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# o-Workers' vs. e-Workers' Perceptions of Job Performance: Evidence from Austrian Service Professionals

## Abstract

**Research background and purpose:** E-work has become increasingly widespread, but it is not accessible to all. Existing research highlights how the remote setting influences individual productivity but the question remains whether workforce is more or less productive remotely or at work. Therefore, this research study aims to examine o-workers' vs. e-workers' perceptions of job performance in the post-Covid era on the basis of research done during the pandemic.

**Design/methodology/approach:** A quasi-experimental design was used in this study of two groups working on the same project for the Czech and Slovak markets from calendar week 1 of 2024 to calendar week 13 (01.01.2024 to 31.03.2024). The authors created macros in Excel for the self-assessment reports (using the De Menezes and De Paula Xavier's instrument) to track the job-performance of employees. Eleven hypotheses were tested using Pearson's chi-square test of independence; 10 (H1-H10) of the 11 hypotheses were confirmed.

**Findings:** According to the data, e-work enables mutual matching between employees and firms, which boosts labour productivity. Working at the home premises produces a better turnaround on projects and increases productivity. E-work can be a more productive work environment compared to o-working, because it can lead to focusing on practices that promote well-being and help employees thrive wherever the work is critical.

**Value added and limitations:** Instead of autocratically ordering the workforce back to the office, employers could exploit this advantage to determine how to make e-work work. It is incumbent upon employers to recognise workers as individuals, not just as units of labour in the business. Despite some limitations (sample size, questions in language, geographical scope, restricted generalisation, lack of randomisation and limited control over outside factors), this paper presents crucial findings related to the questions at issue.

**Keywords:** *Austria, productivity, performance, office and home premises*

**JEL Classification:** C9, J21, J24, J28

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## 1. Introduction

E-work has become increasingly widespread, but is not accessible to all. A large proportion of the workforce prefers flexibility (Bal and Jansen, 2016), including a four-day work week (Beno et al., 2022), but a larger proportion of the workforce prefers working in the office (Appel-Meulenbroek et al., 2022). This simply means that employees like to be able to decide for themselves where, when and how they work (Hill et al., 2008) and want to choose whether they are in the office or not.

Some research utilised e-workforce self-rated performance assessment (Beno & Hvorecky, 2021), while other research used executive-rated performance criteria (Jendyose, 2024). This results in opposing views of performance arising from contrasting ways of understanding the meaning of productivity (Bloom et al., 2023) and the definition of productivity as outcomes (manager's point of view) and as output (individuals) (Storey et al., 2022; Teevan et al., 2022) or as output, e.g. sales or units produced, relative to input, e.g. the number of hours worked or the cost of labour (Beno & Hvorecky, 2021).

It is very important to investigate flexibility at work. The relationship between the work performance and productivity of o-workers' (white-collar workers working with computers and modern technology in the office) and e-workers' (white-collars workers working with computers and modern technology at home) self-assessment has so far not been explored. Job performance, in simple terms, is the assessment of an individual's job (Aguinis, 2019; Schmitt, 2023). The workforce's performance determines business success (Siddiqui, 2014). And the author noted further that flexible working shifts can improve an organisation's productivity.

This means that studying work performance is vital for workers and for organisations. As stated by Aguinis and Burgi-Tian (2021, p. 158): "rather than abandoning performance management because performance is understandably difficult to measure, a better solution is to adapt performance measurement to the new organizational and societal realities. What is needed is a measure of performance that is simple, relevant, informative, adaptable, comprehensive, and clear".

The aim of this study was to investigate o-workers' vs. e-workers' perceptions of job performance in the post-Covid era as a response to previous research during the pandemic (Alessandri & Borgogni, 2015; Erdsiek, 2021; Rodríguez-Sánchez et al., 2020; Wolor at al., 2021). Simply put: Are employees more productive at home or in the office?

In line with the general assumption that e-work will expand in the future as a complementary work form (Allen et al., 2021; Beno & Caganova, 2023), the authors decided to investigate the potential effect working on-site rather than remotely could have on the relationship between perceived overall job performance, including the perception of productivity. To the best of authors' knowledge, no previous research has examined both these levels in one study. The following research question was set:

How does the Austrian workforce working at home vs. the workforce working in the office perceive its performance/productivity when working on the same project during the same period?

