

# Drivers and Constraints of Employee Satisfaction with Remote Work: An Empirical Analysis

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**Background/Purpose:** The Covid 19 epidemic has forced many organizations to move to remote work (RW), and this trend is expected to continue even later in the post-epidemic period. Employees of the organization are at the heart of this transition to RW, so identifying the factors that affect employee satisfaction with RW is very important for organizations to increase employee commitment and motivation. Therefore, the main objective of this study was to identify and prioritize the factors affecting employee satisfaction with RW using an innovative method.

**Method:** In the first phase of this study, a conceptual research model was designed inspired by literature. In the next phase, the proposed conceptual model of this re-search was tested using structural equation modeling (SEM). Then, using the artificial neural network model, the importance of each of the model variables in predicting employee satisfaction with RW was identified.

**Results:** The findings of this article ultimately disclosed that work-life balance, institutional and technological support, job satisfaction, and perceived limited communication are, respectively, elements that affect employee satisfaction with RW. The first three factors are drivers of employee satisfaction and the last factor (i.e., perceived limited communication) is the constraint of employee satisfaction with RW because it had a statistically significant negative effect on employee satisfaction with RW.

**Conclusion:** This study revealed that organizations should focus on the processes and strategies to improve employees' work-life balance, provide institutional and technological support during remote work, and increase job satisfaction in order to increase the satisfaction level of their employees in the remote work. On the other hand, it was found that perceived limited communication is an effective factor that causes a decrease in the level of satisfaction of employees in remote work.

**Keywords:** Remote work, Employee satisfaction, Structural equation modeling, Multilayer perceptron, Artificial intelligence, Artificial neural network, Covid 19 pandemic

## 1 Introduction

The coronavirus disease (COVID-19) pandemic has had a significant impact on individuals, organizations, and society. It has wreaked havoc on people's lives, resulting in job and personal losses, career shifts, and physical

and mental health concerns. Conventional techniques becoming unsustainable and unfeasible, businesses have been compelled to pivot and reallocate resources toward creative modes of operation. Apart from the implementation of long-term and periodic lockdowns, as well as the reorganization of employment and work (Stevano et al., 2021), these changes have also hindered the flow of prod-

ucts and services and harmed commerce and service exchange (Maliszewska et al., 2020). As a result of the pandemic, workplace norms have shifted, and firms have been obliged to adapt their operations to the new environment. One example of this type of adaptation is the transition to remote work (Béland et al., 2020; Brynjolfsson et al., 2020; Makó & Illéssy, 2020; Manojkumar et al., 2021). Remote work is a work arrangement allowing employees to operate from anywhere and at any time using telecommunications, mobile devices, and computer-based technologies (Ferreira, 2011; Neirotti et al., 2013). Companies are starting to refer to remote work as a set of organizational interventions aimed at fully unleashing their employees' innovation potential by giving them more autonomy over where they work, when they work, and what tools they use, in exchange for a strong commitment to achieving corporate goals in these fast-paced environments.

The transition to remote requires not just organizational preparation in terms of infrastructure and practicality, but also personnel willingness to embrace this transformation. Because employees are a critical component of this equation since they are at the forefront of the transition (Makó, 2005). While the focus of the current research is on companies' preparedness to shift to remote work. Franken et al. (2021), for example, investigate the impact of remote working on organizational performance and employee well-being. Eberhard et al. (2017) explore the skills required by workers to prepare them for the RW, while Raguseo et al. (2016) propose a model for organizations to prepare for RW, through which enterprises may boost labor productivity. Another trend in the literature is studies that examine employee job satisfaction in remote work. In these studies, either the effect of remote work on job satisfaction has been investigated (e.g., Grant, 2021 and Țălnar-Naghi, 2021) or the factors affecting job satisfaction in remote work have been identified (e.g., Karunaratne, 2021 and Bulińska-Stangrecka and Bagińska, 2021). However, we found no study that examines the factors that affect employee satisfaction with remote work. In order to address this literary gap, the present study was conducted to first examine the factors influencing (both drivers and constraints) employee satisfaction with remote work.

Although the Covid 19 Pandemic forces remote work (Wang et al., 2021), re-searching the variables driving affecting employee satisfaction with RW may help enterprises enhance work quality, work organization and labor productivity. With a thorough analysis of the literature, the current study develops an original model for predicting employee satisfaction with RW. To put the suggested model to the test, this study uses structural equation modeling (SEM). In the next phase of this study, an artificial neural network (ANN) is utilized to determine the importance of each model variable to predict employee satisfaction.

