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# Impact of Covid-19 on employee satisfaction and trust with focus on working from home

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## Abstract

The Covid-19 virus has triggered a worldwide pandemic and therefore many employees were required to work from home which caused numerous challenges. With the Covid-19 pandemic now in its third year, there are already several studies available on the subject of home offices. To investigate the impact of remote work on employee satisfaction and trust, this quantitative study aims to review existing results and formulate hypotheses based on a conceptual model created through a qualitative study and extensive literature review. The research question is as follows: Does home office during Covid-19 affect employee satisfaction and trust? To test the hypotheses, a structural equation model was constructed and analyzed. The culture of trust and flexibility are identified as the biggest influencing factors in this study.

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## 1. Introduction

The Covid-19 pandemic outbreak has had a profound impact on people's lives, leading to significant changes. The world of work has faced unprecedented challenges, and organizations have had to quickly adapt to the new reality. As a result, many companies had to rapidly alter their work routines, and a large number of employees found themselves having to work mostly from home. [1] Before 2020, only 4% of employees in Germany worked from home. A few months later, the number of home-based jobs spiked to a total of 27%. [2] In this particular context, it

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has become crucial to ensure that each individual employee has accessibility to all necessary working materials, as well as to ensure that they are accessible themselves. As a result, the implementation of a mature digitization strategy has become increasingly important. [3] With colleagues no longer being seen on a regular basis and communication channels changing, household members may now accompany individuals during their workday at home. However, this also presents new opportunities for flexibility and a better work-life balance. [4] This quantitative study aims to examine the impact of Covid-19 and the resulting shift to working from home on employee satisfaction. To achieve this, a survey will be conducted to examine various influencing factors, such as *trust culture*, *isolation*, *communication*, *flexibility*, and *working conditions*. This is based on the results of a previous qualitative study and a structured literature review. [5] The model and procedure used in the study are also presented. The obtained results, including descriptive results and findings from the structural equation model, are then presented. The results are analysed and interpreted, and limitations that need to be considered are discussed. Finally, a conclusion is drawn based on the results presented.

## 2. Theoretical background

### 2.1. Employee satisfaction

Employee satisfaction is a term that has been defined in various ways. This paper adopts the definition used in recent publications, which refers to it as "the state of mind towards the work situation." [6] The satisfaction level of an employee is determined by the extent to which their actual work situation aligns with their idealized view of it. Studies have shown that when given the freedom to choose their place of work, employees tend to be more satisfied when working from home. [7] However, if an employee only works from home occasionally, their satisfaction level is higher than if they work exclusively from home. According to research, the optimal balance is around two days of work from home per week. [8] It is important to note that the Covid-19 pandemic has changed the work landscape, and the impact of the pandemic on employee satisfaction needs to be revisited. For instance, employees who are required to work from home due to measures enacted as a result of the pandemic may experience a decrease in satisfaction if they do not work from home voluntarily. [9]

### 2.2. Culture of trust

In a remote work setting, leadership at a distance necessitates a higher level of trust. As a result, many companies are focusing on fostering a culture of mutual trust. This model is built on the notion that employees must not exploit the flexibility that comes with working from home but should instead receive fair treatment from their supervisors. According to a survey conducted by an LPP company, there is an empirical link between the availability of a remote work option and a culture of trust. [10] In addition, several studies have shown that employees' trust in their supervisors has a significant impact on their attitudes and work patterns. [11] Workers who have more confidence in their current supervisors' performance are more likely to be satisfied with the organization as a whole. Organizational trust is thus regarded as an alternative means of engaging in the decision-making process to influence employee satisfaction. [12] In conclusion, the following hypotheses can be formulated:

H0<sub>1</sub>: "If a culture of trust is practiced by the supervisor it has no impact on employee satisfaction."

H1<sub>1</sub>: "If a culture of trust is practiced by the supervisor it has an impact on employee satisfaction."