Firstly, a literature review of previous research is provided. The section after that explains the methodological approach used in this study. Next, the results are presented and discussed. That is followed by concluding remarks about the results obtained.

## 2. Literature review

"The work environment is defined as everything that is part of an employee's interaction with the work itself" (Rahman et al., 2023, p. 162). The authors then explain that organisations are able to design an environment where the workforce is productive.

According to the authors of this study, o-workers are white-collar workers working with computers and modern technology in the office while e-workers are white-collar workers working with computers and modern technology at home. The difference between on-site and remote workers goes further than just their location.

"Motivation greatly influences individual behaviour" (Sultana et al., 2021, p. 2413). Productivity is defined as a measure between input and output (OECD, 2015). "Productivity is naturally linked to effectiveness and efficiency" (De Been et al., 2016, p. 1). Additionally, employees' productivity is defined as a measure of the efficiency of an employee or group of employees in the organisation (Samadzad & Hashemi, 2021). In other words, the workforce's productivity is a criterion that relates to the workforce's efficiency at achieving desired outcomes.

E-work has the potential to improve the workforce's performance (Chiguvi & Bakani, 2023). More precisely, on a day level, e-workers reported higher work engagement and higher job performance on e-working days compared to non-e-working days (Delanoeije & Verbruggen, 2020). Ten Brummelhuis et al.'s (2012) data demonstrate that daily use of new ways of working is positively related to daily engagement, and Vega et al. (2014) report higher job performance when working remotely. But working at the home premises can involve various distractions which can influence concentration on the job at hand, with possible suboptimal performance and decreased productivity (Toniolo-Barrios and Pitt, 2020). Dutcher (2012) distinguishes between positive productivity of creative tasks and negative productivity of dull tasks when working remotely. Less time spent on communication with co-workers increases e-workers' productivity (Nakrošienė et al., 2019). Lajšić (2019) argues that it is necessary to emphasise the importance of measuring performance. In this regard, the results of a recent study reveal that e-work increases job performance in terms of job quality but reduces it in terms of job productivity (Qu & Yan, 2022). Increased job satisfaction has beneficial

effects on individuals' productivity (Halkos & Bousinakis, 2010). Erdsiek's (2021) data on e-work show that a ratio of 60% of examined firms reported no significant change in productivity, 15% reported an increase, and a quarter reported a decrease in productivity. Wolor et al. (2021) saw no significant influence on productivity when working remotely. In order to have a healthy balance between personal and business life, the workforce needs more time at the home premises (Delecta, 2011). Various studies show how the work environment affects the employee's performance/productivity (Anjum et al., 2018; Leblebici, 2012; Muketha, 2017).

"Engagement is positively related to job performance at an individual level, a factor that can boost performance, creativity, income, and health and well-being, while preventing absence from work" (Eurofound, 2016, p. 103). Reduced work pressure and role conflict, as well as increased autonomy, may increase work engagement (Sardeshmukh et al., 2012). Self-management measured on a day-level is different from general self-management (Breevaart et al., 2014).

Generally, an engaged workforce reflects greater productivity the greater the employees' personal commitment to their business goals and success. Engagement and productivity are clearly connected. In the current study, the gap in the literature will be addressed by asking how the Austrian workforce working at home vs. the workforce working in the office perceives its performance/productivity when working on the same project during the same period. Eleven hypotheses were formulated to submit to the test procedures (see the methodology section for further details).

## 3. Methods

The participants were full-time employees of a large Austrian company operating globally. They were from administration department where the workload levels were the same. A total of eight employees with different backgrounds, from different ethnic groups and with gender balance participated in the study. Their ages ranged from 22 to 44 (mean age 33.25), and they have been in the organisation for 3-8 years. Four of the respondents are parents.

