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The role of self-regulation and perceived self-efficacy in adaptation to home-office work during the pandemic

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ABSTRACT

As a consequence of the unprecedented labor market circumstances that the prolonged Covid-19 pandemic brought about, organizations have faced challenges never seen before. One such challenge was the sudden ubiquity of working from home, which resulted in an intensive learning experience for employees and employers alike. While there is an increasing body of research on working from home in general, the perceived effectiveness of this mode of working is still under-researched. This niche provided the inspiration for us to investigate what factors might influence employees' self-efficacy in working from home arrangements. We conducted a mixed-methods case study by collecting both qualitative and quantitative data from 24 employees of a division of the Hungarian subsidiary of a chemical and consumer goods multinational. The purpose of our investigation was to gain a deeper understanding of perceived self-efficacy and self-regulation during the learning processes that the participants experienced under the new circumstances. Results suggest that the perceived high level of work-efficiency among the employees of the examined division was based on the firmly controlled work-division, trusting managers, as well as supportive and clear communication, which created space for autonomy in the adaptation process. The findings also revealed that self-reflection acted as a predictor of perceived work self-efficacy.

KEYWORDS

self-regulation, working from home, self-efficacy, case-study, COVID-19

INTRODUCTION

Due to the extraordinary circumstances resulting from the Covid-19 pandemic in the last two years, organizations have had to face labor market changes that are rare in the life cycles of companies. As a major change, individuals across occupations were forced to work from home arrangements that resulted in different reactions: some professions with very little experience in working from home have perceived it as a forceful change while certain occupations with abundant experience in this way of working have lived this shift more easily (Kramer & Kramer, 2020). However, we do not yet know much about the effects and consequences of this change. The transition to a new organization of work and smooth operation has resulted in an intensive learning process for both employees and employers, and the lessons are worth exploring, structuring and incorporating into post-emergency recovery work processes.

The paper presents the results of a case-study investigation of one division of the Hungarian subsidiary of a chemical and consumer goods multinational company, after working from home for a few months due to the pandemic restrictions and organizational regulations.

Our research investigated the perceived effectiveness of working from home and attempted to explore what factors might influence this. As a starting point, we assumed that

in addition to environmental factors and the appropriate support tools, employees' views on self-efficacy and autonomy, as well as their self-management and self-regulation also play a crucial role in managing their work from home effectively.

We conducted a case-study in the mixed methods research paradigm by collecting both qualitative and quantitative data from 24 participants in order to gain a more complete understanding of perceived self-efficacy and self-regulation during the learning processes that the employees experienced moving to working from home arrangements. By combining an online questionnaire and semi-structured interviews we tried to find an answer to how employees perceived their effectiveness of working from home and what affected it based on their perceptions.

LITERATURE REVIEW

Work from home

Work from home (WFH) has long been regarded as a mode of work contributing to a better work-life balance in organizations (Afrianty, Artatanaya, & Burgess, 2021). WFH is supposed to provide more flexibility for employees and helps to balance working individuals' roles in work and outside of work (Olson & Primps, 1984). From the perspective of human resources management, WFH arrangements are recognized as having a positive impact on employees' work attitudes and behaviour, and being able to enhance job satisfaction, increase commitment to organizations and even improve employee performance (Crosbie & Moore, 2004). There has been a lot of research on the efficiency and productivity of WFH arrangements in recent years (see e.g., Nakrošienė, Bučiūnienė, & Goštautaitė, 2019; Timsal & Awais, 2016). One of the most often cited benefits of this work arrangement is increased employee productivity, as it is claimed that due to working from home, employees can be more productive as they can work during their most productive time of the day, they can better focus on their work owing to the lack of office socializing and co-workers, and their commuting time is reduced (Golden & Veiga, 2008). On the downside, negative consequences might be being on continuous call and balancing the demands of family and social life with WFH (Felstead & Jewson, 2000).

The Covid-19 pandemic has posed several challenges to society and forced both businesses and individuals to change a wide array of practices affecting all fields of life including work, leisure, travel, and daily tasks (Vyas & Butakhieo, 2021). Working from home became a necessity and a priority both on a regulatory level imposed by governments and on an operational level implemented by organizations. Work from home practices have spread widely across the globe. The number of workers working from home in the USA, for example, rose from 8.2% to 35.2% between February and May 2020, and 72% of workers found this way of work effective (Bick, Blanding & Mertens, 2020). The figures were very similar in the UK, 37% of employees were

working from home in May 2020 (The Decision Maker Panel, 2021) and 37% in EU countries compared to 9% before the pandemic, based on surveys of over 85,000 individuals (Eurofund, 2020).