### 2.3. Isolation

In the beginning of the Covid-19 pandemic, many employees and managers were compelled to almost exclusively work from home, depriving them of direct contact with colleagues and potentially leading to social isolation. The literature often highlights the negative effects of reduced interaction, such as a decline in motivation. [13] However, while some employees may also feel socially isolated in the office due to a lack of communication, this may not be the case for those working from home. [14] Although there is a risk of social isolation and negative consequences, studies demonstrate that not all remote workers experience social or professional isolation. With

appropriate measures and organizational strategies in place, feelings of isolation can be avoided, and employee satisfaction remains unaffected. [15] In conclusion, the following hypotheses can be formulated:

H0<sub>2</sub>: “Home office isolation has an impact on employee satisfaction.”

H1<sub>2</sub>: “Home office isolation has no impact on employee satisfaction.”

#### 2.4. Communication

To support extensive remote work while maintaining effective teamwork, an increasing number of communication tools are being utilized. However, communication issues between colleagues remain a common issue. [16] Social isolation and a decrease in contact with coworkers appear to occur primarily with continuous rather than occasional home office use. [17] Nevertheless, only about a quarter of workers report inadequate contact with their teams, suggesting that this is not a significant disadvantage of home office work. [18] On a positive note, working from home can enhance the relationship between employees and managers, as it allows for greater autonomy for workers and less monitoring by supervisors. [19] Based on these observations, the following hypotheses related to communication can be formulated:

H0<sub>3</sub>: “Communication in the home office has an impact on employee satisfaction.”

H1<sub>3</sub>: “Communication in the home office has no impact on employee satisfaction.”

#### 2.5. Flexibility

Previous research has indicated that working from home can help to address various obstacles to achieving work-life balance. [20] Working from home typically allows for better time management of personal needs, and eliminates commuting time, freeing up more time for activities in one's private life. [21] However, it is important to note that there may be a higher risk of stress among mothers who work from home, as they may end up spending more time on caregiving duties compared to those who work in an office. [22] Despite this, overall research suggests that working from home can lead to increased satisfaction among parents, as it makes it easier to balance work and family life. [23] On the other hand, there are also potential negative impacts of working from home on flexibility and job satisfaction. Studies have found that remote workers tend to take on more work and end up working longer hours, which can lead to increased stress and reduced job satisfaction. [24] Based on these findings, the following hypotheses can be formulated:

H0<sub>4</sub>: “Flexibility in the home office has no impact on employee satisfaction.”

H1<sub>4</sub>: “Flexibility in the home office has an impact on employee satisfaction.”

#### 2.6. Working conditions

It is likely that many employees do not have ergonomically optimal work equipment at home, such as height-adjustable desks, back-friendly office chairs, or optimal lighting conditions. A recent empirical study conducted in 2020 found that overall satisfaction with the home office situation was high, including both work-related and personal factors. Working conditions play a crucial role in job satisfaction, as they facilitate focused and undisturbed work. [25] However, compared to the employer's on-premises office, the working environment at home often falls short. Without a designated workspace at home, the line between work and personal life can become increasingly blurred, which can compromise privacy. The quality of technical infrastructure and tools available to employees, both at the personal and company level, can significantly impact their comfort level when working from home. [26] Based on the Covid-19 pandemic, we propose the following two hypotheses:

H0<sub>5</sub>: “The given working conditions in the home office have no impact on employee satisfaction.”

H1<sub>5</sub>: “The given working conditions in the home office have an impact on employee satisfaction.”

### 3. Research method and data collection

The following conceptual model emerged from the analysis of our data, which is shown in Fig. 1.

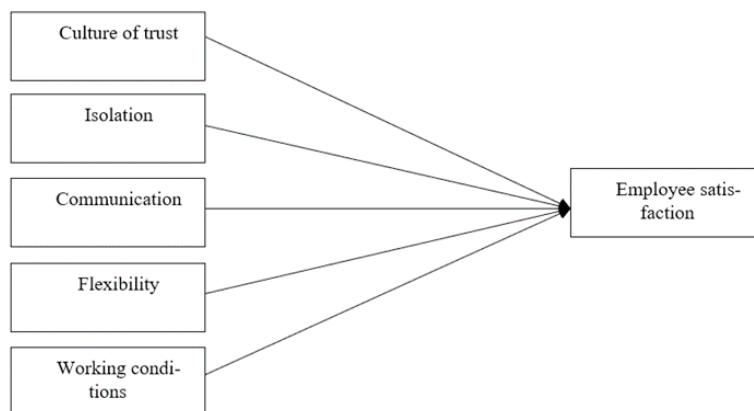


Fig. 1. Test Model.