The authors implemented a quasi-experiment (occurring in natural circumstances) where two groups of workers are compared. The first group consisted of those who work according to traditional work arrangements on a Czech project, and the others work by e-working methods on a Slovakian project. The decisions regarding the Czech and Slovak design projects (task scope, difficulty and choice of client) were made by the managers of the workforce groups. This method involves the creation of a comparison group and is often used when it is not possible to place individuals or several employees in random groups to analyse or to serve as control groups (White & Sabarwal, 2014). Experimental and quasi-experimental research is seen as being rigorous and systematic (Loewen and Plonsky, 2016). "Experimental and quasi-experimental research designs examine whether

there is a causal relationship between independent and dependent variables" (McKinley & Rose, 2023, p. 1). The authors created macros in Excel for the self-assessment reports to track the job-performance of employees. Using De Menezes and De Paula Xavier's (2018) instrument provides an accurate measurement of the participants' job performance, which shows that the questionnaire used in this investigation is correct. The consistent results under the same conditions give the assurance that the measurements can be trusted to provide dependable information about job performance. The participants in this study were asked to evaluate their perceptions of job performance weekly from calendar week 1 of 2024 to calendar week 13 (01.01.2024 to 31.03.2024) on a Likert basis (not much, a little, average, a good deal and very much). The authors implemented De Menezes and De Paula Xavier's (2018) instrument to assess the workers' productivity during a working day by means of 10 questions. At the end of the 3-month period of their perception of job performance, the authors collected data from the participants through their managers. The data were placed in sealed envelopes marked with three codes for age, gender and parenthood so as to ensure anonymity. The participants were given the assurance through their managers that their responses would remain anonymous. There was no personal contact between the researchers and the participants. The data were then transferred to Excel files for further analysis to test these hypotheses:

H1: There are significant differences in the feeling of focus and efficiency between office and home workers;
H2: In terms of feeling tired or sleepy, workers in the office and at home differ significantly.
H3: In terms of feeling productive, workers in the office and at home differ significantly.
H4: In terms of the ability to make work-related decisions, workers in the office and at home differ significantly.
H5: In terms of the feeling of self-confidence in making work-related decisions, workers in the office and at home differ significantly.
H6: In the feeling of anger and agitation, workers in the office and at home differ significantly.
H7: In the feeling of difficulty in managing work, workers in the office and at home differ significantly.
H8: In terms of looking forward to work, workers in the office and at home differ significantly.
H9: Office and home workers differ significantly in their feelings of being affected by physical symptoms.
H10: Office and home workers differ significantly in their feelings of satisfaction with their work performance.
H11: We assume a statistically significant effect of worker type (on-site/HO), age, gender and parenthood on overall productivity.

The hypotheses were tested using Pearson's chi-square test of independence by testing the relationship between two categorical variables. For some tests, some rating categories had to be merged to meet the conditions for performing the test. For hypothesis H11 an assumed regression model was created as follows:

$$Productivity = \beta_0 + \beta_1 * Gender + \beta_2 * Parenthood + \beta_3 * Employees + \beta_4 * Age + \varepsilon$$

In order to build this model, each of the individual predictors (gender, worker, parenthood and age) had to correlate with the dependent variable, namely productivity.

Several aspects of confidentiality and anonymity were warranted during the design of the study, the implementation of data collection and the analysis of data. The authors shielded their participants and their information to the best of their ability and communicated their assurances before a participant agreed to participate in the experiment.

## 4. Findings

Workforce perception plays a pivotal role in an organisation, which influences the workers' motivation and engagement levels. Employers need to know their employees and need to understand how they are performing. It is necessary to measure their performance or to know how they are performing. It is incumbent on employers to understand the performance levels of all of their employees.

*H1: There are significant differences in the feeling of focus and efficiency between office and home workers.*

The ability to maintain focus while working is something the workplace needs more of. This is so because according to the contingency table data, office workers felt less focused and less efficient during the working week more often (21.2%) than e-workers (7.7%). E-workers felt more focused and more efficient during the working week (17.3%) than office workers (1.9%). According to the p-value of the Pearson chi-square test (p=0.017), which is lower than the selected significance level, the differences in the feeling of focus and efficiency are statistically significant. The substantive significance measured by the Cramer coefficient (V=0.340) is rather small. The hypothesis was confirmed.

*H2: In terms of feeling tired or sleepy, workers in the office and at home differ significantly.*

Fatigue is common and can be caused by many different factors which are not easily measured or quantified. Further analysis based on the contingency table shows that

o-workers felt very tired and sleepy during the working week more often (25%) than home office workers (0%). Home office workers did not feel sleepy or tired at all during the working week (63.5%) compared with office workers (34.6%). According to the p-value of the Pearson chi-square test ($p<0.001$), which is lower than the selected significance level, the differences in the feeling of tiredness and sleepiness are statistically significant. The substantive significance measured by the Cramer coefficient ($V=0.437$) is rather small. The hypothesis was confirmed.