In the continuation of this article, the related literature has been reviewed and the conceptual model of this article

has been developed in Section 2. In Section 3, the research methodology is described. Sections 4 and 5 are devoted to the results and discussion on them. Finally, the conclusion of this article is presented in Section 6.

## 2 Research Background

There is a lot of research in the literature that studies different aspects of remote work. Following the outbreak of the Covid 19 pandemic, most countries put teleworking on their agenda, which led to more studies on remote work. A simple search for the keyword remote work in the title, abstract, and keywords of the articles in the Scopus database disclosed how the trend of publishing articles on the subject of remote work has increased exponentially in the last two years, so that 412 of the 817 articles published between 1970 and 2022 were published in 2021. This is while searching for other synonyms such as telework, work from home, smart work, etc. will surely lead to more results. A review of the literature in the field of employee satisfaction with remote work illustrates that most of these studies have been done on evaluating employee job satisfaction. Țălnar-Naghi (2021) compares, for instance, employee job satisfaction with remote work before and after the Covid 19 pandemic in Romania. They show that the job satisfaction of employees over 40 years of remote work in the pandemic period has increased significantly. Grant (2021) provides evidence that remote work increases employee job satisfaction. There are also studies in the literature that have identified the factors that affect employee job satisfaction in remote work. Karunaratne (2021) believes, for example, that the supervisor's perceived trust in remote work increases employee job satisfaction, or Bulińska-Stangrecka & Bagińska (2021) provide empirical evidence that the relationship between employees is one of the factors influencing job satisfaction in remote work. In addition, there are studies in the literature that examine the productivity (e.g., Baker et al., 2007 and Van Der Voordt, 2004), employee performance (e.g., Nugroho, 2021), and employee well-being (e.g., Franken et al., 2021; Rožman et al., 2019) in the remote work, however, there is no study that investigates antecedents of employee satisfaction with remote work (not job satisfaction or satisfaction from the job). Therefore, the present study intends to answer the following research question:

What are the driving forces and constraints of employee satisfaction with remote work?

### 2.1 Conceptual Model of the study

New technologies, along with the coronavirus pandemic, have led organizations to digitize, and this transition to digitalization is inevitable for many businesses. This transition has created new working conditions and

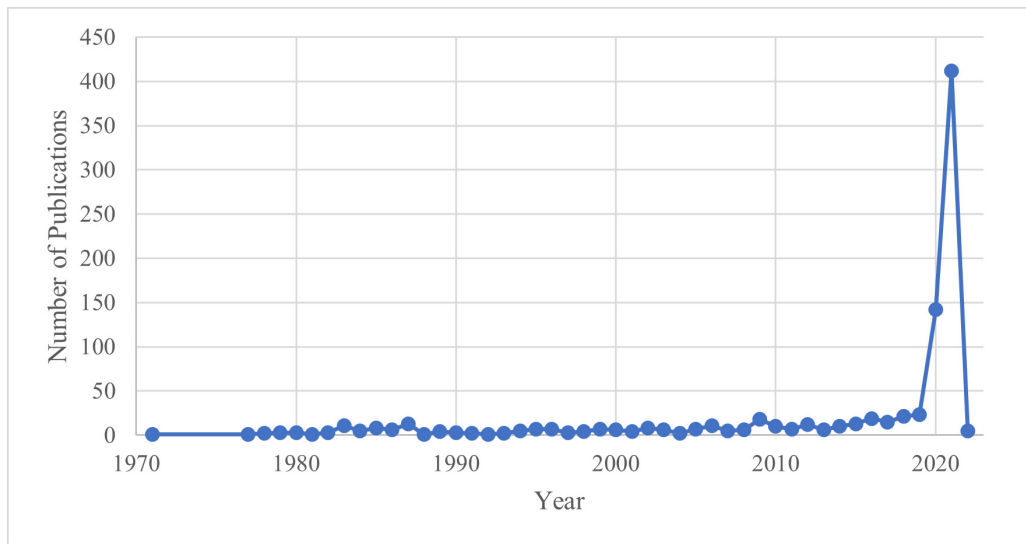


Figure 1: Trend of publications in the Scopus database on remote work in 1970-2022

