Understanding Virtual Onboarding Dynamics and Developer Turnover Intention in the Era of Pandemic

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ABSTRACT

This study examines the dynamics of virtual onboarding (VO) for Salesforce Commerce Cloud developers during the COVID-19 pandemic in a multinational software company. The newly developed Virtual Integration and Retention Framework (VIRF), which provides an improved understanding of VO, customized to the opportunities and challenges presented by the pandemic, is the fundamental concept of this study.

A two-staged, higher-order constructed (HOC) quantitative research approach was used for the study, revealing a negative relationship between VO success and the challenges brought on by the pandemic. This emphasizes how difficult it can be to transition to remote work settings, especially regarding how operational effectiveness and employee well-being interact.

Furthermore, the study demonstrates the positive connection between VO success and the delivery of technology and equipment during the pandemic. This result emphasizes how important logistical support is to the effectiveness of remote work arrangements. The study's key findings show positive impact of successful VO on developers' job satisfaction and workplace relationship quality (WRQ). Strong VO practices are essential to improve employee retention, as evidenced by the inverse correlation between these factors and turnover intentions. The study uses mediation analysis, with job satisfaction and WRQ acting as mediators, to further clarify how VO success influences turnover intentions.

This study offers an in-depth understanding of VO practices during the pandemic. It discusses the future of remote work and onboarding procedures while navigating the immediate difficulties caused by the outbreak. The study emphasizes how important VO is for improving WRQ, decreasing turnover intentions of developers within the software company, and improving job satisfaction. These insights benefit organizations trying to improve developer integration and retention in changing work environments and improve their remote work strategies.

1. . Introduction

In recent years, the modern workplace has undergone profound transformations due to the swift progression of technology and society's ever-changing standards. Significant organizational practices have transformed employee well-being and environmental responsibilities due to the proliferation of remote work and digital tools, which the global health crisis of COVID-19 has further propelled (Adeniji et al., 2018; Eriksson et al., 2022).

The advent of the COVID-19 pandemic in 2019 forced organizations to transition to remote operations, resulting in significant consequences for both the personal and professional spheres (El Keshky et al., 2020). The sudden change in circumstances compelled organizations to

reassess their approaches to team dynamics and collaboration (Leonardi, 2021).

Given unforeseen obstacles, companies improved their online visibility and customer interaction. Remote work was less common before the pandemic and was predominantly employed in specialized positions or sectors (Raj et al., 2022; Shabir and AlBishri, 2021). On the contrary, the advent of the pandemic revolutionized remote work, exposing its inherent possibilities and obstacles (Błaszczyk et al., 2022). A notable barrier encountered was the process of virtually familiarizing personnel with the organization, specifically in industries such as software development that rely heavily on efficient team collaboration (Britto et al., 2018; Pavlina, 2020; Rodeghero et al., 2021).

1.1. Research questions and significance of the study

This study addresses critical questions in the context of the impact of the pandemic on remote work.

- How do remote work conditions influence the effectiveness of virtual onboarding during the pandemic?
- What is the relationship between the success of virtual onboarding and the likelihood that developers hired during the pandemic leave the company?
- How are the elements of successful virtual onboarding linked to the decisions of Salesforce Commerce Cloud Developers to remain on or leave a global software company?

The significance of the study is derived from investigating the relationship between virtual onboarding and turnover intentions during the pandemic, employing a quantitative research methodology. The study presents a novel theoretical framework that enriches the understanding of the complexities associated with virtual onboarding, making a substantial contribution to the existing body of literature. We study virtual onboarding success through combining multiple factors, including role clarity (Rizzo et al., 1970), self-efficacy (Schwarzer et al., 1995), social integration (Price et al., 1986), knowledge of culture (Li et al., 2000; Bavik, 2016), and perceived virtual onboarding experience (Sharma and Stol, 2020; Hayter, 2021). We treat these factors as lower-order constructs that make up a higher-order construct called virtual onboarding success, and by doing this, we increase the explanatory power of the Virtual Integration and Retention Framework that we propose. We also investigate additional factors that were specific to and significant during the COVID-19 pandemic. These additional factors include the logistics and delivery of technology, and developers' concerns relating to the pandemic. Evidence from literature shows that these factors have not been jointly used in the same explanatory model before.

Gaining insight into the correlation that exists between effective virtual onboarding and employee turnover intention has the potential to produce significant advantages for organizations. Using the findings obtained from this research can facilitate the enhancement of recruitment and hiring tactics, resulting in financial savings and increased employee retention and productivity (Bauer and Erdogan, 2011).

2. Literature review and theoretical framework

The need to realign the onboarding process for remote work has been catalyzed by the rapid and ubiquitous transition to virtual environments, which accelerated due to the global COVID-19 pandemic. The notion of onboarding before the pandemic centered on physical presence and face-to-face interaction, has been replaced by the need for virtual integration strategies that navigate the absence of a shared workspace (Adeniji et al., 2018; Eriksson et al., 2022). This shift reflects a broader trend toward digitization and remote work, which, while gaining momentum over recent years, was propelled to the forefront by the pandemic (Leonardi, 2021; Shabir and AlBishri, 2021).

The pandemic has highlighted the persistent challenge of software developer turnover, which impacts the continuity and success of complex projects (Byrd et al., 2004; Gorla and Lam, 2004). The loss of skilled developers can lead to knowledge gaps and financial strain, emphasizing the critical role of effective onboarding practices in retention(DeMarco and Lister, 2013; Foucault et al., 2015). During the pandemic, the rapid deployment of remote work infrastructures brought unique challenges, necessitating a fresh examination of onboarding frameworks to ensure they remain relevant and effective in a virtual context (Leonardi, 2021) (Fig. 1).

2.1. Pandemic concerns

Several issues were directly affected by the emergence of the COVID-19 pandemic, including the nature of work and the well-being of the employees. The sudden transition to remote work is one of the most consequential. As organizations adjusted, the difficulties associated with maintaining efficiency and ensuring effective communication emerged. Personnel faced challenges in harmonizing their personal and professional lives, including the absence of a designated workspace and the possibility of increased work-related stress resulting from the indistinct separation between the workplace and their home (Leonardi, 2021). In addition, the mental health of employees has become a critical issue due to social isolation and the lack of direct assistance from colleagues and managers. These factors could negatively affect job performance and satisfaction (Shabir and AlBishri, 2021).

Furthermore, in times of uncertainty, the pandemic highlighted the importance of addressing personnel's well-being and safety requirements. Organizations faced the dual responsibility of facilitating a seamless transition to remote operations while ensuring their workforce felt adequately supported through policies and practices promoting physical and mental wellness. This involved ensuring consistent communication, providing wellness resources, and offering flexible work arrangements to accommodate the diverse circumstances of the employees. The importance of human resources increased significantly due to the unprecedented pressure to develop strategies that could mitigate concerns caused by the pandemic and promote a perception of stability during the outbreak (Leonardi, 2021; Shabir and AlBishri,
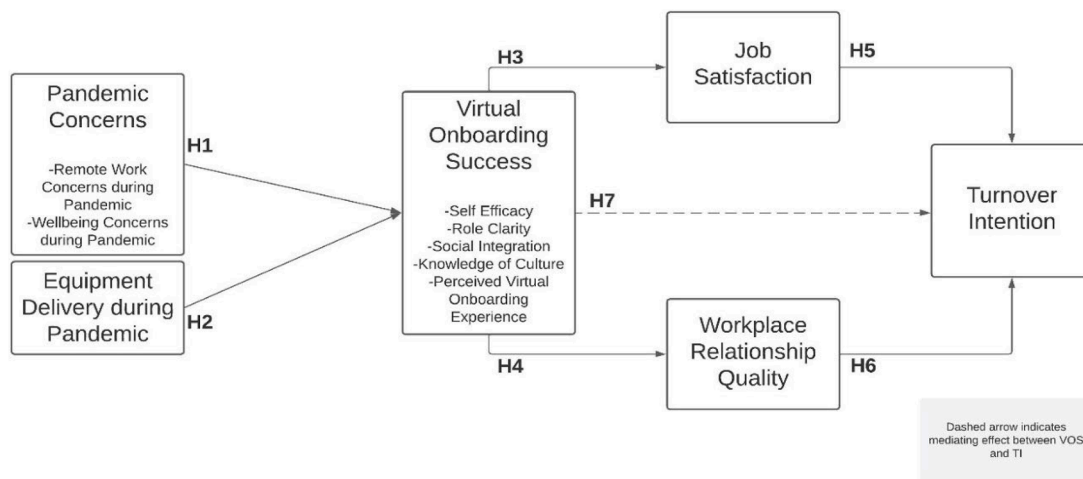

Fig. 1. Virtual Integration and Retention Framework.

2021). The issues surrounding the pandemic have caused significant changes in the workplace, underscoring the importance of effective virtual onboarding procedures that can seamlessly acclimate new employees to this transformed workplace.