*H3: In terms of feeling productive, workers in the office and at home differ significantly.*

Valid productivity means having good systems in place and staying productive. The contingency table data show that office workers felt less productive during the working week more often (17.3%) than home office workers (5.8%). Home office workers felt more productive during the working week (17.3%) than office workers (1.9%). According to the p-value of the Pearson chi-square test ($p=0.023$), which is lower than the chosen significance level, the differences in the feeling of productivity are statistically significant. The substantive significance measured by the Cramer coefficient ($V=0.320$) is rather small. The hypothesis was confirmed.

*H4: In terms of the ability to make work-related decisions, workers in the office and at home differ significantly.*

Autonomy is the hallmark of an innovative culture. Creating more autonomy involves shifting power in the organisation and among employees. Further examination of data from the contingency table reveals that office workers felt more often not much, a little or average ability to make work-related decisions during the working week (96.1%) compared to home office workers (50%). Home office workers felt more often a good deal of or very much ability to make work-related decisions during the working week (50%) compared to those working in the office (3.8%). According to the p-value of the Pearson chi-square test ($p<0.001$), which is lower than the chosen level of significance, the differences in the feeling of making work-related decisions are statistically significant. Material significance measured by the Cramer coefficient ($V=0.529$) is medium. The hypothesis was confirmed.

*H5: In terms of the feeling of self-confidence in making work-related decisions, workers in the office and at home differ significantly.*

Confident choices improve outcomes and increase workforce satisfaction. The contingency table evidence shows that during the working week, office workers felt more often not much or a little self-confidence when making work-related decisions (28.8%)

compared to home office workers (9.6%). During the working week, home office workers felt a good deal of confidence or very much confident about work-related decisions (50%) compared with office workers (26.9%). According to the p-value of the Pearson's chi-square test (p=0.013), which is lower than the chosen level of significance, the differences in the feeling of self-confidence in work-related decisions are statistically significant. Material significance measured by the Cramer coefficient (V=0.289) is small. The hypothesis was confirmed.

*H6: In the feeling of anger and agitation, workers in the office and at home differ significantly.*

Anger is an emotional state that varies in intensity and is caused by both external and internal events. The further examination of contingency table evidence shows that office workers felt very upset or angry during the working week more often (21.2%) than home office workers (0%). Home office workers did not feel upset or angry more often during the working week (61.5%) than those working in the office (30.8%). According to the p-value of the Pearson chi-square test (p=0.001), which is lower than the chosen level of significance, the differences in the feeling of excitement and annoyance are statistically significant. Material significance measured by the Cramer coefficient (V=0.413) is rather small. The hypothesis was confirmed.

*H7: In the feeling of difficulty in managing work, workers in the office and at home differ significantly.*

Juggling between the duty of having to do work at home and in the office may seem difficult but it is achievable. The contingency table figures show that it was more often very or completely difficult for workers in the office to handle the assigned work (28.8%) than for workers in the home office (0%). For home office workers, it was not at all difficult to manage the work more often (69.2%) than for office workers (19.2%). According to the p-value of the Pearson chi-square test (p<0.001), which is lower than the chosen level of significance, the differences in the feeling of making work-related decisions are statistically significant. Material significance measured by the Cramer coefficient (V=0.577) is medium.
The hypothesis was confirmed.

*H8: In terms of looking forward to work, workers in the office and at home differ significantly.*

Generally, when looking forward to doing things productivity increases and overall happiness accelerates. Additional statistics of the contingency table reveal that office

workers do not enjoy the working week at all or enjoy it a little less often (40.4%) than home office workers (9.6%). Home office workers look forward to work during the working week a good deal or very much more often (61.5%) than those working in the office (38.4%). According to the p-value of the Pearson chi-square test (p=0.003), which is lower than the chosen level of significance, the differences in the feeling of productivity are statistically significant. Material significance measured by the Cramer coefficient (V=0.393) is rather small. The hypothesis was confirmed.