norms in organizations and posed serious challenges to the management of organizational behavior. One of the most important issues of organizational behavior is employee satisfaction, which apparently with the changes in the structure of today's organizations, past theories of organizational behavior management as well as employee satisfaction also need to be re-tested. In addition to their professional roles in the organization, employees also have roles and responsibilities in their personal lives (for example, as a spouse, parent, etc.). The conflict between these two roles can affect a person's performance in both of these roles. Therefore, role management in research literature has been considered by many researchers. Balancing work-life helps the person to function effectively both at work and in one's personal life. Organizations are also looking for conditions that can help the individual to balance their work-life. Franken et al. (2021) provide evidences that remote work builds work-life balance that results in improvement in quality of life and employee well-being. In remote work, employees may spend more time with family, get emotional support, and experience less work-related stress (Franken et al., 2021). On the other side, Malik et al. (2016) express that remote work promotes employee flexibility and productivity, which eventually results in increased employee satisfaction. In other words, remote work creates work-life balance (Franken et al., 2021; Grant, 2021; Stevens, 2017), and this balance is expected to increase employee satisfaction. Accordingly, work-life balance is considered as a drivers of employee satisfaction and the first hypothesis of this study is formulated as follows:

*H1: Work-life balance has a positive and significant effect on employee satisfaction with remote work.*

When it comes to workplace attitudes, job satisfaction is one of the most often studied (Illéssy et al., 2021). Kayaalp et al. (2021) state that Locke in 1976 defined job satisfaction as "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". It is widely accepted that job satisfaction is a critical component in both individual and organizational success (Elayan et al., 2023). One of the topics that has been widely covered in the remote work literature is employee job satisfaction. Țălnar-Naghi (2021) show that the job satisfaction of employees over 40 years of remote work in the covid 19 pandemic period has increased significantly. Grant (2021) provides evidence that remote work increases employee job satisfaction. Therefore, it can be concluded that if employees are satisfied with their duties and jobs, it can lead to their satisfaction with remote work. Subsequently, job satisfaction is also considered as a driving force of employee satisfaction and the second hypothesis of this study is written as follows:

*H2: Job satisfaction has a positive and significant effect on employee satisfaction with re-mote work.*

Employee resistance to change is one of the main challenges for organizations in the transition to remote work (Hu, 2020) while the support of organizations can eliminate this resistance and facilitate remote work adoption (Alnaimi & Rjoub, 2021; Rainey & Chun, 2005). Remote work may pose challenges and ambiguities for employees. These ambiguities can be resulted from the use of new technologies, devices, software, or in general, ambiguities that arise due to the dynamics of the work itself. Therefore, organizational support can play an important role in facilitating the process. Eom et al. (2016) stress the importance of institutional and technological support in re-

remote work and consider this variable in their study. Thus, this study also considers institutional and technological support as a driving force of employee satisfaction with remote work and writes the third hypothesis as follows.

*H3: Institutional and technological support has a positive and significant effect on employee satisfaction with remote work.*

Informal networks in the organization are in some cases more powerful than the formal organizational structure, therefore, informal communication among people within the organization is the focus of many researchers in the field of organizational behavior. In addition to the political behavior between employees, these informal relationships create friendly relations among the employees and create the opportunity for socialization with people who are socially in their class. While the possibility of in-person social interaction of employees with colleagues and customers in remote work is minimized. Toscano and Zapala (2020) claim that social isolation has a direct negative effect on employee satisfaction with remote work, both directly and through stress. Perceived limited communication is frequently named as a barrier to employee remote work adoption, in the literature (Mokhtarian & Salomon, 1997; Pérez et al., 2002). Hence, this factor is considered as a constraints for employee satisfaction with remote work and accordingly the fourth hypothesis of this study is designed as follows:

*H4: Perceived limited communication has a negative and significant effect on employee satisfaction with remote work.*

Eom et al. (2016) develop a model that evaluates the factors that influence the South Korean government's de-

cision to accept remote work. In this model, they believe that the costs that a person expects to incur from remote work (costs such as commuting and business trip costs) influence their decision to accept remote work. In other words, if the cost of remote work is lower, they will welcome remote work, and vice versa, if the perceived cost of remote work is higher, the employee will resist to accept it. In general, in the behavioral intention theory literature, perceived costs are considered as a variable affecting an individual's behavioral intention (Anasoud et al., 2021). Remote work is expected to impose costs on employees, such as the cost of equipment and the provision of technologies and devices needed to perform task duties in an off-the-job environment. Hence and according to the research literature, in the present study, perceived cost is considered as a deterrent to employee satisfaction with remote work and the corresponding hypothesis is written as follows:

*H5: Perceived cost has a negative and significant effect on employee satisfaction with remote work.*

In accordance with the hypotheses presented, the proposed conceptual research model of this study for the antecedents of employee satisfaction with remote work is presented in Figure 2. Since work-life balance, job satisfaction, institutional and technological support were hypothesized, based on the literature, to have a positive impact on the employee satisfaction with remote work, they are labeled as the drivers of the employee satisfaction with remote work. Besides, it is expected that perceived limited communication and perceived cost have a negative impact on the employee satisfaction with remote work. They were considered as constraints of employee satisfaction with remote work in this study.