2.2. Technology/Equipment delivery during the pandemic

The conventional work environment was drastically transformed by the COVID-19 pandemic, which brought a rapid shift to remote work and required an unmatched emphasis on the provision of technology and equipment. As organizations managed this sudden transition, ensuring that developers had access to essential hardware and software became critical to maintaining operations in a remote setting. Pavlina (2020) emphasizes this necessity, highlighting the importance of providing remote workers with sufficient resources to enhance their immediate productivity and foster sustained engagement in their new work environment. The achievement of this logistical endeavor signified not only practicality but also an organization's dedication to its employees amidst a crisis.

Integrating digital and information and communication technologies (ICTs) gained a crucial role in the proliferation of remote work (Battisti et al., 2022). However, the undertaking was not free from obstacles. Organizations were forced to quickly modify their information technology infrastructures to integrate novel security protocols and ensure consistent access to digital resources. Amid the challenges posed by the COVID-19 pandemic, this digital revolution has generated fears regarding the financial and economic implications for employees, specifically regarding the efficacy of technology integration in their remote work settings (Dalton and Groen, 2022).

2.3. Virtual onboarding success (VOS) and its sub-factors

In adapting to the challenges posed by the COVID-19 pandemic, virtual onboarding success (VOS) has evolved significantly, including various factors crucial for effectively integrating new employees in a remote work setting. Building upon Bauer's "Four C's" framework, *Compliance, Clarification, Culture,* and *Connection*, the VOS within the Virtual Integration and Retention Framework (VIRF) incorporates key aspects such as self-efficacy, role clarity, social integration, and knowledge of culture (Bauer and Erdogan, 2011). Furthermore, the VIRF model introduces a novel element, the "perceived virtual onboarding experience," to capture the unique dynamics of onboarding during the pandemic.

Self-efficacy in VOS reflects the confidence of new employees in their ability to perform their job roles successfully, especially in a remote setting. This factor determines how effectively new employees adapt to the virtual work environment. High levels of self-efficacy are associated with better job performance and greater initiative-taking, which are critical in remote settings where direct supervision is limited (Bauer and Erdogan, 2011).

Clarity of the role ensures that new employees comprehensively understand their job responsibilities and how they contribute to the organization's objectives. This becomes even more crucial in a virtual setting due to the lack of physical presence and immediate feedback. Clear and consistent communication about job roles and expectations is essential to prevent confusion and help new employees integrate smoothly into their roles (Bauer and Erdogan, 2011).

Social integration focuses on developing connections and fostering a sense of belonging among remote employees. This aspect of VOS involves creating opportunities for new hires to build relationships and engage with their colleagues and supervisors, which can be challenging in a virtual environment. Activities such as virtual team-building exercises and regular online meetups can help bridge the physical distance and promote a sense of community (Bauer and Erdogan, 2011).

Knowledge of the organizational culture involves acclimatizing new employees to the company's values, norms, and practices. In virtual onboarding, conveying the essence of the company's culture requires creative approaches, such as virtual orientation and culture-focused discussions, to ensure that new hires can align and contribute to the organizational ethos (Bauer and Erdogan, 2011).

The perceived virtual onboarding experience reflects how new hires view and value their onboarding experience in a remote setting. This factor encompasses the general satisfaction of new employees with the virtual onboarding process, including the accessibility of resources, the effectiveness of communication channels, and the level of support received. It is a critical measure of the success of virtual onboarding initiatives and their impact on the integration and retention of new hires.

The Virtual Onboarding Success (VOS) construct within the Virtual Integration and Retention Framework (VIRF) differentiates itself from traditional and newly researched virtual onboarding concepts through its comprehensive and detailed approach. Unlike many studies in traditional onboarding, which often focus on specific aspects of employee integration, our VOS provides a more holistic and in-depth overview of the onboarding process. It encompasses a variety of factors that are particularly relevant in the context of remote work and the unique challenges brought about by the COVID-19 pandemic.

Furthermore, compared to existing models in the domain of virtual onboarding, the VOS within the VIRF model stands out due to its extensive details and the breadth of its exploration. By incorporating a more comprehensive array of variables and delving deeper into each aspect through a comprehensive set of questions, the VOS offers a richer and more nuanced understanding of virtual onboarding. This approach allows for a more detailed examination of how various elements, including self-efficacy, role clarity, social integration, and culture knowledge, as well as the newly added perceived virtual onboarding experience, interact to influence the overall success of onboarding in a remote setting.

In summary, the inclusion of the VOS in our VIRF model constitutes a substantial advancement in the domain of onboarding research. This research not only surpasses the limitations of conventional onboarding studies but also offers a more comprehensive and intricate viewpoint compared to the existing knowledge on virtual onboarding. By adopting this comprehensive approach, the VOS framework is guaranteed to be adequately prepared to tackle the intricacies and ever-evolving dynamics of onboarding within the swiftly evolving work domain.

2.4. Job satisfaction (JS) and workplace relationship quality (WRQ)

In the context of remote work environments, Job Satisfaction (JS) and Workplace Relationship Quality (WRQ) hold significant importance, as they continue to play a pivotal role in influencing an employee's commitment and likelihood to remain with the company. These constructs are essential indicators of the success of virtual onboarding practices and have been consistently linked to employee retention and overall organizational health (T. N. Bauer and Erdogan, 2011).

Job satisfaction is a critical component of employee well-being and organizational performance. It reflects an employee's contentment with their job role, work environment, and overall experience within the organization. Factors contributing to job satisfaction in remote work settings differ from those in traditional office settings. Research indicates that elements such as the flexibility to manage one's work-life balance, the availability of remote work tools and resources, and effective communication channels play a significant role in determining job satisfaction among remote employees(Ahmed and Jafir, 2022). Furthermore, job satisfaction is closely related to an employee's perception of their job autonomy and the extent to which they can independently manage their tasks and responsibilities(Zhuang and Pan, 2022).

Workplace Relationship Quality (WRQ) encompasses the quality of interactions and relationships employees have with their colleagues, supervisors, and peers in a remote work environment. Maintaining

strong workplace relationships in a virtual environment presents unique challenges compared to traditional in-person settings. Research by Shockley et al. (2021) suggests that remote employees who engage in frequent and high-quality communication with their colleagues and supervisors tend to report higher levels of WRQ. Furthermore, using collaborative tools and platforms that facilitate informal interactions and team bonding can contribute positively to WRQ in remote settings (English, 2022; Errichiello and Pianese, 2021).

The COVID-19 pandemic has significantly altered how remote work environments perceive job satisfaction and work relationships. This shift underscores the importance attributed to remote support systems and work-life balance in relation to job satisfaction. Additionally, high-quality workplace relationships directly impact employee engagement and well-being in virtual environments. In summary, a comprehensive understanding of the distinct dynamics between job satisfaction (JS) and workplace relationship quality (WRQ) is imperative to improve virtual onboarding procedures and employee retention, as these factors are critical to the well-being of employees and the achievement of organizational objectives in the context of remote work.

2.5. Turnover intention

The intention of employees to leave the organization, commonly referred to as the intention to change, has received significant attention in the field of onboarding research. Understanding the factors that influence turnover intention has become especially critical during the COVID-19 pandemic as organizations grapple with the challenges of maintaining stability and continuity in predominantly remote work environments (T. N. Bauer and Erdogan, 2011)

Remote work has introduced unique dynamics into the landscape of intention to turnover. This research underscores that the pandemic has increased organizations' need to address turnover intentions proactively. The shift to remote work has raised questions about job security and career progression, which can significantly impact an employee's intention to stay or leave (Sharma and Stol, 2020).

Moreover, workplace relationships play a central role in shaping turnover intention in remote settings. The quality of relationships with colleagues and supervisors can influence an employee's sense of belonging and attachment to the organization, ultimately affecting their decision to stay or depart (Wang et al., 2021).

Employee retention and the intention to leave are distinct yet interconnected concepts in the organizational context. Retention refers to the rate at which employees remain with a company over time and the strategies employed to keep them, indicating the organization's ability to maintain its workforce. Conversely, employee turnover, or the intention to leave, encompasses employees' decisions to leave the company, whether voluntary or involuntary. Effective virtual onboarding plays a critical role in influencing both these aspects (Holliday, 2023).

In the context of our research on virtual onboarding, the concepts of 'retention' and 'intention to leave' are intrinsically linked and used to assess the effectiveness of onboarding strategies in the current remote work environment. Employee retention, in this case, refers to the organization's success in maintaining its workforce over time, a key indicator of effective onboarding processes (Holliday, 2023). On the other hand, the 'intention to leave' reflects the employees' likelihood of seeking opportunities outside the organization, often as a response to inadequate onboarding experiences (Yarbrough and Ramos Salazar, 2023).

Effective virtual onboarding positively influences employee retention by fostering a sense of belonging, role clarity, and organizational culture knowledge. Conversely, shortcomings in the virtual onboarding process can heighten employees' intention to leave, marked by feelings of disconnection, lack of clarity, and dissatisfaction (Holliday, 2023; Yarbrough and Ramos Salazar, 2023).

Thus, in our study, these concepts provide a comprehensive understanding of how virtual onboarding during the pandemic impacts employee retention and turnover dynamics within the organization.