While there was a general increase in the number of employees in all fields of business, considerable heterogeneity can be observed across socioeconomic groups and industries: Switching to WFH was more characteristic of knowledge workers who had had a high income already before the pandemic and contact-intensive sectors harder hit by social distancing were more adversely affected (Adams-Prassl, Boneva, Golin, & Rauh, 2020a, b). While the extent of exposure of a business to threats induced by the pandemic was influenced by many factors, such as the extent to which a given industry provided services which were considered essential by governments, another source of variation was the potential for WFH across industries (Dingel & Neiman, 2020).

Self-regulation in work activities

At the center of most theories of self-regulation lies the idea that individuals set goals, compare their progress against the goals, and make modifications if there is a discrepancy between a goal and the current state (Karoly, 1993). More precisely, self-regulation is the "self-generated thoughts, feelings and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmermann, 2000, p. 14), which involves the cognitive, emotional and also the behavioural aspects of work activities. To measure self-regulation performed during work-duties we used the self-regulated learning model as we had found measurement tools only in these areas. Recent studies highlight that self-regulated learning can shape our understanding of workplace learning since self-regulation is likely to have a strong impact on learning in informal situations where workers have to identify and manage their own learning opportunities (Milligan et al., 2015) similarly to finding new resolutions to difficult situations, problems arising during work.

We integrated the *work design concept* into our study as the perception of autonomy plays a key role in the regulation of work processes, various working conditions influence the extent to which an individual will be able to regulate their own work activities (Boekaerts & Cascallar, 2006). Work design characteristics can be defined as the attributes of the task, job, and social and organizational environment (Humphrey, Nahrgang, & Morgeson, 2007) in which particular work duties are performed by an individual worker. From this point of view "it concerns who is doing the work, what is done at work, the interrelationship of different work elements, and the interplay of job and role enactment with the broader task, social, physical, and organizational context" (Morgeson & Humphrey, 2008). Morgeson and Campion (2003) created a framework for structuring work characteristics in three major categories: motivational, social and contextual. The first category includes motivational aspects of work design, which aspect has



been the most investigated in the literature and reflects the overall complexity of the work. This category is subdivided into task characteristics and knowledge requirements of the work. Task characteristics describe how the work itself is accomplished and what kind of tasks are associated with a particular job. Main task characteristics are autonomy, task variety, task significance, task identity, and feedback from job. Knowledge characteristics display those kinds of knowledge, skills, and abilities that a job demands from an individual: these are job complexity, information processing, problem solving, skill variety and specialization.

The second category comprises social characteristics (social support, interdependence, interaction outside the organization, feedback from others) and reflects on the fact that work is performed within a broader social environment. Contextual characteristics, as the third category of the work-design model include ergonomics, physical demands, work condition and equipment use, and mirror the context within which the work is performed, including the physical and environmental contexts.

The perceived autonomy of an employee reflects the extent to which a job allows freedom, independence and preference to schedule work, make decisions and choose different methods to perform tasks. The tool that was developed to measure autonomy includes three dimensions of this characteristic: freedom in work-scheduling, decision making and work methods (Morgeson & Humphrey, 2007).

Several studies support the relationship between self-efficacy beliefs and work success (Bandura, 2001; Pepe, Farnese, Avalone, & Vecchione, 2010). Self-efficacy judgments, perceptions about one's capacity to resolve tasks (Bandura, 1977) will determine how much effort people will spend on a task and how long they will persist in it. People who possess strong self-efficacy beliefs exert more efforts to reach their goals and persist longer when encountering challenges than those with weak self-efficacy beliefs who are more likely to give up (Bandura & Schunk, 1981). Efficacy beliefs influence people's thoughts and behaviours, thus obtain a central role in the regulatory processes through which an individual tries to attain goals and aspirations (Wood & Bandura, 1989). Different studies revealed firm relationships between self-efficacy and work success: individuals who believe they will be able to carry out their job assignments, perform better (Wood & Bandura, 1989), persevere in the face of adversities (Lent, Brown, & Hackett, 1994), and are better able to manage changes (Hill, Smith, & Mann, 1987).

RESEARCH DESIGN

The primary goal of the research can be defined as exploring and interpreting the personal perceptions of employees about working from home along the following research questions:

- How do employees perceive their effectiveness of their working from home?

- What factors have an influence on the efficiency of working from home?
- How do autonomy perceptions and self-regulation strategies affect self-efficacy perceptions of working from home?
- What kind of learning did the transition to home-office result in?