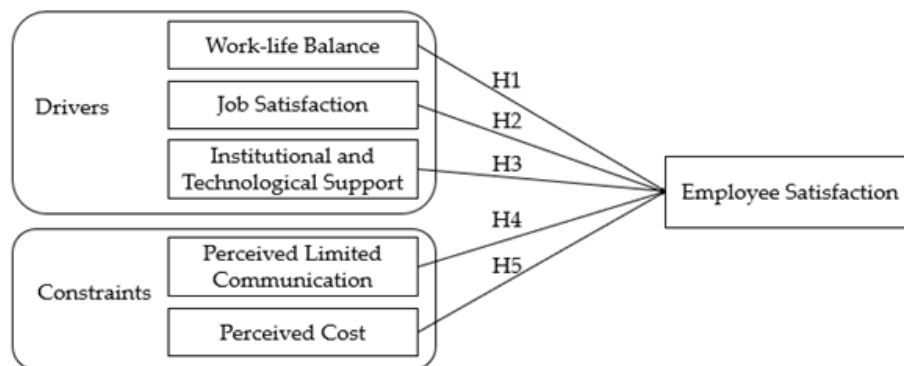


Figure 2: The conceptual model of the study

### 3 Materials and Methods

#### 3.1 Data collection

Based on the variables of the proposed conceptual model of this research, a questionnaire was designed and distributed through e-mail among knowledge-based companies in Tehran. To begin collecting data, a list of KBOs was taken from the Centers of Knowledge-Based Companies in Tehran<sup>1</sup>, Iran, which indicated that Iran has a total of 6359 KBOs, 3355 of which are located in Tehran. A preliminary consent to participate in this study was obtained by contacting the managers of all KBOs functioning in Tehran. Companies who consented to participate in the research were requested to share the online link to the prepared questionnaire, which was emailed to them, with their workers and to encourage them to complete it. Data collection was done in the summer of 2022, from July to September. 432 businesses volunteered to participate in the survey, however only 268 of the online questionnaires were completed, with 234 being complete and useable. 65.4% of the participants were male and the rest 34.6% of them were female. The other demographic characteristics of the participants in this research are presented in Table 1.

#### 3.2 Data analysis methods

Three steps of data analysis were used in this investigation. To begin, confirmative factor analysis was used to determine the convergent and discriminant validity, composite reliability, and Cronbach's alpha index of the hypothesized study model. In the second stage of this investigation, structural equation modeling (SEM) using maximum likelihood estimation was employed to assess hypotheses. In the third step, we employed multilayer perceptron (MLP), which is an artificial neural network model, to confirm the strength of independent factors' effect on dependent variables whose significance was confirmed using SEM analysis (Värzaru & Bocean, 2021). Since, the performance of ANN models is higher than standard linear statistical approaches such as Multiple Regression Analysis (MRE) in both discovering nonlinear interactions and determining causal linkages, MLP used to model antecedents of employee satisfaction with RW.

Structural Equation Modeling (SEM) and Artificial Neural Networks (ANN) are two popular techniques in data analysis. SEM is a statistical modeling technique that is used to analyze complex relationships between variables, while ANN is a machine learning technique that is

used to identify patterns in data. In recent years, there has been a growing interest in combining these two techniques, resulting in the SEM-ANN approach.

In fact, SEM is limited in its ability to identify patterns in data. While SEM can model complex relationships between variables (Alfarajat, et al., 2021), it may not be able to identify nonlinear relationships or interactions between variables that are not explicitly modeled. ANN, on the other hand, is highly effective in identifying such patterns and interactions, which can lead to more accurate predictions (Nosratabadi, et al., 2022). In addition, SEM-ANN can help address some of the limitations of ANN. While ANN is highly effective in identifying patterns, it may not provide a clear understanding of the underlying relationships between variables. SEM can help provide a more interpretable model that can help identify the underlying relationships and mechanisms (Kayed, et al. 2022). Overall, the SEM-ANN approach is performed to combine the strengths of SEM and ANN and overcome their limitations. SEM provides a framework for modeling complex relationships between variables, while ANN is effective in identifying patterns and interactions in data. By combining these two techniques, researchers can develop more accurate and interpretable models that can help explain the underlying mechanisms and make better predictions.