This conceptual model was derived from the qualitative study "Impact of Covid-19 on employee satisfaction and trust with a focus on working from home - Target group: Supervisor" in connection to a structured literature review served as the basis for this study. [5] A deductive approach was used to identify different factors that influence employee satisfaction, specifically *culture of trust*, *isolation*, *communication*, *flexibility*, and *working conditions*. The research question and hypotheses were investigated through a quantitative research approach, using a web-based survey designed to conform to the research model. The survey was conducted using open-source software LimeSurvey, and a pretest was performed to assess the questionnaire's structure and consistency. The main survey, which collected all necessary data, was opened on January 14th, 2022, and concluded on February 7th, 2022, with a total of 135 participants from various companies. Incomplete responses were eliminated, resulting in a final sample size of  $n = 103$  participants. The questionnaire consisted of seven parts, with the first part requesting general information about the participants, followed by the examination of the independent variables of *culture of trust*, *isolation*, *communication*, *flexibility*, and *working conditions* in parts two to six. The dependent variable of employee satisfaction was queried in the final part. The questionnaire used a 5-point Likert scale to rate numerous items in sections two to seven. [27] The demographic aspects of the sample were also examined in the first part of the questionnaire, revealing that 50.5% of participants were female, and the majority (44%) were in the age group of 20-29 years. To investigate the impact of the Covid-19 pandemic on the opportunity to work from home, participants were asked if they had the option before the pandemic, with 55% responding negatively and 45% having already had the option. To obtain a sufficiently large sample, the survey was distributed through various channels, including email, social media, and personal contacts.

## 4. Results

### 4.1. Descriptive Statistics

In the context of descriptive statistics, the focus is on presenting noticeable results. In this study, the majority of respondents (44%) disagreed with the statement that it is more difficult to organize one's private life in the context of working from home, while 25% partially disagreed. Only 11% believed that working from home makes their daily lives more difficult to manage, and 20% chose the neutral answer option. Therefore, it can be concluded that working from home does not have a negative impact on structuring private life. To investigate the relationship between employees and their supervisors in the remote work context, the question was asked whether the relationship had declined as a result of working from home. The results showed that 11% of the respondents agreed with this argument, while 32% had not experienced any change, and 33% completely opposed this statement. Therefore, it can be concluded that more than half of the respondents did not experience any disadvantages in their relationship with their supervisors as a result of working from home. At the end of the survey, general questions

related to Covid-19 were included. The results showed that 59% of the employees were more than satisfied with the possibility of working from home during the pandemic, while 32% somewhat agreed with the statement and 7% indicated neither. Only 2% of the participants were not happy about working from home during the pandemic. Therefore, it can be concluded that for the majority of employees, working from home during the pandemic was a relief. In response to the general research question of to what extent employees feel that their satisfaction has been affected by working from home, it was found that women were more likely to report being satisfied than men, with 40% of women totally agreeing with the statement, compared to 35% of men. Differences were also found between supervisors and employees, with supervisors overall being more satisfied with working from home than employees without a leadership function. However, this could be due to the fact that fewer managers than employees participated in the survey, and thus further investigation is needed. Finally, when asked about their wishes for the future, almost all respondents (94 out of 103) preferred a hybrid work model with a dynamic rotation between the office and home office, while 8 participants preferred working from home exclusively. Only one person preferred working on the organization’s premises. Therefore, it can be concluded that there is a clear tendency towards working from home opportunities.