The case study-mixed method (CS-MM) research design (Guetterman & Feters, 2018) was chosen for answering the research questions. The case study design might involve collecting both qualitative and quantitative data to create a more complete understanding of a particular case/phenomena, and the integration of different data call for the utilization of mixed method research design (Stake, 1995; Yin, 2018). Based on the main research question, we used a single-case study with a double approach: firstly, the descriptive focus (Yin, 2018) as the purpose of examination was to describe the adaptation process of a small division in a particular organization to home office work arrangements during the first wave of Covid-19 pandemic. Secondly, the explanatory approach appeared when we tried to build an explanation of the case by using self-efficacy, work-design and self-regulation theories for a better understanding of the factors that could lie behind the possible successes and failures of the examined adaptation process. We collected data through an online survey and interviews and synthesized the resulting data to provide a more comprehensive understanding of the process. In this way, the research fits into the convergent form of mixed methods design (Creswell & Creswell, 2017)¹.

PARTICIPANTS

The participants of the survey were working at the previously mentioned division of the Hungarian subsidiary of a chemical and consumer goods multinational when they took part in the survey. The description of the participants can be seen in Table 1.

As can be seen in the table, 15 of the respondents were female, nine were male. Nine of them fell in the age range of 26–35, seven of them were between 36 and 45, five of them between 46 and 55, and three of them between 18 and 25 years old. The majority of the participants lived in the capital city of Hungary, Budapest, three of them in county seats, two of them in smaller towns, and one of them in a homestead. The overwhelming majority had a university degree (nine of them MSc or MA, 11 of them BSc or BA degrees). 15 of them were working as employees at the time of the survey, while six of them were managers from a diverse range of areas as shown in Table 1. Almost half of them had spent over five years at the organisation, seven of them between one and three years, five of them between three and five years, and two of them less than a year.

¹Research ethical permission nr.:2020/192.



Table 1. Description of the participants

Pseudonym	Gender	Age	Residence in	Qualifications	Employment status	Position	Employment	Experience
1. Anna	female	26–35	capital	MSc/MA	employee	Brand Manager	3–5 years	3–5 years
2. Adele	female	36–45	capital	MSc/MA	employee	Demand Planner	3–5 years	over 5 years
3. Albert	male	26–35	county seat	BSc/BA	manager	Head of Key Account Managers	over 5 years	over 5 years
4. Cloe	female	36–45	capital	MSc/MA	manager	Sales Manager	1–3 years	over 5 years
5. Dawn	female	26–35	capital	MSc/MA	employee	Employee	1–3 years	1–3 years
6. Emily	female	26–35	capital	BSc/BA	employee	Brand Manager	1–3 years	1–3 years
7. Fiona	female	18–25	capital	BSc/BA	employee	Assistant	3–5 years	3–5 years
8. Andy	male	36–45	capital	BSc/BA	employee	Key Account Manager	over 5 years	over 5 years
9. Hannah	female	26–35	capital	MSc/MA	employee	Trade Marketing	3–5 years	3–5 years
10. David	male	36–45	capital	MSc/MA	employee	Key Account Manager	1–3 years	over 5 years
11. Jill	female	26–35	capital	BSc/BA	employee	Brand Manager	1–3 years	over 5 years
12. Jeremy	male	36–45	capital	BSc/BA	manager	Customer Service Team Leader	1–3 years	over 5 years
13. Kate	female	26–35	capital	MSc/MA	employee	Junior Brand Manager	1–3 years	3–5 years
14. Lynn	female	26–35	capital	BSc/BA	manager	Middle Manager	over 5 years	over 5 years
15. John	male	26–35	capital	BSc/BA	employee	Demand Planner	over 5 years	over 5 years
16. Margo	female	18–25	capital	BSc/BA	employee	NRM Analyst/Sales Controller	less than a year	1–3 years
17. Robert	male	46–55	town	technical secondary school	manager	Head of TT & Field	over 5 years	over 5 years
18. Nataly	female	36–45	capital	BSc/BA	employee	Category Manager	less than a year	over 5 years
19. Peggy	female	46–55	town	secondary school	employee	Assistant	over 5 years	over 5 years
20. Rita	female	18–25	capital	MSc/MA	employee	Customer Service Associate	3–5 years	3–5 years
21. Tim	male	46–55	county seat	BSc/BA	employee	Local CAM	over 5 years	over 5 years
22. Tina	female	36–45	capital	MSc/MA	manager	Marketing Manager	over 5 years	over 5 years
23. Tom	male	46–55	homestead	technical secondary school	employee	Key Account Manager	over 5 years	over 5 years
24. Val	male	46–55	county seat	secondary school	employee	Key Account Manager	over 5 years	over 5 years



Generally, the respondents had extensive experience in their field of work: 16 of them had been active in this field for over five years, five of them between three and five years, and three of them between one and three years.