In our study, we also adopted the SEM-ANN approach to analyze our data. Following prior studies, we used a feed-forward-back-propagation multilayer perceptron (MLP) with a sigmoid activation function in the hidden and output layers. We also employed a tenfold cross-validation procedure with a 90% training sample and a 10% testing sample. As a standard neural network, MLP consists of three hierarchical layers: an input layer, one or more hidden layers, and an output layer. The number of hidden layers is determined by the complexity of the problem. One hidden layer was employed in this study. The input layer comprises neurons with a total number equal to the model's input variables. The factors in this research that were verified to have an influence on employee satisfaction with RW during the SEM analysis phase are considered as input variables (or input neurons). The number of neurons in the output layer is equal to the number of model dependent variables, in this case, employee satisfaction with RW is the lone neuron in the MLP model output layer. In order to select the number of neurons in the hidden layer, the model was repeated three times and each time with a different number of neurons in the hidden layer. The performance of the model was compared with 2, 3, and 4 neurons in the hidden layer, respectively, and the network with the lowest error rate was selected. The Root Mean Square of Error

<sup>1</sup> Centers of Knowledge-Based Companies in Tehran established by the Ministry of Industry, Mines, and Trade, the Tehran Center for Science and Technology Parks in 2004 aims to create a dynamic and supportive space for the growth and development of new and innovative companies (visit <https://daneshbonyan.isti.ir>).



Table 1: Demographic features of the sample

Age	Number	%	Position	Number	%
18-24	45	19.2	Top Manager	25	10.7
25-34	57	24.4	Middle Manager	53	22.6
35-44	96	41	Supervisor	43	18.4
<45	36	15.4	Employee	113	48.3

Table 2: Validity and reliability test results

Factors	Cronbach's alpha	CR	AVE
Work-life Balance	0.876	0.871	0.833
Job Satisfaction	0.862	0.822	0.87
Institutional and Technological Support	0.827	0.853	0.774
Perceived Limited Communication	0.783	0.839	0.783
Perceived Cost	0.828	0.824	0.8
Employee Satisfaction	0.854	0.873	0.901

Table 3: The matrix of intercorrelations

	WLB <sup>1</sup>	JS <sup>2</sup>	ITS <sup>3</sup>	PLC <sup>4</sup>	PC <sup>5</sup>	ESRW <sup>6</sup>
WLB	1					
JS	0.55	1				
ITS	0.32	0.65	1			
PLC	0.47	0.56	0.5	1		
PC	0.47	0.67	0.54	0.42	1	
ESRW	0.51	0.63	0.45	0.55	0.31	1

1 WLB: work-life balance

2 JS: job satisfaction

3 ITS: institutional and technological support

4 PLC: perceived limited communication

5 PC: perceived cost

6 ESRW: employee satisfaction with remote work

$$RMSE = \sqrt{\frac{1}{N} \sum_{i=1}^N (A - P)^2} \quad (1)$$

(RMSE) was utilized to assess the predictive ability of the networks. RMSE is measured by Equation 1. The sigmoid activation function is used in both the hidden and output layers in this work, and all variables are normalized to the range (0,1) to save training time and improve prediction performance (Negnevitsky, 2005). To proposed model of the study the data were analyzed using AMOS 18 and to perform MLP, SPSS 20 was used.

## 4 Results

In SEM, the relationship between observable variables (i.e., questionnaire questions) and hidden variables (i.e., the main research variables) is called the measurement model (Alwreikat & Rjoub, 2020). Table 2 shows that the measurement model of this study has acceptable reliability and validity because the value of Cronbach's alpha for all the variables is above 0.7 (Nunnally, 1975) and the CR value for all variables is above 0.7 (Bagozzi & Yi, 1988) and the AVE value for all variables is above 0.5 (Fornell & Larcker, 1981; Nathan et al., 2019).

Table 4: Model fit test results

Fit Metrics	The model's value
X2/df	1.27
GFI	0.831
AGFI	0.819

## 4.1 Hypotheses Test

In this study, the hypothesis test is the same as the testing the structural model in SEM (Yang, 2021). The structural model, which evaluates the relationships between latent variables, is evaluated by three criteria of statistical estimation, the significance level of these estimates and the coefficient of determination (R<sup>2</sup>). The results show that all three variables that are considered as drivers of employee satisfaction in remote work (i.e., work-life balance, job satisfaction, institutional and technological support) have a positive and significant effect on employee satisfaction and therefore the corresponding hypotheses are confirmed, because the estimates related to these hypotheses are significant with a confidence interval of at least 95%. However, the effect of only one of the two constraints (i.e., perceived limited communication) on employee satisfaction in remote work was confirmed.