*H9: Office and home workers significantly differ in their feelings of being affected by physical symptoms.*

Work-related stress is a growing global problem that affects not only the health and well-being of employees, but also their productivity. The contingency table of investigation figures demonstrate that office workers felt more often or very much affected by physical symptoms during the working week (26.9%) than home office workers (0%). Home office workers felt not much or very little affected by physical symptoms during the working week (100%) than office workers (57.7%). According to the p-value of the Pearson chi-square test (p<0.001), which is lower than the chosen level of significance, the differences in the feeling of excitement and annoyance are statistically significant. Material significance measured by the Cramer coefficient (V=0.591) is medium. The hypothesis was confirmed.

*H10: Office and home workers differ significantly in their feelings of satisfaction with their work performance.*

Workers who are satisfied with their jobs tend to be more motivated and engaged. This is a reflection of how the workforce feels about the workplace. According to the contingency table details, office workers felt very satisfied with their work performance during the working week more often (34.6%) than home office workers (15.4%). However, home office workers felt completely satisfied with their work performance during the working week (46.2%) more often than those working in the office (3.8%). Office workers also felt satisfied with their work performance during the working week (19.2%) more often than home office workers (0%).

According to the p-value of the Pearson chi-square test (p<0.001), which is lower than the chosen level of significance, the differences in the feeling of excitement and annoyance are statistically significant. Material significance measured by the Cramer coefficient (V=0.518) is medium. The hypothesis was confirmed.

*H11: We assume a statistically significant effect of worker type (on-site/HO), age, gender and parenthood on overall productivity.*

A productive workforce is the backbone of any successful organisation. The dependence of productivity on gender (t=0.817, p=0.417), parentage (t=0.433, p=0.666) and age (r=0.007, p=0.980) was not confirmed. The influence of the only predictor, namely the type of worker, on site/HO (t=5.004, p<0.001), was confirmed. The hypothesis was not confirmed.

## 5. Discussion

In this paper, the authors examined the effects, both on a person level and on a weekly level, of employees' perceptions of performance/productivity when working on-site and remotely on the same project during the same period. In this regard, our study throws further light on the various aspects of the impact of e-working on productivity (Gibbs et al., 2021; Bartik et al., 2024). Data from this study can provide greater insight into the effect of e-work on the workforce. Differences were found between workers in the office and at home in all productivity assessments. Fatigue, or workplace sleepiness, is a consequence of the modern industrial society (Caldwell et al., 2018). Our data showed that o-workers felt very tired and sleepy during the working week more often (25%) than home office workers (0%). Home office workers did not feel sleepy or tired at all during the working week (63.5%) compared with office workers (34.6%). The authors clearly see work and home as a duality – a balancing act between the needs of the organisation and the needs of the workforce. The results of this research show that e-workers are happier, more rested, more decisive, and therefore more efficient.

Emanuel and Harrington's (2023) data demonstrate that after the transition to e-work, those who were o-workers originally were still 8% more productive than those who were already remote workers, and this is despite the initial decrease in productivity. According to Gibbs et al. (2023), overall productivity fell by 20%. But o-workers in this study felt less productive during the working week more often (17.3%) than home office workers (5.8%). Home office workers felt more productive during the working week (17.3%) than office workers (1.9%).

The data of this study are in the vein of Delanoeije and Verbruggen's (2020) findings of increased work engagement and job performance when working remotely. That is very similar to the data obtained in this study to the effect that o-workers felt very satisfied with their work performance during the working week more often (34.6%) than home office workers (15.4%). However, home office workers felt very satisfied with their work performance during the working week (46.2%) more often than those working in the office (3.8%). We agree with Atkin et al. (2023) that the most productive work environment results from cultural or personal preferences rather than external constraints as demonstrated in this study on various levels. However, according to the

findings, a statistically significant effect of worker type (on-site/HO, t=5.004, p<0.001) on overall productivity has only been confirmed.