INSTRUMENTS

For conducting the data collection, an online questionnaire and an interview protocol was developed based on the literature review and previous research (Kovács & Kálmán, 2020).

1. Questionnaire

The questionnaire consisted of five sections containing 95 items. In Section I., there were 18 questions concerning the participants' biographical and professional background. Apart from basic biographical questions related to the respondents' gender, age, and qualifications, we also asked them about their professional background to find out their current position, as well as how long they had been working in the chemical and consumer goods industry, how long they had been employed by their current employer, and finally, what their underlying motive was when choosing their current employer. While in the first part of Section I there were ten multiple choice questions, the second part measuring respondents' motives in choosing their current employer consisted of eight questions where they had to indicate on a Likert scale from 1 to 5 the strength of certain circumstances that played a role in their choice (e.g., Question 13: To what extent were you motivated by *flexitime* when choosing your current employer?).

Section II. – with 13 multiple choice and open-ended questions and three Likert -scale statements – focused on the respondents' experience related to working from home both before and during the pandemic. In this part of the questionnaire, we would have liked to find out how often the participants had worked in home office (HO) before and during the pandemic, where they had been able to create office space in their home during the pandemic, how satisfied they had been with their own efficiency prior to and during the pandemic when they were working in HO, what kind of difficulties they had faced when working from home, what support they had received from their employer, how their attitude to work had changed during the pandemic, how HO had affected their time management, what skill(s) they had developed during the pandemic, how often they would like to work in HO after the pandemic, and what they had enjoyed about working from home.

Section III. contained nine statements related to autonomy (adapted from Morgeson & Humphrey, 2006) measuring three latent dimensions with Likert-scale answers where the participants had to indicate to what extent they agreed with the statements (1 meaning completely disagree, 5 meaning absolutely agree):

- *Works-scheduling autonomy* (three items) (e.g., Working from home allows me to make my own decisions about how to schedule my work.)

- *Decision-making autonomy* (three items) (e.g., Working from home allows me to make a lot of decisions on my own.)
- *Work methods autonomy* (three items) (e.g., Working from home allows me to make decisions about what methods I use to complete my work.)

Section IV. measured 42 items in three latent dimensions related to self-regulation (SR) (adapted from Fontana et al., 2015) with the same kind of Likert scale answers as in Section III.:

- *Forethought phase* (17 items) (e.g., I set goals to help me manage the time I spend working from home.)
- *Performance phase* (19 items) (e.g., I try to play around with ideas of my own related to what I am working on.)
- *Self-reflection* (6 items) (e.g., I think about what I have learned after I finish.)

Finally, Section V. of the questionnaire measured the criterion dimension of work self-efficacy with ten statements (adapted from Pepe et al., 2010) and the same kind of Likert scale answers as in Section III.:

- *Work self-efficacy* (10 items) (e.g., Working from home I achieve goals that have been assigned.)

2. The interview protocol

The interview protocol contained questions forming three main parts listed below.

1. General attitudes toward and practice of home-office, reactions to the new situation. In this part, we were asking questions about the general home-office strategy of the company, if they got any support in transferring to working from home.
2. Perceptions about efficiency of working from home. In this section, we focused on the challenges the respondents faced in home office, successes and failures during home-office, the factors that the success of home-office depended on, and we were also curious to know who the respondents held responsible for the successful implementation of home-office. We were also interested in their opinion of those personal attributes that could help or hinder working from home.
3. Regulation, control, autonomy. The third section focused on the employees' daily work routine at home, how they perceived control or autonomy in scheduling and realization of their work, how they felt about their leader trust toward work effectiveness and if work-life balance had changed during this period of time.

PROCEDURES

The questionnaire items in Sections I and II were developed by the authors in Hungarian. The items in Section III., IV., and V. were adapted to working from home, and translated from English into Hungarian by the two authors



independently. Subsequently, a third independent translator was asked to back-translate the items into English to ensure accuracy. Both instruments were administered online in July 2020, and SPSS 25.0 was used to analyse quantitative data while the recorded interviews were transcribed and analysed. The interviews were transcribed and analysed along the main thematic structure of the questions and are presented in the same manner.