The first hypothesis of this study (i.e., H1) confirmed the effect of work-life balance variable on employee satisfaction (estimate=0.417,  $p < 0.023$ ). This means that remote work gives employees the flexibility to spend more time with family and friends while doing their job tasks, which also increases their level of satisfaction. The significance of the estimate related to the test of the second hypothesis (estimate=0.312,  $p < 0.004$ ) indicates that the third hypothesis of this study (i.e., H2) is also supported and indicates a positive and significant effect of job satisfaction on employee satisfaction. This finding shows that job satisfaction is one of the main and influential elements on employee satisfaction. Testing the third hypothesis of this study (i.e., H3) shows that the institutional and technological support of organizations during remote work is one of the factors affecting employee satisfaction because this study provides quantitative empirical evidence to support this hypothesis (estimate=0.425,  $p < 0.000$ ).

The fourth hypothesis of the present study (i.e., H4) is also confirmed because the corresponding estimates are statistically significant (estimate=-0.356,  $p < 0.035$ ). This means that the present study provides evidence that there is a negative impact of perceived limited communication variable on employee satisfaction. However, in the present study, there is not enough evidence to support the fifth hypothesis (i.e., H5) that perceived costs affect significantly employee satisfaction (estimate=-0.330,  $p < 0.072$ ).

This could mean that while working remotely reduces the cost of commuting to and from work, this reduction does not increase employee satisfaction. In other words, only the effect of one of the constraints (i.e., perceived limited communication) on employee satisfaction was confirmed. A summary of the hypothesis test is given in Table 5. In addition, the findings show that these four variables (i.e., work-life balance, job satisfaction, and institutional and technological support, and perceived limited communication) explain 73% of the changes in employee satisfaction ( $R^2 = 0.73$ ).

According to the results of quantitative analysis of the proposed conceptual model of the present study using empirical data, the proposed conceptual model of the study is modified and shown in Figure 3. In this model, it is shown that work-life balance, job satisfaction, and institutional and technological support are the drivers of employee satisfaction with remote work, while perceived limited communication is considered as a factor that prevents employee satisfaction with remote work (that reduces employee satisfaction with remote work). While the statistical analysis of the proposed model did not support the effect of perceived costs on employee satisfaction with remote work. The numbers on the arrows between the variables in Figure 3 are standardized estimates which are the same as presented in Table 5.

## 4.2 Neural network analysis

The main purpose of this study was to develop a model using artificial neural networks that can predict employee satisfaction with remote work. The output of the previous step was to identify drivers and constraints that affect employee satisfaction with the remote work which are work-life balance, job satisfaction, and institutional and technological support (as the drivers) and perceived limited communication (as a constraint). At this stage, using the artificial neural network model, we try to identify the importance of each of these variables in determining changes in employee satisfaction. MLP was used to develop a model for predicting employee satisfaction. The first step in the MLP model is to identify the optimal number of hidden layer neurons. In the present study, the model was run three times and each time with the number of neurons, 2, 3, and 4, respectively, and then the error rate of each model

Table 5: Hypotheses test results

	Hypotheses	Estimates	P-value	Standardized estimates	Result
Drivers	H1: Work-life Balance → Employee Satisfaction	0.472	0.023	0.417	Confirmed
	H2: Job Satisfaction → Employee Satisfaction	0.298	0.004	0.312	Confirmed
	H3: Institutional and Technological Support → Employee Satisfaction	0.473	0.000	0.425	Confirmed
Constraints	H4: Perceived Limited Communication → Employee Satisfaction	-0.392	0.035	-0.356	Confirmed
	H5: Perceived Cost → Employee Satisfaction	-0.342	0.072	-0.330	Not confirmed