4.2. Structural equation model

The evaluation was conducted using the SmartPLS program. This paper focuses on five constructs (Fig. 2) and their relationship with employee satisfaction in working from home environments during the Covid-19 pandemic. The central determinants (shown in blue in the hypotheses model in the figure) are referred to as latent exogenous variables. The constructs (latent variables) are represented by the inner model and are measured by indicators (shown in yellow). Various relations are depicted, including those between the latent exogenous variables and the latent endogenous variable, as well as between the latent variables and their indicators. In this reflexive model, the indicators are intended to fully describe the constructs, assuming that they represent the truth. Thus, eliminating indicators should not change the construct's statement. [31] Some indicators were eliminated in the final model due to their quality, with the main consideration being a T-value (explained below) of above 1.96 in conjunction with the latent variable. If many indicators had a T-value below this value for a construct, the ones closest to 1.96 were selected to stay. The best combination for each construct was created after various runs. Trust culture, isolation, flexibility, and working conditions were each described by two indicators. For communication, the general item was used as the indicators described the construct more weakly.

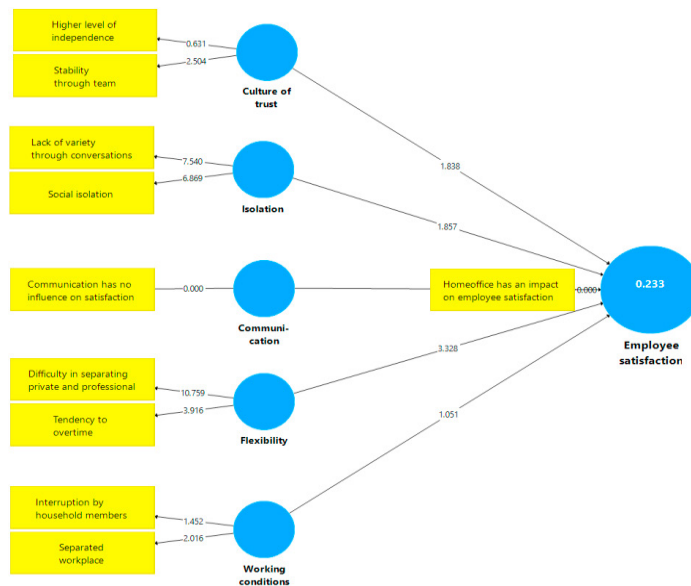


Fig. 2. Structural equation model.

The R-Square (Original sample) accounts for a sufficient model. The value ranges from 0.19 (weak) to 0.66 (substantial), whereas the mean is 0.33. The coefficient of determination R<sup>2</sup> of this model is 0.233. Therefore, while being acceptable, it is still located in the weak range. [32]

Table 1. Reliability and validity results.

	Composite reliability	Average of variance extracted
Communication	1.000	1.000
Culture of trust	0.616	0.506
Employee satisfaction	1.000	1.000
Flexibility	0.782	0.643
Isolation	0.870	0.770
Working conditions	0.090	0.623

The values in Table 1 show different quality criteria for reliability (CR) as well as for validity (AVE). In terms of reliability, all constructs except for culture of trust and working conditions exceed the threshold value of 0.70 recommended in the literature. ON the other hand, all constructs achieve a validity value greater than the recommended range of > 0.5. [30]

Table 2 displays the findings of the bootstrapping analysis. [32] The standard deviation measures the dispersion of characteristics and has a mean value of 0,0996. The constructs culture of trust and isolation have values closest to the mean, whereas working conditions has the farthest value. The P-Value of  $P < 0.1$  indicates a significant influence of the latent exogenous variables on the latent endogenous variable. The T-Values are significant at  $T > 1.96$ . [30] Flexibility has a high level of significance with a P-Value of  $\leq 0.01$ , communication is normally significant with a P-Value of  $\leq 0.05$ , and isolation and trust culture are low in significance with a P-Value of  $\leq 0.1$ . However, only the constructs of communication and flexibility have T-values above 1.96 and are thus significant. The constructs of trust culture and isolation have values close to the threshold. The construct of working conditions has a T-value that is far below the threshold, but a P-Value above 0.1. Therefore, this construct is not significant. Consequently, hypotheses 1 to 4 are confirmed, and only hypothesis 5 is rejected.

Table 2. Bootstrapping results.

