Previous research studies have shown that the organizational design that can successfully meet digital transformation demands should be highly agile (Teece, Peteraf & Leih, 2016). An agile organization must be supported by job redesign, which will be shaped so as to enable fast and quality decision-making, as well as high motivation and performance. Faced with rising and changing demands, stress and dissatisfaction may develop in people if jobs are not adequately designed. Conversely, the state of pronounced energy and high performance can develop, such as engagement, and a properly designed job is among the basic drivers of this state (Tims & Bakker, 2014).

The study has confirmed that the workplace autonomy is an important factor in employee engagement. Employees' discretionary rights to decide on the manner, place and time of performing tasks also increase their perception of the meaningfulness of their work. In addition, if an individual believes that they have control over the work they do and its outcomes, their responsibility for the results increases, as well as their motivation. However, autonomy must be based on individual expertise (Erić Nielsen, 2020), because it is only then that positive effects may be achieved, not only in the engagement context, but also

in the development of entrepreneurial behavior and overall organizational performance.

The results also suggest that it might be difficult for employees to respond to rigidly set requirements in terms of time and working conditions in remote conditions when they have to balance between their work and their life and in situations when they might not have all the available resources present in the office (the equipment, social contacts, etc.). It can also be assumed that the importance of autonomy is particularly pronounced in these conditions because the other, alternative drivers of engagement, such as social contacts, support and feedback, are limited.

The research has a scientific contribution in the areas of organizational design and organizational behavior. The significance of autonomy is emphasized as the important characteristics of the so-called "workplace of the future" in the development of engagement - the state of high performance that leads to individuals' greater proactivity and innovation. Previous studies have mainly been done in other industries, so that the knowledge of the autonomy-engagement relationship has been deepened by doing research in the IT sector. Speaking in methodological terms, a deeper insight into the effects of autonomy on engagement is provided, as individual effects on the three dimensions of engagement are considered, with a demonstrated positive impact on vigor and dedication. The moderating role of remote working in the relationship between autonomy and engagement is found. Thus, the study expands the existing knowledge and strengthens the foundation for drawing new theoretical conclusions about the job design-engagement relationship in the digital environment.

The study has relevant practical implications. It highlights the importance of employee engagement as a target condition to be achieved in modern conditions in order for not allowing demanding work requirements to lead to stress and burnout, but to an increase in energy, dedication, interest in work, and consequently work performance instead. Furthermore, the study points to one of the job characteristics that is considered the most important

for achieving engagement. That characteristic is providing freedom and independence to employees in terms of allowing them to make a choice of the way how, the place where and the time at which they will work. The managers who strive to successfully take their company through the digital transformation process should consider the possibility of increasing employee autonomy whenever that may be allowed by the nature of the workplace, employees' knowledge and skills and other situational factors as well.

The paper also has certain limitations. First, the research study was conducted only in Serbia and only in the IT industry, which makes it somewhat difficult to generalize the conclusions. Second, the sample size is always a limitation in the research of this type, so there is a possibility of expanding it in order to increase the reliability of the obtained results. Finally, it should be noted that the survey as a method of data collection has its drawbacks, which include respondents' potential subjectivity. However, it is smaller compared to some other methods (e.g. an interview) since the survey was conducted anonymously.

The findings presented in the paper open up some new questions, providing recommendations for future research. Given the fact that the relatively strong evidence of the positive effects of autonomy on engagement has been established, the question arises as to whether there are exceptional situations in which autonomy will not result in positive effects and which those cases are. Therefore, it is necessary to analyze this relationship in a variety of circumstances in order to examine the potential situational variables that may affect it. It is also possible to include additional indicators of autonomy as a variable so as to include the other aspects of it. In addition, by identifying the moderating role of remote working, the specific context of remote working and its indirect effects should be further examined. Future research should focus on examining the implications of the other structural, cognitive and social characteristics of work on employees as well.

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