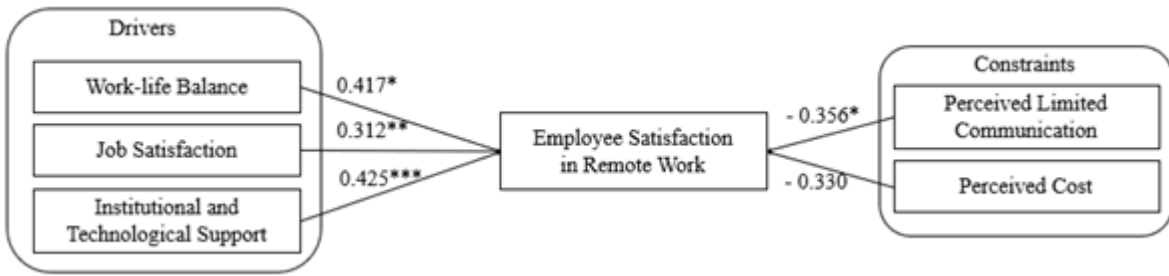


Figure 3: Test result of the proposed conceptual model of the pre-sent study

Table 6: RMSE for different numbers of neurons in the hidden layer

Factors	Neurons	RMSE	
		Training	Testing
<b>Work-life Balance</b>	<b>2</b>	<b>1315</b>	<b>1108</b>
Work-life Balance	3	3161	1529
Work-life Balance	4	1715	1410
<b>Job Satisfaction</b>	<b>2</b>	<b>1147</b>	<b>1953</b>
Job Satisfaction	3	2552	2269
Job Satisfaction	4	3124	2467
<b>Institutional and Technological Support</b>	<b>2</b>	<b>1575</b>	<b>1346</b>
Institutional and Technological Support	3	1677	1400
Institutional and Technological Support	4	3564	2621
<b>Perceived Limited Communication</b>	<b>2</b>	<b>1737</b>	<b>1465</b>
Perceived Limited Communication	3	3018	1613
Perceived Limited Communication	4	1749	1851



Table 7: Sensitivity analysis results

Factors	Normalized Importance
Work-life Balance	1,000
Institutional and Technological Support	0.642
Job Satisfaction	0.365
Perceived Limited Communication	0.259

was compared using RMSE. Table 6 shows that the proposed model of this study to predict employee satisfaction with 2 neurons in the hidden layer has the highest level of accuracy (i.e., the lowest error rate).

Variables whose effect on employee satisfaction was confirmed in the previous step (Which are work-life balance, job satisfaction, institutional and technological support, and perceived limited communication) are considered as MLP model in-puts. The MLP model used in this study has three levels including input layer with four neurons (that are four input variables), a hidden layer with two neurons, and an output layer with one neuron (that is the dependent variable which is the same as employee satisfaction).

The output of the MLP model is presented in Table 7. In this table, the variables are sorted based on their importance in determining the changes in employee satisfaction. Findings of this study illustrate that work-life balance has the greatest impact on determining employee satisfaction changes, followed by institutional and technological support, job satisfaction, and perceived limited communication are respectively effective in predicting employee satisfaction with remote work.

## 5 Discussions

A review of the literature led the present study to hypothesize that three antecedents as drivers of employee satisfaction with remote work are work-life balance, job satisfaction, and institutional and technological support. Findings of this study confirm the importance of the role of work-life balance in increasing employee satisfaction with remote work. The remote work allows employees to be more effective in playing their roles in personal life (Franken et al., 2021; Grant, 2021; Stevens, 2017) and on the other hand, this flexibility in the workplace has also increased their productivity (Malik et al., 2016), which ultimately leads to balance employees work-life (Franken et al., 2021; Grant, 2021; Stevens, 2017). Rani and Mariappan (2011) and Kim and Ryu (2017) have also shown that work-life balance increases employee satisfaction, and the findings of the present study are consistent with these findings. Confirmation of the second hypothesis of

the present study indicates that the level of job satisfaction of employees also affects their level of satisfaction with remote work. In other words, remote work has increased the employees' satisfaction with their work, which in turn has increased their satisfaction with the remote work, which is consistent with findings Grant (2021) and Țălnar-Naghi (2021). The findings also confirmed the importance of institutional and technological support for remote work because remote work affects work processes and poses new challenges for employees in the way they perform tasks. The present study showed that if there is the necessary organizational support to meet the challenge, it will increase employee satisfaction in remote work, which is in line with the findings of Eom et al. (2016).

On the other hand, in this study, perceived limited communication and perceived costs were considered as factors that have the potential to affect employee satisfaction with remote work and reduce employee satisfaction. The current study provides quantitative empirical evidences illustrating that employees believe that remote work limits their socialization opportunities with their co-workers, and this reduces their satisfaction with remote work. In general, the importance of informal relationships and informal networks in organizations has been discussed in the organizational behavior management literature, and this finding was predictable and in line with findings Mokhtarian and Salomon (1997) and Pérez et al. (1997). However, the present study failed to provide evidence to support the fifth hypothesis, and this may be because most employees have the necessary equipment to work remotely (such as PC access, stable Internet, etc.). Therefore, they do not expect remote work to impose a remarkable additional cost on them, as if remote work gives them the opportunity to be able to save money and time spent shuttling to work.