2.6. Proposed hypotheses and VIRF

Based on the existing body of literature, the Virtual Integration and Retention Framework (VIRF) presents the following hypotheses:

H1. Pandemic concerns negatively impact virtual onboarding success.

H2. Effective technology/equipment delivery during the pandemic positively influences virtual onboarding success.

H3. Virtual onboarding success positively impacts job satisfaction.

H4. Virtual onboarding success positively impacts workplace relationships.

H5. Higher job satisfaction is associated with lower turnover.

H6. Higher quality of workplace relationships associated with lower intention of turnover.

H7. Job satisfaction and workplace relationship quality will mediate the relationship between virtual onboarding success and turnover intention.

The VIRF model seeks to provide an in-depth understanding of the virtual onboarding process and its crucial importance in maintaining employee retention amidst an era of exceptional global disruption. The present study aims to improve the existing knowledge about remote work and the developer onboarding process within a global pandemic by investigating these hypotheses. The Virtual Integration and Retention Framework (VIRF) has been developed to methodically examine three fundamental research questions about virtual onboarding in the context of the pandemic.

- How do the conditions of working from home impact the effectiveness of virtual onboarding?
- How is the likelihood that developers hired during the pandemic leave the company related to the success of their virtual onboarding?
- From a theoretical perspective, how closely are the elements of successful virtual onboarding linked to the decisions of Commerce Cloud Developers to stay or depart from a global software company?

The Virtual Integration and Retention Framework (VIRF) in our research represents a focused exploration into the nuances of remote work dynamics during the pandemic, particularly in the context of virtual onboarding. Unlike Sharma's model, which primarily examines the impact of traditional onboarding activities on turnover intention through job satisfaction and workplace relationship quality, VIRF delves deeper into the specific challenges and transformations brought about by the pandemic. It assesses factors such as technological accessibility, work-life balance, and pandemic-induced uncertainties, which have become increasingly relevant in the remote working environment.

VIRF stands out in its approach by employing mediators to uncover the underlying patterns and indicators that influence software developers' decisions to stay with or leave their employers. This is conducted through an extended and comprehensive questionnaire designed to capture a broader spectrum of experiences and insights related to virtual onboarding success (VOS) under pandemic conditions. The framework's emphasis on pandemic-specific challenges and its detailed analysis through unique mediators distinguishes it from traditional onboarding models, offering fresh perspectives and deeper insights into the evolving dynamics of virtual onboarding and employee retention during this unprecedented period.

The framework will provide insight into the complicated decision-

making process by conducting a comprehensive investigation to understand the relationship between onboarding processes, organizational objectives, and individual career expectations.

The Virtual Integration and Retention Framework (VIRF) aims to understand virtual onboarding during the pandemic comprehensively. It covers the managerial, psychological, and theoretical aspects of virtual integration and retention, making it a valuable resource for researchers, practitioners, and organizations navigating the evolving landscape of remote work, specifically in the IT sector.

3. Research methodology

3.1. Scope and generalizability of the case study

The central focus of this research on recruiting Commerce Cloud developers within a multinational corporation during the pandemic might raise questions about the generalizability of the results to a broader context. However, it is essential to recognize the value of this specific focus. Previous research has demonstrated that examining particular subgroups within multinational enterprises can provide valuable insights into intricate social mechanisms more broadly relevant to the specific context and international organizations (Regnér and Zander, 2011). These targeted studies have practical implications for selection interviews, performance reviews, and cross-cultural training within international organizations (Harzing et al., 2009).

Moreover, it is crucial to understand that using a case study methodology in this study serves as a means of specific exemplification rather than a generalization. The academic literature supports the idea that case studies excel at providing context-specific findings, which are invaluable both for the development of theoretical frameworks and for the implementation of practical strategies (Flyvbjerg, 2006; Yin, 2018). Stake (1995) highlighted the inherent significance of case studies in understanding specific scenarios and offers unique insights often overlooked in broader-scale investigations. Therefore, selecting a specific case company in this study should not be viewed as a constraint but rather as an advantage that enables a comprehensive and intricate understanding of the processes under investigation. It is essential to distinguish between the potential limitations of generalizability and the valuable context-specific lessons that can be derived from this case study, which contribute to the richness of the research (Harzing et al., 2009; Regnér and Zander, 2011; Yin, 2018).

In this study, we employ an instrumental case study with quantitative analysis approach to look at the hypotheses of the Virtual Integration and Retention Framework (VIRF). Instrumental case studies use a particular case to gain a better understanding of an issue or phenomenon (Crowe et al., 2011). By seeking to understand the onboarding success and turnover intention of developers during the pandemic through this model, we aim to generate findings that could be transferable to other organizational contexts, professional roles, or global events in which virtual onboarding processes take place.

3.2. The case company

The research centers on a multinational company established in 2003 with headquarters in Canada and Romania. The company specializes in software development for global commerce and digitalization, offering solutions for various sectors, including B2C and B2B commerce. Its global presence and industry recognition make it an ideal case for virtual onboarding during the pandemic.

The case company employed hybrid (both in-person and virtual) onboarding practices before the pandemic. At the time of publication of this study, the case company have been using virtual onboarding practices only, which is a shift from the pre-pandemic era.

3.3. Understanding the commerce cloud developers' virtual onboarding procedure

In the case of the company's virtual onboarding procedure for Commerce Cloud developers, new hires undergo a critical three-month probation period where their performance is closely evaluated. Failure to meet performance requirements during this period can lead to contract termination. Before the COVID-19 pandemic, the organization followed a hybrid work structure, allowing employees to choose between working from home or in the office. However, pandemic-related restrictions forced a complete shift to remote onboarding. Previously, employees near company offices could collect work equipment and complete the orientation with HR in person. Despite this change, the modified remote onboarding process aims to maintain the effectiveness of employee integration.

The onboarding process starts with the IT department contacting new developers at least one week before their official start date to expedite the shipment of necessary equipment. On the first day, structured activities include remote configuration of work equipment by IT, formal onboarding by HR, and a three-day orientation program. Days 3 to 5 involve assigning a technical trainer who customizes the training based on the developer's role. From days 6 to 10, trainees participate in cloud-based commerce learning modules with evaluations. Days 11 to 30 focus on learning materials and practical exercises, with mandatory attendance at scrum meetings. Between days 31 and 40, an experienced developer mentors new hires, conducting code evaluations and revisions. Project integration begins after day 40, with the timeline varying based on the developer's skills. This structured orientation and training process typically takes around 55–65 days for junior developers before they are fully onboarded into projects. In addition, their mentors keep close track of their mentees, who are newly hired developers, for at least three more months to ensure their success in the project tasks and to complete the whole remote onboarding process.

3.4. Ethical considerations

The research adheres to strict ethical protocols, including obtaining ethical approval from the institution's Ethics Committee, securing consent from the case company through a Nondisclosure Agreement (NDA), and ensuring informed consent from survey participants. Anonymity and data protection measures are also in place to safeguard participants' rights and privacy.

3.5. Instrumentation

The current study includes 47 measurement items that were adapted from the literature. Meanwhile, minor textual changes were made to the items to improve their suitability in the research setting. The survey used a five-point Likert scale, with "1″ representing "strongly disagree" and "5″ representing "strongly agree." All 47 items were made compulsory to answer to prevent missing data. In terms of attention-check items, three questions (RC1, WB1, WB3) were written in reverse. Appendix A contains survey instrumentation and references

3.6. Data collection

Data for this study were gathered through an online survey on Microsoft Forms, a platform used by the case company for internal surveys. We contacted developers hired during the pandemic, specifically those who began working between February 2020 and June 2022. This time frame is because the company's virtual onboarding process typically lasts six months during a developer's tenure.

We initially identified 180 eligible developers to participate in the survey. However, five developers left the company before the survey could be conducted, leaving us with 175 potential participants. To ensure the survey questions were clear and comprehensive, we piloted

the survey with five developers from different countries and incorporated their feedback. The pilot survey also helped us assess the readability and length of the questionnaire, which turned out to be acceptable to the respondents.

Actual data collection occurred from November 7, 2022, to November 21, 2022. We sent individual invitation emails to 175 developers explaining the purpose of the study and asking for their participation. We followed up with three reminders during this period. Finally, we received 150 responses out of the 175 invitations sent. Survey questions were administered anonymously and allowed participants to respond at their convenience, ensuring honest and accurate responses (Al-Anezi and Alajmi, 2021).

3.7. Data analysis methodology

We used a powerful statistical technique known as structural equation modeling (SEM) (SmartPLS GmbH, 2023) to analyze the data collected for this study. SEM is a sophisticated method used to examine relationships between variables to confirm existing theories and explore new ones. It allows us to dig deeper into the structural relationships between measured variables and latent constructs, making it a versatile tool for research.

3.7.1. The pls method

Within SEM, we specifically used the Partial Least Square (PLS) method (Harlianto and Rudi, 2023). PLS suits our research well because it can handle reflective and formative variables within complex models. Reflective variables are influenced by their underlying constructs, while formative variables define them. PLS provides the flexibility needed for our study compared to traditional SEM methods based on covariance analyses.