RESULTS FROM THE QUESTIONNAIRE

As the scales were adapted to the home office (HO) context and were translated by the authors from English into Hungarian, it was necessary to check whether the new scales were still reliable. In order to check the internal reliability of the seven dimensions, the Cronbach's Alpha coefficients were computed. All of the scales yielded favourable Cronbach's Alphas (Table 2), which shows that the adapted scales worked in the investigated context.

COMPARATIVE ANALYSIS OF THE SCALES

Table 3 presents descriptive statistics of the dimensions, their mean values and standard deviation values. We can see from the data that within the dimensions of *Autonomy*, *work-scheduling autonomy* showed the highest mean at 4.03, which suggests that the HO context lends respondents substantial independence in how they schedule their work activities. Paired samples *T* tests have shown that there are significant differences between the mean values of the three dimensions of autonomy. Therefore, participants are significantly less autonomous in their *work methods* (3.54) and *decision-making* (3.11), which can be attributed to the fact that the environment they work in is strictly regulated by how certain tasks are to be completed and who the decision makers are.

As regards the *self-regulation* scales, the results lead us to believe that the participants are generally activity-focused in the sense that they regulate themselves during executing their work activities significantly stronger (4.05) than either

Table 3. Descriptive statistics of the dimensions

Autonomy	Means	Standard deviation
Work-scheduling autonomy (WS Autonomy)	4.03	1.14
Work methods autonomy (WM autonomy)	3.54	1.17 *
Decision-making autonomy (DM Autonomy)	3.11	1.28 *
<i>Self-regulation</i>		
Self-regulation, Performance phase (SRP)	4.05	0.43
Self-regulation, Forethought phase (SRF)	3.80	0.72 *
Self-regulation, Self-reflection (SRSR)	3.62	0.89
<i>Criterion measure dimension</i>		
Work self-efficacy (WSE)	4.46	0.42

*The line indicates significant differences between the scales above and below the line based on paired *T*-test procedures ($p < 0.05$).

prior to (3.80) or after (3.62) completing their tasks. These results might imply that several of the participants' tasks have become routine tasks due to their experience in their positions; therefore, they do not require either extensive preparation or reflection before and after completing their jobs. The low standard deviation values of the three self-regulation scales (0.43, 0.72, and 0.89 respectively) demonstrate that there is relatively little variance in the responses given.

As far as the criterion measure scale of *work self-efficacy* is concerned, it can be concluded that the respondents regard themselves as efficient workers. The 4.46 mean value and the low (0.42) standard deviation value prove that they are unanimously satisfied with their efficiency in HO. This result is further strengthened by the fact that their answers to two of the questions in Section II. (If you had the opportunity to work in HO before the pandemic, how satisfied were you with your efficiency? and How satisfied were you with your efficiency in HO during the pandemic?) were equally high, 4.21 and 4.58 without a significant difference between the two.

ITEM ANALYSIS OF THE WORK SELF-EFFICACY DIMENSION

In order to get further insights into which aspects of work self-efficacy the participants found themselves stronger and weaker at working from home, a comparative item analysis was conducted on the items of this dimension. Table 4 presents the mean and standard deviation values of the items.

The data in Table 4 suggest several inferences. First and foremost, it can be concluded that the participants regard themselves as efficient workers when working from home, as the mean values of the items measuring the dimension approximate the higher end of the Likert scale with only one

Table 2. Reliability coefficients for the dimensions

Dimension	Cronbach's α s
Work-scheduling autonomy (WS Autonomy)	0.93
Decision-making autonomy (DM Autonomy)	0.93
Work methods autonomy (WM autonomy)	0.93
Self-regulation, Forethought phase (SRF)	0.92
Self-regulation, Performance phase (SRP)	0.85
Self-regulation, Self-reflection (SRSR)	0.89
Work self-efficacy (WSE)	0.76



Table 4. Comparative item analysis of the work self-efficacy dimension

Item	Mean	SD
Q5 Working from home, I finish all assigned work.	4.83	0.48
Q8 Working from home, I have good relationships with direct superiors.	4.79	0.51
Q6 Working from home, I collaborate with other colleagues.	4.71	0.46
Q7 Working from home, I work with people of diverse experiences and ages.	4.71	0.55
Q10 Working from home I can easily work in a team.	4.63	0.58
Q9 Working from home, I behave in an efficacious way with clients.	4.50	0.98
Q2 Working from home, I respect schedules and working deadlines.	4.50	0.72
Q1 Working from home, I achieve goals that will be assigned.	4.33	0.96*
Q4 Working from home, I concentrate all energy on work.	4.00	0.78
Q3 Working from home, I learn new working methods.	3.58	1.10*

* The lines indicate significant differences between the items above and below the line based on *T*-test procedures ($P < 0.05$)

corresponding mean (Q3) being lower than 4. Secondly, based on *T*-test procedures, there are no significant differences between the mean values (in descending order) belonging to the first seven items, which indicates that the participants consider themselves equally efficient in these aspects of HO efficiency. Finally, the last item in the descending order with the lowest mean value (Q3) makes us assume that learning new working methods is the area where the participants feel least efficient. This could either be explained by the fact that online platforms are not as efficient for transferring new working methods as onsite presence, or alternatively, strictly controlled work processes do not encourage trying out or experimenting with novel or diverse solutions.