	Standard deviation	T-Statistic	P-Values
Communication	0.086	2.290	0.022
Culture of trust	0.104	1.838	0.067
Flexibility	0.086	3.328	0.001
Isolation	0.104	1.857	0.064
Working conditions	0.118	1.051	0.294

## 5. Discussion

The results of the study confirm the positive influence of the constructs *culture of trust* and *flexibility* on employee satisfaction in working from home contexts, even during the Covid-19 pandemic. These findings are consistent with previous research conducted outside of crisis events (as discussed in Section 2). Surprisingly, the factor *isolation* had no effect on employee satisfaction, despite a negative impact being expected during the current situation. The availability of supervisors had the greatest positive impact on the factor *communication*. Furthermore, the study found no effect of the construct *working conditions* on employee satisfaction. The Covid-19 crisis has created new challenges for companies and their employees, and this study highlights the impact of home office on employee satisfaction and trust. To maintain this satisfaction and trust, it is important to ensure that employees working from home receive the same level of information as those working face-to-face. Technical aids should be used for the exchange of information, in addition to regular jour fixes and task-related communication via e-mail,

telephone or video telephony. Moreover, supervisors should offer coaching to employees facing remote work-related problems. It is recommended that the option of working in a home office be retained even after the Covid-19 crisis. However, the model presented in this study is not exhaustive and there may be other constructs that impact employee satisfaction in the home office during the Covid-19 crisis. Future research should focus on a specific target group and use a more equally distributed sample based on position in the company. A longitudinal study would be useful to complement the cross-sectional study design of this research. Lastly, exploring the impact of home office on employee satisfaction post the Covid-19 pandemic would be an interesting avenue of research.

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## References

- [1] Kunze F, Hampel K, Zimmermann S (2020) Homeoffice in der Corona-Krise: Eine nachhaltige Transformation der Arbeitswelt? Policy Paper:1–10.
- [2] Hans Böckler Stiftung (2021) Studien zu Homeoffice und mobiler Arbeit. <https://www.boeckler.de/de/auf-einen-blick-17945-Auf-einen-Blick-Studien-zu-Homeoffice-und-mobiler-Arbeit-28040.htm>. Accessed 18 March 2023.
- [3] Härtling R, Reichstein C, Jozinovic P (2017) The Potential Value of Digitization for Business – Insights from German-speaking Experts. Eibl M, Gaedke M.: Informatik.
- [4] Lengen JC, Kordsmeyer A-C, Rohwer E, Harth V, Mache S (2020) Soziale Isolation im Homeoffice im Kontext der COVID-19-Pandemie: Hinweise für die Gestaltung von Homeoffice im Hinblick auf soziale Bedürfnisse. *Zentralbl Arbeitsmed Arbeitsschutz Ergon*: 63–68.
- [5] Härtling R-C, Kadriu F, Kleemann J et al. (2021) Impact of COVID-19 on employee satisfaction and trust with focus on working from home - Target Group: Supervisor.
- [6] Weiss HM (2002) Deconstructing job satisfaction. *Human Resource Management Re-view* 12:173–194.
- [7] Wheatley D (2017) Employee satisfaction and use of flexible working arrangements. *Work, Employment and Society* 31:567–585.
- [8] Golden TD, Veiga JF (2005) The Impact of Extent of Telecommuting on Job Satisfaction: Resolving Inconsistent Findings. *Journal of Management* 31:301–318.
- [9] Ahlers E, Mierich S, Zucco A (2021) Homeoffice: Was wir aus der Zeit der Pandemie für die zukünftige Gestaltung von Homeoffice lernen können, *WSI Report* 65: 1-34.
- [10] Arnold D, Kampkötter P, Steffes S (2016) Homeoffice als Herausforderung für die Mitarbeiterführung. *PERSONAL quarterly – Wissenschaftsjournal für die Personalpraxis* 68:8–13.
- [11] Nakrošienė A, Bučiūnienė I, Goštautaitė B (2019) Working from home: characteristics and outcomes of telework. *International Journal of Manpower* 40:87–101.
- [12] Driscoll JA (1978) Trust and Participation in Organizational Decision-Making as Predictors of Satisfaction. *Academy of Management Journal* 3:44–56.
- [13] Morganson VJ, Major DA, Oborn KL et al. (2010) Comparing telework locations and traditional work arrangements. *Journal of Managerial Psychology* 25:578–595.
- [14] Golden TD, Veiga JF, Dino RN (2008) The impact of professional isolation on teleworker job performance and turnover intentions: does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter? *Journal of Applied Psychology* 93:1412–1421.
- [15] Bentley TA, Teo STT, McLeod L et al. (2016) The role of organisational support in teleworker wellbeing: a socio-technical systems approach. *Applied Ergonomics* 52:207–215.
- [16] Cooper CD, Kurland NB (2002) Telecommuting, professional isolation, and employee development in public and private organizations. *Journal of Organizational Behavior* 23:511–532.
- [17] Biemann T, Weckmüller H (2015) Change-Prozesse erfolgreich steuern und Veränderungsbereitschaft fördern. *Personalquarterly*.
- [18] Grunau P, Ruf K, Steffes S et al. (2019) Mobile Arbeitsformen aus Sicht von Betrieben und Beschäftigten: Homeoffice bietet Vorteile, hat aber auch Tücken. *Institut für Arbeitsmarkt- und Berufsforschung* 11/2019: 1-12.
- [19] Gajendran RS, Harrison DA (2007) The good, the bad, and the unknown about telecommuting: meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology* 92:1524–1541.
- [20] Hill E, Ferris M, Martinson V (2003) Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office) influence aspects of work and personal/family life. *Journal of Vocational Behavior* 63:220–241.
- [21] Messenger J, Llave Vargas O, Gschwind L et al. (2017) Working anytime, anywhere. The effects on the world of work. *Publications Office of the European Union*.