3.7.2. Hierarchical component models in PLS

In our analysis, we adopted the Hierarchical Component Model (HCM) concept within PLS (Pico-Saltos et al., 2023). HCMs simplify complex models by introducing higher-order constructs that encapsulate lower-order constructs. For example, we conceptualized 'Virtual Onboarding Success' as a higher-order construct, including lower-order constructs like 'Self-Efficacy,' 'Role Clarity,' 'Knowledge of Culture,' 'Social Integration,' and 'Perceived Virtual Onboarding Experience.' This simplification allows for a more streamlined analysis, reducing the number of relationships to examine.

3.7.3. Statistical analysis and hypothesis testing

Our statistical analysis involved evaluating the strength and direction of the relationships between variables using path coefficients (β). To test the significance of these relationships, we used a one-tail significance test (P) and bootstrapping, a resampling method to estimate the distribution of statistics (Mohammadi et al., 2022). The relationships were considered statistically significant if the p-values were less than 0.05 and the t-values exceeded 1.96.

Our data analysis employed SEM with the PLS method utilized HCM for simplification, and rigorously tested hypotheses to draw meaningful conclusions from the research data(Sarstedt et al., 2020). This approach allowed us to gain valuable insights into the intricate relationships within our study, making our findings robust and informative for the academic community.

4. Data analysis and results

4.1. Sample characteristics (Demographics)

The survey's respondent pool consisted mainly of male participants, with 121 out of 150 respondents identifying as men. Regarding age groups, most fell into 18–26 (63 respondents) and 27–35 (69 respondents) brackets. A significant proportion of the respondents had at least a bachelor's degree, with 127 participants having attained this level of education. Regarding marital status, the data revealed that most of the respondents were unmarried, representing 106 individuals.

In relation to their tenure in the case company, 81 respondents had been working for 13–24 months, 60 respondents for 6–12 months, and nine respondents for over two years. Furthermore, a notable finding was that 64 respondents did not have previous developer experience before joining the case company, while the remaining 86 respondents had prior developer experience. Given the global nature of the case company, the respondents hailed from various countries, representing Brazil, Turkey, India, Canada, France, Romania, Ukraine, Germany, the United States of America, Spain, and Pakistan.

4.2. Measurement model assessment - Lower-order constructs

We evaluate the measurement model in Structural Equation Modeling (SEM), which comprises measurement and structural models. This entails ensuring that our constructs are reliable and valid representations of the theoretical concepts we are studying. To assess construct validity, we employed two key metrics, Cronbach's Alpha (CA) and Composite Reliability (CR) (J. Hair et al., 2021). Our findings on the reliability and convergent validity of the construct are summarized in Table 1.

It is important to note that during the initial testing of the measurement model, we observed a slightly low Cronbach alpha value for the "well-being concerns" construct. This could be attributed to the limited number of items measuring this construct. To address this, we removed items with the lowest outer loadings (see Appendix A), resulting in improved validity and reliability. In the final analysis, Cronbach's alpha values ranged from 0.42 to 0.917, indicating fair reliability (see Appendix B for Structural Model).

Additionally, we considered composite reliability (CR) as a more liberal measure of reliability, as recommended by Hair et al. (2021). Our CR values ranged from 0.715 to 0.936, with all constructs exceeding the threshold of 0.7, demonstrating good internal consistency.

We evaluated the convergence validity using the Average Variance Extracted (AVE) metric to establish construct validity. Although the threshold for AVE is typically 0.5, it can be accepted at 0.4 if the composite reliability of the construct exceeds 0.6 (J. F. Hair et al., 2017). Our AVE values ranged from 0.459 to 0.755, and all constructs had satisfactory composite reliability values exceeding 0.6, confirming the convergent validity (see Table 1).

Discriminant validity was evaluated using the Fornell-Larcker criterion, the heterotrait-monotrait ratio (HTMT), and cross-loading (Fornell and Larcker, 1981; J. F. Hair et al., 2017). The square root of the AVE for each construct exceeded its correlation with all other constructs,

Table 1
Reliability and Convergent Validity.

	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
CL	0.863	0.907	0.709
JS	0.819	0.874	0.582
RC	0.610	0.793	0.561
RWC	0.751	0.810	0.522
SE	0.725	0.823	0.537
SI	0.728	0.846	0.648
TD	0.718	0.859	0.755
TI	0.917	0.936	0.711
VO	0.737	0.833	0.557
WRQ	0.814	0.875	0.638
WB	0.422	0.714	0.459

Note. CL: Knowledge of Culture, JS: Job Satisfaction, RC: Role Clarity, RWC: Remote Work Concerns, SE: Self Efficacy, SI: Social Integration, TD: Technology/Equipment Delivery, TI: Turnover Intention, VO: Perceived Virtual Onboarding Experience, WB: Well-being Concerns, WRQ: Workplace Relationship Quality.

meeting the Fornell-Larcker criterion. Furthermore, our results showed that each item loaded significantly better on its parent construct than on other constructs, establishing discriminant validity (see Table 2). Cross-loading analysis also yielded satisfactory results.

Finally, we use the HTMT ratio technique to assess discriminant validity, with scores below the 0.85 threshold level and confidence intervals below 1 indicating discriminant validity (see Table 3). In conclusion, our analysis confirms the reliability and validity of the study's constructs, affirming that the measurement model for VIRF is suitable for structural analysis.

4.3. Validation of higher-order formative constructs

Our study has a higher-order formative construct known as Virtual Onboarding Success (VOS), built on five lower-order constructs. Another higher-order formative construct is called 'Pandemic Concerns,' which consists of two lower-order constructs. We needed to ensure that these higher-order constructs were valid and free of multicollinearity issues.

To confirm the validity of these constructs, we used a statistical measure called the variance inflation factor (VIF). When the VIF value is less than or equal to 5, it indicates that there are no problems with multicollinearity. Our analysis found that the VIF values ranged from 1.070 to 2.348, well below the threshold of 5, which means multicollinearity was not a concern for our constructs (J. Hair et al., 2021).

Next, we assessed the outer weights, outer loadings, and statistical significance of the indicators within these constructs. Some lower-order constructs, such as RC, SE, and SI, showed insignificant results in terms of outer weights. However, when we examined their outer loads, we found they were significant for each indicator contributing to the formation of the virtual onboarding success construct (see Table 4) (J. F. Hair et al., 2019).

In conclusion, our analysis confirmed the validity of the higher-order construct model for virtual onboarding success (VOS) and pandemic concerns (PC).

4.4. Testing the structural model

We systematically investigated the hypotheses that we presented in a step-by-step manner. First, we examined the direct impact of the variables using a robust statistical technique called bootstrap resampling. With 10,000 resamples, we rigorously tested these relationships. The results were quite compelling, as they provided statistical support for all of our research hypotheses. You can find the detailed results of the hypotheses pertaining to direct relationships in Table 5.

Moving forward, we explore the mediation effect to understand how virtual onboarding success (VOS) influences turnover intention (TI) through job satisfaction (JS) and workplace relationship quality (WRQ). This mediation analysis adds depth to our understanding of the connections within our framework.

Furthermore, we assessed the explanatory power of our framework. Our analysis revealed R-squared (R-sq) values for the variables in our

research sample, ranging from 0.174 to 0.514. These R-squared values illustrate how well our model can explain the variations in the endogenous variable based on the exogenous variables. As recommended by Falk and Miller (1992), an R-square value equal to or greater than 0.10 is typically considered adequate for explaining the variance in a specific endogenous variable. In our research model, these R-squared values meet and exceed this threshold, demonstrating the model's strong in-sample predictive power.

In addition, we assessed the Q-squared value (Q-sq), a measure of predictive relevance, using the blindfold procedure. Values greater than zero indicate that the construct has predictive relevance, as Sharma and Stol (2020) suggested. In Table 5, you will notice that all R-squared and Q-squared values surpass the threshold values, providing further evidence that our proposed model possesses predictive relevance.

4.5. Mediation analysis

Mediation analysis serves as a valuable tool for gaining a deeper understanding of the mechanisms through which an independent variable (IV) exerts its impact on a dependent variable (DV) by involving a mediator variable (MV). Its primary objective is to shed light on the underlying processes or pathways that explain the observed relationship between the independent variable (IV) and the dependent variable (DV).

In the context of our study, we examined Hypotheses 7.1 and 7.2, which sought to investigate whether Job Satisfaction (JS) and Workplace Relationship Quality (WRQ) played a mediating role in the association between Virtual Onboarding Success (VOS) and Turnover Intention (TI). The analysis yielded notable findings, demonstrating a significant and negative mediating effect of job satisfaction (JS) ($B = -0.334$, $T = 5.931$, $p < 0.001$) and work relationship quality (WRQ) ($B = -0.106$, $T = 2.525$, $p < 0.05$) in mediating the relationship between VOS and TI. These results support Hypotheses 7.1 and 7.2, and a summary of the mediation analysis results can be found in Table 6.