According to Lucas and Diener (2003, p. 51), "happy workers may be more sociable, but whether this benefits productivity depends on the precise nature of their task." Similarly in our analysis, based on the contingency table details, o-workers felt very satisfied with their work performance during the working week more often (34.6%) than e-workers (15.4%). However, home office workers felt completely satisfied with their work performance during the working week (46.2%) more often than those working in the office (3.8%). Office workers also felt satisfied with their work performance during the working week (19.2%) more often than home office workers (0%). This means, in a similar way to Bowling's (2007) study, that the debate on how to interpret the relationship between well-being and performance is far from over. Note in this regard that o-workers felt very much affected by physical symptoms during the working week (26.9%) more often than home office workers (0%). Home office workers felt not much or very little affected by physical symptoms during the working week (100%) compared with office workers (57.7%).

The significance of stress in the working environment, as in the day-to-day life, should of course not be underestimated. Pfejfer-Buczek et al. (2023) highlight that stress in the working environment directly affects employees and organisations. However, the difficulty of measuring work-related stress must be noted (Seňová & Antošová, 2014).

Overall, it is clear that steps for promoting worker performance and/or well-being should be undertaken with consideration of the possible consequences in taking a longer-term perspective (Grant et al., 2007).

## 6. Conclusion

In conclusion, the present paper has shown that there is no single overarching theoretical conceptualisation of o-workers' vs. e-workers' perceptions of job performance in the post-Covid era because, patently, not all workplaces are the same. The authors set out with the aim of finding the answer to the following research question:

*How does the Austrian workforce working at home vs. the workforce working in the office perceive its performance/productivity when working on the same project during the same period?*

Eleven hypotheses were tested using Pearson's chi-square test of independence; 10 (H1-H10) of the 11 hypotheses were confirmed. Differences between workers in the office and at home were found in all productivity assessments. The research shows that home office workers are happier, more rested, more decisive, and therefore more efficient. Moreover, according to the findings, a statistically significant effect of worker type (on-site/HO,

t=5.004, p<0.001) on overall productivity has only been confirmed. The higher self-esteem of their job performances by e-workers was confirmed as a result of the mutual cooperation and outcomes between employees and end customers as perceived by the managers. According to the data, e-work enables mutual matching between employees and firms, which boosts labour productivity. The future of work will be workforce-focused. Employees' personal preferences are the key elements in this process: from where and how their work originates to how they are rewarded and recognized through job performance.

Some limitations are associated with this study. The first is the sample size for saturation. A small random sample, in this case 8 employees, reduces the risk of bias but may of course have an impact on the reliability of the generalisations. Furthermore, the questions in English could represent a limitation to a certain extent because of the respondents not fully understanding them. Another limitation is the geographical scope of the study. Furthermore, the restricted generalisation of the findings obtained could be augmented with an expanded analysis to obtain a broader representative data sample. This is due to the fact that the findings from quasi-experimental designs may have limited generalisability. The lack of randomisation and limited control over outside factors also involved considerable challenges. Yet quasi-experimental design can provide valuable insights into complex phenomena, as shown in this study.

Despite these limitations, this paper presents crucial findings related to the questions at issue. These can be examined by further research. With the e-work shift, the traditional methods of performance assessment that are focused on time spent in the cubicle are now becoming obsolete. Instead, companies are turning to more outcome-focused metrics to evaluate workforce productivity and performance in the modern workplace. Future research could investigate the modern metrics used in workplaces. Furthermore, the workforce's efficiency and performance are conditioned to a great extent by various interruptions in the cubicle and at the home premises. This is why attention should be paid in future research to identifying these distracting elements and to means of avoiding them. Additionally, in order to achieve suitable job performance by o-workers and e-workers, the distraction and efficiency elements of the working activity (increased or decreased job operation) should be analysed as relationships.

Note, lastly, that the findings of this study should be of practical benefit to companies when deciding whether to squeeze the workforce into the same office model or whether to refashion the approach and to make workforce experience a company priority. Trusting the workers to know when, where and how they work best and providing them with suitable modern tools to do so effectively seems to be crucial. Purpose-driven employees are efficient employees. On the basis of the evidence obtained in this study, it is crucial for employers to gain an intimate understanding of the performance levels of their entire workforce, from its lowest to its highest ranks.

## Authors' contribution

**M.B.:** conceived of the presented idea, was engaged in the investigation, literature search and selection, verified the analytical methods, writing original draft, preparation, and finishing the last version. **D.C.:** was involved in proof reading, forming conclusions, and limitations as well as in contribution to the last version. Both authors discussed the results and contributed to the final manuscript.

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