RELATIONSHIPS AMONG THE SCALES

In order to find out what relationships might describe the dimensions, we carried out correlational and regression analyses. Table 5 presents significant correlations between the dimensions, whereas Table 6 shows significant correlations between the variables and the criterion measure scale. In order to guarantee a much smaller likelihood of the events occurring simply by chance, only correlations where $P < 0.001$ are reported.

As can be seen in Table 5, there were strong correlations between three pairs of scales, and the highest value (0.800) was obtained between the scales of *decision-making autonomy* and *work methods autonomy*. Based on these data, it can be concluded that those participants who are

Table 5. Significant correlations between the dimensions ($P < 0.001$)

Scales	1	2	3	4	5	6
1. WS Autonomy	-					
2. WM Autonomy	0.780	-				
3. DM Autonomy		0.800	-			
4. SR Forethought	0.533			-		
5. SR Performance				0.596	-	
6. SR Self-reflection					0.717	-

Table 6. Significant correlations between the variables and the criterion measure scale ($P < 0.001$)

Scale	DM Auto.	WM Auto.	WS Auto.	SR Fore	SR Perf.	SR Refl.
Work self-efficacy					0.522	0.550

autonomous in decision-making exhibit features that support autonomy in choosing a particular kind of work method as well. There is also a strong correlation (0.780) between the dimensions of *work scheduling autonomy* and *work methods autonomy*, which implies that the more autonomous respondents are in scheduling their work, the more independently they choose the working method that suits them best. Finally, the third strong correlation (0.717) was found between two self-regulation scales, the dimensions of *performance* and *self-reflection*. This result suggests that the more participants reflect on their work the better they are at regulating themselves during the performance phase of their working activities as well. Apart from the above, there were two more instances of moderate correlations between the dimensions investigated: the *performance* dimension of self-regulation correlated moderately (0.596) with the *forethought* phase of self-regulation. This somewhat lower correlation value implies that the underlying features of the *forethought* phase are less likely to go hand in hand with the features of the *performance* phase than those of the *self-reflection* phase. The other moderate correlation result was found between the scales of *work-scheduling autonomy* and the *forethought* phase of self-regulation, which is not surprising, as both latent dimensions are concerned with planning the tasks one would like to complete.

The data show that the *work self-efficacy* scale showed moderate correlations with two self-regulation scales, *SR performance* (0.522) and *SR Self-reflection* (0.550). The first correlation is not surprising as work self-efficacy and self-regulation during the performance phase seem to tap into the same dimension, both are connected to the actual performance one exhibits. As regards the second moderate correlation value between *work self-efficacy* and *self-reflection*, it implies that there seems to be a relationship between how efficient one considers oneself and how much one spends reflecting on one's work.

In order to determine causality and to find out which dimensions act as predictors of the participants' *work self-*

efficacy, linear regression analysis was carried out with a stepwise approach. The results are summarised in Table 7. Out of the six dimensions investigated, only one contributed significantly to work self-efficacy: SR self-reflection.

It can be seen from the data that the proportion of variance in *work self-efficacy* that can be explained by the independent variable is 30%, which is not a very high value, nevertheless, this is the only scale that seems to significantly contribute to *work self-efficacy* in the context investigated.

As we also wanted to investigate what causative effect each of the dimensions had on the other dimensions, we ran regression analyses on all of the constructs measured. Figure 1 illustrates causative effects of the dimensions on one another. The percentage rates show the proportion that can be predicted by the other dimensions, whereas the thickness of the arrows represents the strength of the effect.

As the percentages show in Fig. 1 work scheduling is strongly determined by the possibility of choice, the degree of autonomy in selecting work methods. However strongly regulated work processes result in easier and more efficient planning. But on the other hand, if we have autonomy in different decisions, then it also influences the choice of working methods, so self-determination can be achieved in this way as well. However, the stronger the external regulation, the less we can choose our working methods, and the less we need reflection after work, as we can rely on our superiors' and colleagues' evaluation and do not have to do it ourselves. The stronger the reflection after work, the more effectively we manage, regulate our activities, and should rely less on external control. The in the awareness of whether we have autonomy (autonomy, responsibility) in the choice of our working methods plays an important role in the performance self-regulation.