5. Findings and discussion

The findings of our analysis revealed significant relationships among the variables in our study. First, we observed a negative impact of pandemic concerns (PC) on the virtual onboarding success (VOS) ($B = -0.358$, $T = 2.873$, $p < 0.05$), providing empirical support for hypothesis 1 (H1). Second, the analysis indicated a positive influence of turnover determination (TD) on VOS ($B = 0.150$, $T = 1.829$, $p < 0.001$), thereby corroborating Hypothesis 2 (H2).

Furthermore, we found that VOS had a substantial and positive effect on job satisfaction (JS) ($B = 0.717$, $T = 17.459$, $p < 0.001$), lending strong support to Hypothesis 3 (H3). Similarly, our analysis revealed that VOS significantly and positively affected the quality of the work-life relationship (WRQ) ($B = 0.566$, $T = 9.514$, $p < 0.001$), thus validating Hypothesis 4 (H4).

Additionally, job satisfaction (JS) had a negative effect on turnover intention (TI) ($B = -0.466$, $T = 6.575$, $p < 0.001$), aligning with

Table 2
Fornell-Larcker Criterion.

	CL	JS	RC	RWC	SE	SI	TD	TI	VO	WRQ	WB
CL	**0.842**										
JS	0.673	**0.763**									
RC	0.417	0.458	**0.749**								
RWC	0.203	0.008	−0.036	**0.722**							
SE	0.265	0.248	0.531	−0.029	**0.733**						
SI	0.466	0.409	0.394	0.033	0.219	**0.805**					
TD	0.121	0.095	0.143	0.078	0.252	0.047	**0.869**				
TI	−0.476	−0.547	−0.251	0.173	−0.149	−0.289	−0.129	**0.843**			
VO	0.687	0.644	0.565	0.077	0.4	0.405	0.22	−0.537	**0.746**		
WRQ	0.52	0.433	0.385	0.115	0.288	0.353	0.156	−0.39	0.484	**0.799**	
WB	−0.259	−0.193	−0.209	0.248	−0.197	−0.12	−0.17	0.318	−0.324	−0.25	**0.677**

Table 3
HTMT Model.

	CL	JS	RC	RWC	SE	SI	TD	TI	VO	WRQ	WB
CL											
JS	0.801										
RC	0.554	0.64									
RWC	0.221	0.117	0.101								
SE	0.308	0.363	0.741	0.111							
SI	0.576	0.519	0.591	0.095	0.313						
TD	0.156	0.156	0.197	0.110	0.338	0.192					
TI	0.525	0.620	0.329	0.229	0.168	0.350	0.144				
VO	0.838	0.791	0.840	0.115	0.507	0.528	0.257	0.613			
WRQ	0.577	0.494	0.539	0.153	0.338	0.454	0.225	0.420	0.599		
WB	0.413	0.341	0.405	0.623	0.316	0.286	0.416	0.463	0.565	0.444	

Table 4
HOC Validation.

	VIF	Outer Weights	T Statistics	P-values	Outer loadings	P-values
CL	2.007	0.565	5.155	0.000	0.923	0.000
RC	1.806	0.115	1.164	0.122	0.632	0.000
SE	1.386	0.041	0.444	0.328	0.423	0.000
SI	1.372	0.058	0.729	0.233	0.549	0.000
VO	2.349	0.401	3.660	0.000	0.891	0.000
RWC	1.070	−0.595	2.163	0.015	−0.346	0.050
WB	1.070	0.971	3.748	0.000	0.818	0.000

Table 5
HOC Structural Model Test Results.

Hypotheses	B	T	P	Results
H1: PC->VOS	−0.358	2.873	0.002	Supported
H2: TD->VOS	0.150	1.829	0.000	Supported
H3: VOS-> JS.	0.717	17.459	0.000	Supported
H4: VOS->WRQ	0.566	9.514	0.000	Supported
H5: JS->TI	−0.466	6.575	0.000	Supported
H6: WRQ->TI	−0.187	2.675	0.004	Supported
	R-Sq	Q-Sq		
VOS	0.174	0.128		
JS.	0.514	0.012		
WRQ	0.320	0.082		
TI	0.328	0.042		

Table 6
Mediation Analysis Results.

Hypotheses	B	T	P	Results
H7.1: VOS->JS->TI	−0.334	5.931	0.000	Supported
H7.2: VOS->WRQ->TI	−0.106	2.525	0.006	Supported

Hypothesis 5 (H5). Furthermore, Workplace Relationship Quality (WRQ) also had a negative impact on Turnover Intention (TI) ($B = -0.187$, $T = 2.675$, $p < 0.05$), supporting Hypothesis 6 (H6). As indicated in Section 4.5: Mediation Analysis, work relationship quality (WRQ) ($B = -0.106$, $T = 2.525$, $p < 0.05$) and job satisfaction (JS) ($B = -0.334$, $T = 5.931$, $p < 0.001$) had a significant and negative mediating effect in establishing the relationship between VOS and TI, supporting Hypothesis 7 (H7). These results provide empirical evidence for the relationships proposed in our research framework.

This study has successfully extended the theoretical framework of Sharma et al. (2020), which previously examined software developers in a traditional onboarding setting, to understand the unique virtual onboarding experiences of Salesforce Commerce Cloud developers during the COVID-19 pandemic. Adapting the framework to pandemic conditions is a novel approach that addresses remote work's unique challenges and dynamics during this period.

The study's first hypothesis, exploring the impact of pandemic concerns on virtual onboarding success, aligns with research by Grant et al. (2013), Martyniuk et al. (2021), and Prasad (2021), among others. Addresses the pandemic's challenges, such as adapting to remote work and managing wellness concerns. This aspect of the study adds depth to our understanding of how these broader pandemic-related issues can influence the onboarding process. Complementary research from Yarbrough and Ramos (2023) highlights similar struggles in developing effective VO experiences during COVID-19, emphasizing communication challenges in remote settings.

The importance of technology and equipment delivery, as explored in the second hypothesis, resonates with the findings of Pavlina (2020), who noted the importance of such factors in successful virtual onboarding. This element was particularly crucial during the pandemic, where remote work required a change in how companies approached onboarding logistics. This aspect gained importance as the rise of connectivity technologies facilitated a shift to remote work, necessitating new approaches to onboarding logistics (Kniffin et al., 2021).

The positive association between virtual onboarding success and job satisfaction, as noted in hypothesis three, corroborates the work of Sharma and Stol (2020) and Bauer (2013). This finding highlights the critical role of a well-planned onboarding process in fostering job satisfaction among new hires, even in a virtual setting. Additional research by Kniffin et al. (2021) supports this, highlighting the challenges and best practices for virtual teams that impact job satisfaction.

The study's findings on the impact of virtual onboarding on WRQ provide new insights, diverging from Sharma et al. (2020). The finding in this study where VOS significantly affects WRQ suggests that effective virtual onboarding can enhance workplace relationships, an aspect that gains increased importance during pandemic-driven isolation (Hickman, 2019; Mosebeck and Mobasheri, 2021). A recent study highlights the critical role of virtual leadership in affecting employees' mental health, job satisfaction, and perceptions of isolation, which are key components of WRQ. This indicates that effective virtual leadership can mitigate negative psychological impacts and improve job satisfaction, which is essential for maintaining WRQ and reducing turnover intentions (Efimov et al., 2022).

The study further expands on the concept of 'organizational fit' as proposed by Sharma et al. (2020), suggesting that job satisfaction and WRQ are critical mediators in turnover intentions. The more successful the virtual onboarding process is, the higher the job satisfaction and work relationship quality of the employees. This means that it is less likely for the developers hired during the pandemic to leave the company. This aligns with the broader literature on employee retention, emphasizing the importance of these factors in a virtual work environment (Anderson et al., 2015; Grant et al., 2013).

In extending the practical implications of our research into virtual onboarding (VO) for Salesforce Commerce Cloud developers during and post-COVID-19, it is crucial to consider a structured approach to onboarding programs. Research indicates that the onboarding experience should be tailored to the employee's role. For example, individuals

in leadership roles may benefit from a more extended and structured onboarding. In contrast, other developers might require a more concise but comprehensive approach. This differentiation ensures that each new hire receives the support and information they need in a manner that is most relevant to their position.

A crucial aspect of successful VO is the emphasis on relationship building. Creating effective communication channels is vital. This could involve virtual meetups and platforms like Slack for ongoing communication. These initiatives help new employees establish connections with their colleagues and assimilate into the company culture, even in a remote setting.

Incorporating the company culture into the VO process is another critical element. This can be achieved by sending new employees a welcome package that includes information about the company's policies, mission, and culture. In addition, organizing virtual training sessions on diversity, ethics, and inclusion can facilitate cultural integration. Offering flexible work arrangements can also help reduce the potential burnout associated with remote work, catering to the need for a work-life balance in a virtual environment.

Finally, empathy plays a vital role in the onboarding process. New hires should have time and space to acclimate to company procedures, projects, and teams. Providing resources and support during this learning period, such as access to online courses, can enhance the onboarding experience.