## 6 Conclusion and Implications of the Findings

Remote work is not new, but after the outbreak of the coronavirus, many organizations were forced to experience remote work. This epidemic has brought many changes not only in the daily lives of human beings, but also in the way tasks are done in business, and it is ex-

pected that these changes will continue in the post-Covid period. One of these changes could be the continuation of RW (either fully or partially remote). The human resources of the organizations are at the fore-front of this transition to RW, so it is necessary to optimize the working conditions of RW in order to increase the commitment and motivation of employees. Therefore, the present study tried to identify the factors affecting employee satisfaction with remote work, to provide a predictive model that allows managers to manage the quality of work and increase work commitment and employee motivation. The findings of this study revealed that work-life balance, institutional and technological support, job satisfaction, and perceived limited communication are the most influential factors on employee satisfaction with remote work, respectively. The findings of this study contribute to the RW literature as well as employee satisfaction. This study provides a basis for future research as well as guidance for KBO managers for remote work management, which are provided below.

## 6.1 Theoretical implications

The main contributions of this study are Figure 2 and Table 7. Figure 2 shows the conceptual model of the research in which the relationships expressed in it have been confirmed by quantitative empirical evidence and Table 7 shows the importance of each of the independent variables (i.e., driving forces and constraints of employee satisfaction) in determining the behavior of the dependent variable (i.e., employee satisfaction with remote work). This proposed conceptual model contributes to the literature on employee satisfaction, organizational behavior management, and remote work.

Another innovation of this research is the use of SME-ANN method to identify the factors that predict employee satisfaction with RW. In this method, first the factors affecting employee satisfaction with RW were identified and then using the neural network model, their importance in predicting employee satisfaction was calculated. The findings of this study show that work-life balance, job satisfaction, institutional and technological support, and perceived limited communication are the factors that are effective in determining employee satisfaction with RW, respectively. Confirmation of the first hypothesis (i.e., H1), which indicated the effect of work-life balance on employee satisfaction with RW, shows that RW has been able to create a balance between work and life, and this balance causes employee satisfaction with RW.

The second hypothesis of this study, which examined the effect of job satisfaction on employee satisfaction with RW, was also confirmed. This means that the more satisfied the employees are with their job, the higher their satisfaction with the remote work, and this factor as a motivating factor for employees' satisfaction with the remote work. It

is also confirmed that institutional and technological support is another driver of employee satisfaction with RW (i.e., H3). This finding implies that if employees received the organization's support to deal with the dynamics of the tasks in the remote work, it increases their satisfaction with RW.

It was also found that perceived limited communication has a negative effect on employee satisfaction with remote work. This finding is also consistent with findings of Pérez et al. (2002), where he shows that perceived limited communication influences employees' decision to accept remote work. However, the present study failed to provide evidence that perceived costs can affect their satisfaction with remote work. This may be because the difference between the costs of remote work and work at workplace for the participants in this study was not large enough to affect their decision and their level of satisfaction.

## 6.2 Managerial implications

The Covid 19 Pandemic pushed most firms to move to remote work, and it is projected that many enterprises will continue to use remote work in some capacity. Identifying the drivers and constraints of employee satisfaction with RW may therefore give managers suggestions to better manage this transition. This research presents quantitative empirical evidence that work-life balance is a predictor of employee satisfaction with RW. Employees are more flexible in remote work and in addition to being able to perform their duties, they can also take care of their family affairs. Receiving emotional support is one of the effective factors in accepting remote work by employees (Franken et al., 2021) and in this study, its effect on the satisfaction of remote work has been confirmed. It is also disclosed that job satisfaction is another driver of employee satisfaction and by increasing the job satisfaction of employees, organizations can also increase their satisfaction with RW.

Remote work requires not only the use of new devices, technologies, and software; there is also a need for managers and supervisors in the workplace who can help employees resolve ambiguities and problems created by task dynamics. This study provides evidence that the existence of institutional and technological support in RW increases employee satisfaction with RW. It is also found that employees' chances of communicating with coworkers and social interactions in general are reduced by RW, and if they cannot find a suitable alternative to meet their social needs (for example, with family and friends), they feel lonely and isolated, which influences their satisfaction with RW.

**Conflicts of Interest:** "The authors declare no conflict of interest."

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