Table 7. Results of regression analysis of the scales with *work self-efficacy* as the criterion variable (significance level $P < 0.01$)

Variable	β	t	P
1.SR Self-reflection	0.55	3.09	<0.001
R^2			0.30

RESULTS FROM THE INTERVIEW

Efficiency of working from home: conditions of implementation, influencing factors

Benefits of working from home. The respondents agreed that they had accomplished strongly task-focused work with higher productivity without interruptions due to regular employee communication that appeared in the office. The communication between the staff became more conscious and practical, they sought each other only in justified cases, and achieved a greater degree of self-determination in initiating the resolution of smaller difficulties by themselves. Due to the new challenges, the digital competencies of the employees developed enormously, new tools were introduced and learned that had not seemed to be important before (although the technical background was given in the office context). Work realization became more comfortable without traveling, easier day planning and work-life balance had been consolidated from the beginning. Also, they highlighted that during work processes they carried out more efficient meetings with less time-consuming discussions.

Challenges of working from home. Most of the interviewees admitted that working alone, lacking social connections was the hardest aspect of working from home. It proved to be more challenging to reach people and it often seemed uncontrollable where the colleagues were and what they were doing. At the beginning of this period, it was difficult to design the place and conditions for working at home, but after taking home office equipment, the feeling of comfort and efficiency increased. A constant problem highlighted by those employees who had families was the difficulty of supporting their children in learning and completing homework during their regular working time.

Personal attributes of working from home efficiently. A common understanding about the role of personal attributes can be outlined from the answers: most of the respondents believed that work behaviour from the office would appear in a home-office context too, in other words, the way one

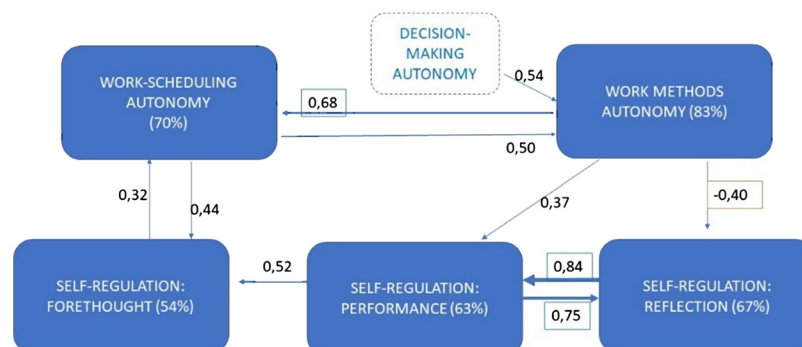


Fig. 1. Regression analysis of dimensions

worked in the office would work at home in the same manner. But there are some personal traits that emerged as helpful for realizing efficient work from home. These are as follows:

- conscientiousness, a sense of responsibility
- developing a personal working pace
- well-designed working conditions
- good time management
- focused work
- confidence
- an established daily routine
- precision, diligence, serious work
- flexibility
- adaptability
- being a good team player

The respondents also stressed those responsibilities that they attributed to their employers: providing a technical background and firm infrastructure, clear expectations and decisive communication, trust toward the employee. The participants' overall impression of the employer's support can be described with satisfaction, they couldn't really highlight what other extra help would have been needed from the employer.

Regulation, control and autonomy in work processes

Guidance and regulation. The respondents highlighted several circumstances that supported the guidance and regulation of work activities, such as the structure of the tasks, the dependence on work with peers (teamwork) as well as the previously established schedule from the office that they could adapt at home too. They perceived the intensity and appearance of communication also as a control tool, but the regular meetings created a structure of daily planning. Work management in this division of the company showed an interesting pattern: the deadlines for the tasks were fixed but apart from that, the management was flexible in the realization of the task, which offered less external regulation and demanded more self-control and a stronger sense of autonomy. Based on the participants' experiences greater independence came with responsibility, which had a positive effect on self-efficacy and trust in their own abilities. Some of the interviewees used to-do lists or ranked tasks in their daily weekly schedule, which helped them guide and regulate the work flow but also supported measuring their efficiency.