Organizations can create a more effective and supportive environment for new employees by integrating these practices into their virtual onboarding strategies. This approach can lead to better job satisfaction, stronger workplace relationships, and lower turnover intentions, aligning with our research findings.

6. Conclusion

This research explores the relatively underexplored domain of virtual onboarding (VO) during the COVID-19 pandemic, specifically emphasizing Salesforce Commerce Cloud developers. The study provides a comprehensive analysis of the impact of virtual onboarding (VO) on critical employee metrics such as job satisfaction, workplace relationship quality (WRQ), and turnover intentions, specifically in the context of the unique pandemic. The investigation emphasizes the distinctive role of VO during the pandemic era, characterized by novel obstacles and prospects. Including novel concepts such as remote work concerns and well-being concerns and creating the virtual integration and retention (VIRF) model signifies a notable progression from the theoretical framework established by Sharma et al. (2020) before the pandemic. The VIRF model offers a comprehensive framework for analyzing the complexities of virtual organizations during these exceptional circumstances.

Although our study offers valuable information, its focus is primarily centered on the context of the pandemic. The potential applicability of our findings may be constrained as the global community moves toward a post-pandemic period. Therefore, future studies must expand on these inquiries and gain a comprehensive understanding of virtual onboarding (VO) within a remote work environment that aligns with the typical conditions observed in the post-pandemic era. The relationship between onboarding success and employee turnover intention in other contexts could make use of the VIRF; researchers can extend this model onto contexts that arise from other major global events that create unprecedented conditions, such as climate change and other global crises, which

are likely to drive employees towards remote working. To illustrate, the additional constructs relating to the concerns and software and technology delivery during the pandemic could be adapted to such constructs as '[unprecedented event] concerns' and 'software and technology delivery during [unprecedented event]'.

Moreover, integrating qualitative or mixed-method approaches in future studies could further enrich the understanding of VO's impact across diverse industries and workforce demographics. Longitudinal studies after the pandemic will be crucial in assessing the long-term effectiveness of VO strategies that evolved during the pandemic. Exploring hybrid onboarding models, blending virtual and traditional elements, will be a crucial area of interest as the world adapts to a new normal in the workplace.

In summary, this research substantially advances the knowledge of virtual onboarding, particularly in a worldwide crisis such as the COVID-19 pandemic. This finding highlights the importance of VO in improving job satisfaction, WRQ, and mitigating turnover intentions. Our research findings and the VIRF model provide a basis for future academic investigations, highlighting the importance of ongoing innovation and adaptability in human resource management as the pandemic subsides. This study not only addresses the immediate challenges presented by the pandemic but also provides guidance for organizations as they navigate the changing dynamics of remote work, towards which the post-pandemic era has caused a shift (Hansen et al., 2023).

Declaration of AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used GPT-4, Grammarly, and QuillBot paraphrasing tool to improve grammatical accuracy and readability. After using these tools/services, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

CRediT authorship contribution statement

Gorkem Akdur: Writing – original draft, Visualization, Resources, Methodology, Investigation, Formal analysis, Conceptualization. **Mehmet N. Aydin:** Writing – review & editing, Supervision, Conceptualization. **Gizdem Akdur:** Writing – review & editing, Formal analysis, Conceptualization.

Declaration of competing interest

Data availability

The authors do not have permission to share data.

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Appendix A. Survey instrument

The complete questionnaire is provided below. Items with a (*) prefix were eliminated due to weak loading in their respective constructs.

Item	Question	Reference (where adopted)
TI1	I frequently think about quitting my current job.	(Sharma and Stol, 2020)
TI2	I will be actively looking for a new job within the next year.	(Sharma and Stol, 2020)
TI3	I feel like I do not belong to this organization.	By the authors
TI4	I might consider quitting my job if another company offers me more salary.	By the authors
TI5	I might consider quitting my job if another company offers me better career opportunities.	By the authors
TI6	Sometimes, I consider the idea of changing my company.	(Jackofsky and Slocum, 1987)
JS1	My performance and achievements are recognized and appreciated by my superiors.	(Sharma and Stol, 2020)
JS2	My work is helping my professional growth by developing my skills and learning new technologies, tools, and practices.	(Sharma and Stol, 2020)
JS3	I am satisfied with my current salary	(C Schriesheim and AS Tsui, 1980)
JS4*	I am happy to find a remote job, especially during the pandemic	By the Authors
JS5	I feel like I get a fair chance of being promoted.	(Sharma and Stol, 2020)
JS6	Overall, I would say that I am satisfied with my job	(Sharma and Stol, 2020)
WRQ1	I have good professional relationships with my peers.	(Sharma and Stol, 2020)
WRQ2	I am good friends with some of my colleagues.	(Sharma and Stol, 2020)
WRQ3	I have good relations with my superiors.	(Sharma and Stol, 2020)
WRQ4	Communication appears to be good within this organization.	(Sharma and Stol, 2020)
SE1	When I face complex tasks, I am confident I will accomplish them.	(Schwarzer et al., 1995)
SE2	I am confident that I can perform effectively on many different tasks.	(Schwarzer et al., 1995)
SE3	I will be able to achieve most of the goals that I have set for myself.	(Schwarzer et al., 1995)
SE4	I am confident that I can excel at my job.	(Schwarzer et al., 1995)
RC1*	I have received some assignments without adequate resources and materials to execute them.	(Rizzo et al., 1970)
RC2	I know what my responsibilities are at work.	(Rizzo et al., 1970)
RC3	I have clear planned goals and objectives for my job.	(Rizzo et al., 1970)
RC4	I clearly understand the expectations and responsibilities of my job.	(Rizzo et al., 1970)
SI1	The people in my immediate work group helped me find ways to do my tasks better in my first month at the organization.	(Price et al., 1986)
SI2	I feel comfortable when I talk to my colleagues.	(Price et al., 1986)
SI3	My co-workers seem to accept me as one of them in the early stages.	(Price et al., 1986)
CL1	Our organization tries to create a unique family atmosphere.	(Li et al., 2000)
CL2	My organization builds positive morale and motivation for its employees.	(Bavik, 2016)
CL3	My organization provides a satisfactory level of employee benefits.	(Bavik, 2016)
CL4	I think my organization has a genuine interest in the welfare and general satisfaction of those working here.	(Li et al., 2000)
VO1	I would recommend our company as a great place to work.	(Hayter, 2021)
VO2	My company provided me with an excellent virtual onboarding experience during the pandemic.	By the authors
VO3	I got a good idea about the organizational culture during my virtual onboarding.	(Sharma and Stol, 2020)
VO4	During the pandemic, the initial orientation program helped me feel less stressed about joining a new job.	(Sharma and Stol, 2020)
VO5*	Receiving initial training to understand the internal systems and operating practices to perform my job was important.	(Sharma and Stol, 2020)
RWC1	During the pandemic, my personal or family life prevented me from concentrating on my job while working from home.	(O'Connor and Cech, 2018)
RWC2	During the pandemic, I have struggled to separate work and non-work.	(O'Connor and Cech, 2018)
RWC3	During the pandemic, I miss getting out of my house and socializing.	(Bolisani et al., 2020)
RWC4	During the pandemic, staying focused while working from home is difficult due to not having physically close colleagues.	(Bolisani et al., 2020)
WB1	During the pandemic, by working from home, I contribute to lowering the risk of getting and spreading Covid-19.	(Taylor et al., 2021)
WB2*	During the pandemic, I feel less energetic during work-from-home periods.	(Chu et al., 2022)
WB3	During the pandemic, I give regular breaks while working from home to eliminate physical health problems and have an ideal workstation.	(Taylor et al., 2021)
WB4*	During the pandemic, my mental health has severely suffered; since WFH, I feel isolated and alone.	(Taylor et al., 2021)
WB5	In general, I feel frustrated with my work-from-home job.	(Lait and Wallace, 2002)
TechD1	Receiving work laptop, and equipment via mail/cargo was important, especially during the pandemic.	(Pavlina, 2020)
TechD2	It is crucial to ask about equipment preferences and receive them before the first day of work.	(Pavlina, 2020)

* Indicates that the question is removed during lower-order construct validation.