- [22] Samtleben C, Lott Y, Müller K-U (2020) Auswirkungen der Ort- Zeit-Flexibilisierung von Erwerbsarbeit auf informelle Sorgearbeit im Zuge der Digitalisierung: Expertise für den Dritten Gleichstellungsbericht der Bundesregierung.
- [23] Bonin H, Eichhorst W, Kaczynska, J, Kümmerling J, Rinne U, Scholten A, Steffes S (2020) Verbreitung und Auswirkungen von mobiler Arbeit und Homeoffice: Kurzexpertise. Social Science Open Access Repository: 1-153.
- [24] Brenke K (2016) Home Office: Möglichkeiten werden bei weitem nicht ausgeschöpft. [https://www.diw.de/documents/publikationen/73/diw\\_01.c.526038.de/16-5-1.pdf](https://www.diw.de/documents/publikationen/73/diw_01.c.526038.de/16-5-1.pdf). Accessed 15 Feb 2023.
- [25] Nippa M (2020) Zufriedenheit und Effizienz im Homeoffice während des Covid-19-Lockdowns: Ergebnisse einer empirischen Studie in Südtirol im Frühjahr 2020. Freie Universität Bozen, Bozen.
- [26] Hill EJ, Miller BC, Weiner SP et al. (2006) Influences of the virtual office on aspects of work and work/life balance. *Personnel Psychology*:669.
- [27] Weiber R, Sarstedt M (2021) *Strukturgleichungsmodellierung*, 3rd edition. Springer Fachmedien, Wiesbaden.
- [28] Gazem M, Härtig R, Schneider A, Reichstein C (2023) Impact of Covid-19 on employee satisfaction and trust with focus on working from home. In: Jezic, G., et. al. (eds) *Agents and Multi-Agent Systems: Technologies and Applications*. Smart Innovation, Systems and Technologies. Springer.
- [29] Weiber R, Mühlhaus D (2014) *Strukturgleichungsmodellierung: Eine anwendungsorientierte Einführung in die Kausalanalyse mit Hilfe von AMOS, SmartPLS und SPSS*, 2. Aufl. Springer-Lehrbuch. Springer Berlin Heidelberg, Berlin, Heidelberg.
- [30] Hair JF, Hult GTM, Ringle CM et al. (2017) *A primer on partial least squares structural equation modeling (PLS-SEM)*, 2nd edition. SAGE, Los Angeles, London, New Delhi, Singapore, Washington DC, Melbourne.
- [31] Garson GD (2016) *Partial Least Squares: Regression and Structural Equation Models*. Statistical Associates Publisher.
- [32] Chin W (1998) *The partial least squares approach to structural equation modeling*.