Relationship with the leader. None of the respondents reported any trust issues with their leaders: the trust developed by shared work experiences became strong and they could not really mention any issue that would show their leaders' mistrust during working from home. Yet, they highlighted some elements of the relationship that supported the building of trust between the parties. For example, regular communication provided control for both parties, the weekly held status check with a follow up meeting provided supervision involvement with correction or change in

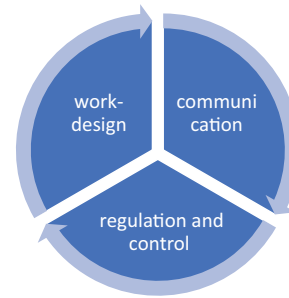


Fig. 2. Factors affecting perceived efficiency of working from home

prioritization if it was necessary. In a sub-division group, the leader initiated a so-called coffee-call with more personal, informal discussions, which offered a sense of care and attention toward subordinates and also led to a stronger and more reliable relationship between the parties. Some interviewees expressed their satisfaction with regular feedback but also emphasized that it should be done regularly and in a very personalized way.

DISCUSSION

Based on the synthesis of the two types of data collected, a cyclical model can be defined, where the elements are strongly interconnected as illustrated in Fig. 2 below:

In this particular case, the work-design element based on the mostly regulated task divisions and work assignments offers the background for the other two factors and strongly defines them as well. Different patterns of communication evolve in this context but all forms of it have the very important role of control and direction of work activities. Then the various forms of guidance and self-regulation of work assignments are embedded in this context of particular work-design and communication, which leads at the end to a specific balance of control and autonomy offering a high level of efficiency perception among the employees.

Work-design attributes

Both data from the questionnaire and interviews highlight that this particular group division ran vigorous task-focused work processes with well-defined work assignments. Due to this work context, there are mostly rigorous task completion procedures with well-defined decision makers where employees have less autonomy for decision-making and learning or experimenting new work methods. As the participating managers stressed regular communication on group and individual levels played a critical role in maintaining work effectiveness after moving to home office work arrangements. Similarly, they considered it highly important to offer the infrastructural background that employees needed for completing their work duties from home; however, other forms of support like counselling, preparation for home office was not mentioned in the interviews; neither the managers, nor the employees expressed such expectations.

Communication patterns

The strongly regulated work-design mentioned previously can be maintained only by clear and purposeful communication. Going online and using Microsoft Teams created a different communication pattern for completing work duties: the respondents formulated consistently that their conversations with colleagues became more conscious, the frequency and quality of initiatives resulted in more efficient communication. As a result, the informal aspect of communication became less important, which offered a more efficient work-flow than in the office environment where colleagues' initiations could be disturbing as opposed to the quietness of home setting. They unanimously considered the company's regular briefings supportive in which it offered concise information about the pandemic situation, new regulations and the policy that the company had formulated adapting to the ever-changing situation. However, some of the respondents called for defining an etiquette for online communication as they faced some annoying aspects of presenting or discussing online.

Regulation and control

The specific nature of work tasks has a strong regulatory effect, as the data from the questionnaire reinforced that self-regulation of work activities appeared in the performance phase and had a smaller role in the planning and reflecting phases. Interestingly, this control offered by the well-defined work duties and regular communication resulted in a high work-efficiency perception that the interviews supported as well. We can conclude that in some sense, self-regulation appears in the adaptation to home settings too, where the employee already has the confidence in performing the different work-tasks, and self-regulation appears only in creating the proper context for effectuating these work assignments. Employees have some degree of autonomy in planning their activities, scheduling their realization, which is seemingly enough for them to perceive themselves to be more efficient and autonomous. This is also maintained by the regular feedback they obtain from their leaders or colleagues. This confidence in self-regulation of work activities from home can be strongly connected to the trustful relationship between the leader and subordinate, as the interview data supported there were no trust issues among the respondents.

CONCLUSION

Data from the questionnaire revealed a high level of work-efficiency perception among the employees of the examined division, which seems to be based on the proper balance created between the firmly controlled work-division and work-context that had to be adapted to home environment. The leaders, by offering trust as well as supportive and clear communication created the space for autonomy in the adaptation to a new work environment, which created

different realizations individually but unanimously led to a high perception of confidence and efficiency in work activities.

The major limitation of our study is that due to the fact that this is a case study, and the sample size of the questionnaire survey was low, the results cannot be generalised. Therefore, without conducting further research in different contexts with a higher number of participants it can only be hypothesised that the model described in Fig. 2 and its underlying mechanisms prove to be true for other home office contexts as well. We assume that vigorous task-focused work processes with well-defined work assignments and task completion procedures with well-defined decision makers coupled with regular, clear and purposeful communication on group and individual levels and appropriate infrastructural background promote the perception of efficiency among home office workers in general. Nevertheless, further studies in various contexts and a higher number of participants would be needed to confirm this claim.

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