Appendix B. Lower-Order Construct Structural Model
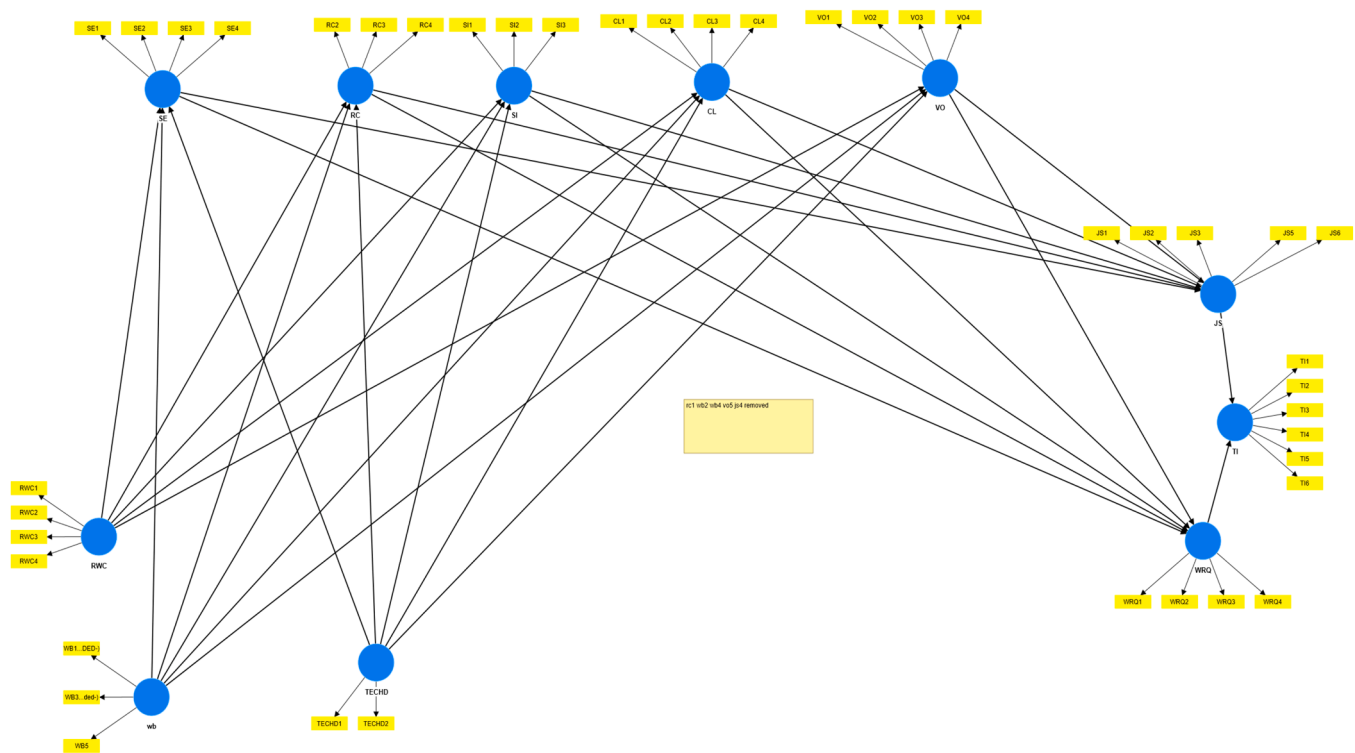
References

Adeniji, C., Adeyeye, O., Iyiola, O., Olokundun, M., Borishade, T., Falola, H., & Salau, O. (2018). Data on impact of technological change on employees' cognitive attitude and organizational performance. *Data in Brief*, 18, 1360–1364. https://doi.org/10.1016/j.dib.2018.04.024.

Ahmed, S., Jafir, M.I., 2022. Impact of home office on job satisfaction and work-life balance of female employees in Bangladesh during Covid-19. Bus. Stud. 104 (1), 12. https://doi.org/10.47119/IJRP1001041720223518.

Al-Anezi, Y.H., Alajmi, S.M., 2021. Factors that influence english teachers' acceptance and use of e-learning technologies. Internat. Educat. Stud. 14 (9), 15. https://doi.org/10.5539/ies.v14n9p15.

Anderson, A.J., Kaplan, S.A., Vega, R.P., 2015. The impact of telework on emotional experience: when, and for whom, does telework improve daily affective well-being? Eur. J. Work Organ. Psychol. 24 (6), 882–897. https://doi.org/10.1080/1359432X.2014.966086.

Battisti, E., Alfiero, S., Leonidou, E., 2022. Remote working and digital transformation during the COVID-19 pandemic: economic-financial impacts and psychological drivers for employees. J. Bus. Res. 150, 38–50. https://doi.org/10.1016/j.jbusres.2022.06.010.

Bauer, T., 2013. Onboarding: the power of connection. December. https://doi.org/10.13140/RG.2.1.4980.6163.

Bauer, T.N., Erdogan, B., 2011. Organizational socialization: the effective onboarding of new employees. APA Handbook Industrial Organizat. Psychol. 3, 51–64. https://doi.org/10.1037/12171-002. *Maintaining, expanding, and contracting the organization*Issue December 2015.

Bavik, A., 2016. Developing a new hospitality industry organizational culture scale. Internat. J. Hospit. 58, 44–55. https://doi.org/10.1016/j.ijhm.2016.07.005.

Błaszczyk, M., Popović, M., Zajdel, K., Zajdel, R., 2022. The Impact of the COVID-19 pandemic on the organisation of remote work in IT companies. Sustain. (Switzerland) (20), 14. https://doi.org/10.3390/su142013373.

Bolisani, E., Scarso, E., Ipsen, C., Kirchner, K., Hansen, J.P., 2020. Working from home during COVID-19 pandemic: lessons learned and issues. Manage. Market. 15 (s1), 458–476. https://doi.org/10.2478/mmcks-2020-0027.

Britto, R., Cruzes, D.S., Smite, D., Sablis, A., 2018. Onboarding software developers and teams in three globally distributed legacy projects: a multi-case study. J. Softwares 30 (4), 1–17. https://doi.org/10.1002/smr.1921.

Byrd, T.A., Lewis, B.R., Turner, D.E., 2004. The impact of IT personnel skills on IS infrastructure and competitive IS. Undefined 17 (2), 38–62. https://doi.org/10.4018/IRMJ.2004040103.

C. Schriesheim, & A.S. Tsui. (1980). *Development and validation of a short satisfaction instrument for use in survey feedback interventions.*

Chu, A.M.Y., Chan, T.W.C., So, M.K.P., 2022. Learning from work-from-home issues during the COVID-19 pandemic: balance speaks louder than words. PLoS. One 17 (January 1), 1–15. https://doi.org/10.1371/journal.pone.0261969.

Crowe, S., Cresswell, K., Robertson, A., et al., 2011. The case study approach. BMC. Med. Res. Methodol. 11, 100. https://doi.org/10.1186/1471-2288-11-100.

Dalton, M., Groen, J., 2022. Telework during the COVID-19 pandemic: estimates using the 2021 business response survey. Mon. Labor. Rev. https://doi.org/10.21916/MLR.2022.8.

DeMarco, T., & Lister, T. (2013). *Peopleware: productive projects and teams.* https://books.google.com/books?hl=en&lr=&id=TVQUAAAAQBAJ&oi=fnd&pg=PR7&ots=O-O89AreXW&sig=E1HDTbrVjwANKucEVM0B150X4B0.

Efimov, I., Rohwer, E., Harth, V., Mache, S., 2022. Virtual leadership in relation to employees' mental health, job satisfaction and perceptions of isolation: a scoping review. Front. Psychol. 13, 960955 https://doi.org/10.3389/FPSYG.2022.960955/BIBTEX.

El Keshky, M.E.S., Basyouni, S.S., Al Sabban, A.M, 2020. Getting Through COVID-19: the pandemic's impact on the psychology of sustainability, quality of life, and the global economy – a systematic review. Front. Psychol. 11 https://doi.org/10.3389/fpsyg.2020.585897.

English, L., 2022. Centric Consulting case study: culture is the key to remote work success. Work 71 (2), 295–298. https://doi.org/10.3233/WOR-210701.

Eriksson, A., Dellve, L., Williamsson, A., Skagert, K., 2022. How conditions and resources connected to digital management systems and remote work are associated with sustainable work. Int. J. Environ. Res. Public Health (23), 19. https://doi.org/10.3390/ijerph192315731.

Errichiello, L., & Pianese, T. (2021). *The role of organizational support in effective remote work implementation in the Post-COVID Era.* 221–242. https://doi.org/10.4018/978-1-7998-6754-8.CH013.

Falk, R.F., Miller, N.B., 1992. A Primer for Soft Modeling, 80. The University of Akron Press. *April.* http://books.google.com/books/about/A_Primer_for_Soft_Modeling.html?id=3CFrQgAACAAJ.

Flyvbjerg, B., 2006. Five misunderstandings about case-study research. Qualitat. Inquiry (2), 12. https://doi.org/10.1177/1077800405284363.

Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Market. Res. 18 (1), 39. https://doi.org/10.2307/3151312.

Foucault, M., Palyart, M., Blanc, X., Murphy, G.C., Falléri, J.R., 2015. Impact of developer turnover on quality in open-source software. In: 2015 10th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, ESEC/FSE 2015 - Proceedings. https://doi.org/10.1145/2786805.2786870.

GmbH, SmartPLS, 2023. SmartPLS. https://www.smartpls.com/.

Gorla, N., Lam, Y.W., 2004. Who should work with whom? Building effective software project teams. Commun. ACM 47 (6), 79–82. https://doi.org/10.1145/990680.990684.

Grant, C.A., Wallace, L.M., Spurgeon, P.C., 2013. An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. Employee Relat. 35 (5), 527–546. https://doi.org/10.1108/ER-08-2012-0059.

Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M., 2017. A primer on partial least squares structural equation modeling (PLS-SEM). Thousand oaks. Sage 165.

Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. European Bus. Rev. 31 (1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203.

Hair, J., Hult, G., Ringle, C., Sarstedt, M., 2021. Partial least squares structural equation modeling (PLS-SEM) using R: a workbook. Multidisciplin. J. https://doi.org/10.1080/10705511.2022.2108813.

Hansen, S., Lambert, P., Bloom, N., Davis, S., Sadun, R., Taska, B., 2023. Remote work across jobs, companies, and space. SSRN Electr. J. https://doi.org/10.2139/ssrn.4380734.

Harlianto, Rudi, 2023. Promote employee experience for higher employee performance. Internat. J. Profess. Bus. Rev. 8 (3) https://doi.org/10.26668/businessreview/2023.v8i3.827.

Harzing, A.W., Baldueza, J., Barner-Rasmussen, W., Barzantny, C., Canabal, A., Davila, A., Espejo, A., Ferreira, R., Giroud, A., Koester, K., Liang, Y.K., Mockaitis, A., Morley, M.J., Myloni, B., Odusanya, J.O.T., O'Sullivan, S.L., Palaniappan, A.K., Prochno, P., Choudhury, S.R., Zander, L., 2009. Rating versus ranking: what is the best way to reduce response and language bias in cross-national research? Internat.l Bus. Rev. 18 (4) https://doi.org/10.1016/j.ibusrev.2009.03.001.

Hayter, N. (2021, October 11). How to measure the employee onboarding experience. https://blog.perceptyx.com/measure-the-employee-onboarding-experience.

Hickman, A., 2019. Workplace Isolation Occurring in Remote Workers. Walden University Scholar Works, pp. 1–141.

Holliday, M. (2023). Employee retention vs. turnover: key differences & why it matters | Netsuite. https://www.netsuite.com/portal/resource/articles/human-resources/employee-retention-turnover.shtml.

Jackofsky, E.F., Slocum, J.W., 1987. A causal analysis of the impact of job performance on the voluntary turnover process. J. Organ. Behav. 8 (3), 263–270. https://doi.org/10.1002/JOB.4030080307.

Kniffin, K.M., Narayanan, J., Anseel, F., Antonakis, J., Ashford, S.P., Bakker, A.B., Bamberger, P., Bapuji, H., Bhave, D.P., Choi, V.K., Creary, S.J., Demerouti, E., Flynn, F.J., Gelfand, M.J., Greer, L.L., Johns, G., Kesebir, S., Klein, P.G., Lee, S.Y., Vugt, M.van., 2021. COVID-19 and the workplace: implications, issues, and insights for future research and action. Am. Psycholog. 76 (1), 63–77. https://doi.org/10.1037/AMP0000716.

Lait, J., Wallace, J.E., 2002. Stress at work: a study of organizational-professional conflict and unmet expectations. In: Relations Industrielles, 57. https://doi.org/10.7202/006886AR.

Leonardi, P.M., 2021. COVID-19 and the new technologies of organizing: digital exhaust, digital footprints, and artificial intelligence in the wake of remote work. In: Journal of Management Studies, 58. https://doi.org/10.1111/joms.12648.

Li, T., Tang, -Ping, Kim, J.K., Ann, D., Donald, O.', 2000. Perceptions of Japanese organizational culture-Employees in non-unionized Japanese-owned and unionized US-owned automobile plants. Emerald.Com 15 (6), 268–3946. https://www.emerald.com/insight/content/doi/10.1108/02683940010373383/full/html?fullSc=1.

Martyniuk, J., Moffatt, C., Oswald, K., 2021. Into the unknown: onboarding early career professionals in a remote work environment. Canadian J. Librar. Informat. Pract. Res. 16 (1), 1–11. https://doi.org/10.21083/partnership.v16i1.6451.

Mohammadi, P., Kamarudin, S., Jalali, S.S., 2022. Do proactive personality and self-efficacy really matter in shaping social entrepreneurial intention? Internat. J. Econ. Manage. 16 (3) https://doi.org/10.47836/ijeam.16.3.03.

Mosebeck, A., & Mobashri, M. (2021). The IMPACT of Working from Home on Effectiveness of Onboarding of New Employees. September. https://www.diva-portal.org/smash/record.jsf?pid=diva2:1614498.

O'Connor, L.T., & Cech, E.A. (2018). Not just a mothers' problem: the consequences of perceived workplace flexibility bias for all workers. Https://Doi.Org/10.1177/0731121418768235, 61(5), 808–829. https://doi.org/10.1177/0731121418768235.

Pavlina, K., 2020. Assessing best practices for the virtual onboarding of new hires in the technology industry. In: Pepperdine University, 4. Pepperdine University.

Pico-Saltos, R., Sabando-Vera, D., Yonfa-Medranda, M., Garzás, J., Redchuk, A., 2023. Hierarchical component model (HCM) of career success and the moderating effect of gender, from the perspective of university alumni: multigroup analysis and empirical evidence from. Quevedo. Ecuador, SustainabilitySwitzerland, p. 15. https://doi.org/10.3390/su15010540.

Prasad, Dr.K., 2021. Remote working challenges and opportunities during Covid-19 pandemic. J. Bus. Strat. Fin. Manage. 2 (1), 01–03. https://doi.org/10.12944/jbsfm.02.01.01.

Price, J.L., Mueller, C.W., Curry, J.P., Wakefield, D.S., 1986. On the causal ordering of job satisfaction and organizational commitment. Acad. Manage. J. 29 (4), 847–858.

Raj, A., Mukherjee, A.A., de Sousa Jabbour, A.B.L., Srivastava, S.K., 2022. Supply chain management during and post-COVID-19 pandemic: mitigation strategies and practical lessons learned. J. Bus. Res. 142 https://doi.org/10.1016/j.jbusres.2022.01.037.

Regnér, P., Zander, U., 2011. Knowledge and strategy creation in multinational companies. Manage. Internat. Rev. (6), 51. https://doi.org/10.1007/s11575-011-0110-3.

Rizzo, J.R., House, R.J., Lirtzman, S, 1970. Role conflict and ambiguity in complex organizations author (s). In: John R . Rizzo, Robert J . House and Sidney I, 15. Lirtzman Published by: Sage Publications, Inc . on behalf of the Johnson Graduate School of Management, pp. 150–163. Stable URL. http://www.jstor.or.

Rodeghero, P., Zimmermann, T., Houck, B., Ford, D., 2021. Please turn your cameras on: remote onboarding of software developers during a pandemic. In: Proceedings - International conference on software engineering, pp. 41–50. https://doi.org/10.1109/ICSE-SEIP52600.2021.00013.

Sarstedt, M., Hair, J.F., Nitzl, C., Ringle, C.M., Howard, M.C., 2020. Beyond a tandem analysis of SEM and PROCESS: use of PLS-SEM for mediation analyses! Internat. J. Market Res. 62 (3) https://doi.org/10.1177/1470785320915686.

Schwarzer, R., Weinman, M.J.J., & Wright, S. (1995). Generalized self-efficacy scale. https://www.religiousforums.com/data/attachment-files/2014/12/22334_285ebbd019ec89856493442b1b6f9154.pdf.

Shabir, S., AlBishri, N.A., 2021. Sustainable retailing performance of Zara during COVID-19 pandemic. Open J. Bus. Manage. 09 (03) https://doi.org/10.4236/ojbm.2021.93054.

Sharma, G.G., Stol, K.J., 2020. Exploring onboarding success, organizational fit, and turnover intention of software professionals. J. Syst. Software 159, 110442. https://doi.org/10.1016/j.jss.2019.110442.

Shockley, K.M., Allen, T.D., Dodd, H., Waiwood, A.M., 2021. Remote worker communication during COVID-19: the role of quantity, quality, and supervisor expectation-setting. J. Appl. Psychol. 106 (10), 1466–1482. https://doi.org/10.1037/APL0000970.

Stake, R.E., 1995. The art of case study research. thousand oaks. CA: SAGE, CA.

Taylor, P., Scholarios, D., Howcroft, D., 2021. Prelimin. Find. 1–30.

Wang, B., Liu, Y., Qian, J., Parker, S.K., 2021. Achieving effective remote working during the COVID-19 Pandemic: a work design perspective. Appl. Psychol. 70 (1), 16–59. https://doi.org/10.1111/apps.12290.

Yarbrough, J.W., Ramos Salazar, L, 2023. Virtual onboarding and socialization, an exploration of employee discussions and experiences. Corporate Commun. 28 (5), 707–723. https://doi.org/10.1108/CCIJ-12-2022-0158/FULL/XML.

Yin, R.K., 2018. Case study research and applications: design and methods, Sixth Edition, 53. SAGE Publications.

Zhuang, M.E., Pan, W.T., 2022. Data Modelling in human resource management: influencing factors of employees' job satisfaction. Math. Probl. Eng. 2022 https://doi.org/10.1155/2022/3588822.

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