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Analyzing The Mediating Role Of OLM Strain In Techno-Stress And Technology Characteristics On Worker Well-Being In Online Gig Economy

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Abstract

This research investigates the complex dynamics of the online gig economy, focusing on the relationships between online labour market (OLM) techno-stress, technology characteristics, OLM strain, and workers' well-being. This is a study conducted within the fast-growing software industry in Pakistan that uses a quantitative, positivist-based methodology to investigate the experiences of 300 software managers and employees in Karachi, Sindh. The research reveals significant results based on Partial Least Squares Structural Equation Modeling (PLS SEM) analysis. The findings of the current research indicate that there is a significant effect of OLM techno-stress and technology characteristics on workers well-being. Further, the results indicated that OLM strain mediates the relationship between observed variables. This study highlights the need to appreciate the complex relationship between psychological and emotional strains of techno-stress and calls for customized interventions to reduce the challenges faced by gig workers in Pakistan. The theoretical contributions of this study expand the literature on techno-stress and technology attributes within the gig economy, while its practical implications provide important considerations for policy makers, employers, and platform developers, leading to the improvement of worker well-being in the highly dynamic world of the online gig economy.

Keywords: *Online gig economy, OLM techno-stress, OLM technology characteristics, OLM strain, Worker well-being.*

1.0 Introduction

1.1. Background of Study

In recent times, online gig economy, which evolved and developed rapidly, has changed the sphere of work, giving people opportunities for multiple tasks and projects through the internet (Kanat et al., 2018). The trend towards digital platforms has changed the way work is performed and managed, with an increasingly dependence on Online Labor Market (OLM) te[1]chnologies (Kokkodis & Ipeirotis, 2014). Although these technologies have brought many advantages, for instance, especially convenience and availability, they have also created a range of new challenges and stressors for workers (Duch-Brown et al., 2022). The workers in online gig economy also suffer from techno-stress, one of their quite significant challenges, which is

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the term denoting a cluster of negative psychological and physical effects from technology use in the workplace (Feldman et al., 2017). Owing to the continuous use of OLM technologies for task management, communication, and coordination, workers are prone to a feeling of anxiety, frustration, and overwhelming, which may also adversely affect their well-being (Lukac & Grow, 2021).

In addition, the attributes of OLM technologies per se strongly influence workers' experiences and attitudes (Graham & Anwar, 2019). Some of the factors that can affect the level of stress and strain on the workers include usability, reliability, and interface design (Pajarinen et al., 2018). For instance, user interface problems and complex design of some platforms that make the usage of some sites more complicated contribute to the increase of techno-stress that also influences user dissatisfaction and their well-being as a whole (Huang et al., 2020). In addition, the strain which includes the emotional and psychological price of stress is an important mediating factor in comprehending the relationship between OLM technostress, technology characteristics, and employee well-being (Mikić et al., 2022). The high strain levels may intensify the negative impacts of stress on employees, reducing job satisfaction, causing burnouts, and even some health problems (Benson et al., 2020).

Worker well-being, which stands for the total well-being, joy, and satisfaction of individuals involved in the online gig economy (Hyers & Kovacova, 2018). Techno-stress is one of workers; adversities that occur due to the use of online labor market (OLM) technologies (Chen et al., 2014). This also includes symptoms of worry, irritation, virtual fatigue, and other stress symptoms due to the continuing use of technology platforms for task management, communication, and coordination (Nawaz et al., 2019). OLM techno-stress is the main stressor of the well-being of workers in the online gig economy (Kokkodis & Ipeirotis, 2014).

OLM technology characteristics comprises multiple properties and traits of the online labor market (OLM) platforms that affect users' experiences and perceptions (Seifried, 2021). Such characteristics may be usability, reliability, interface design, responsiveness, and security measures in the technology platforms (Kokkodis & Ipeirotis, 2016). Positive technology features positively affect user satisfaction and efficiency, while negative characteristics lead to frustration, dissatisfaction, and increased techno-stress among workers in the online gig economy. (Kokkodis et al., 2015) The OLM strain describes the stress level of workers in the online gig economy. The OLM strain acts as a mediating effect between OLM techno-stress and technology characteristics and workers well-being (Bellesia et al., 2019). For instance, high strain levels may worsen the adverse effects of stress on people, consequently, job satisfaction, burnout and other negative outcomes are reduced. OLM strain is a key variable for understanding the relationship of techno-stress, technology characteristics, and worker well-being in the online gig economy (Fu et al., 2021).

Another substantial research void in this field is the absence of detailed investigation into the mediating role of OLM strain in the association between OLM technostress, technology characteristics, and labour wellbeing in the online gig economy (Claussen et al., 2018). However, existing studies have focused on the direct effects of techno-stress and technology characteristics on worker outcomes, but few have thoroughly explored how these factors interact to influence OLM strain, and consequently, well-being (Horton, 2010). Comprehending this mediating process is very important for the development of the focused interventions and approaches that will help to overcome the stressors, make the technology user-friendly and improve the general well-being of gig economy workers online (Umair et al., 2019).

In the Pakistani context, a major research problem is how suitable and applicable are the existing models and frameworks developed in Western environments in getting the dynamics of techno-stress, technology characteristics and workers' wellbeing in the online gig economy (Umair et al., 2023). Pakistan is an exceptional socio-cultural and economic environment that creates challenges and opportunities with respect to online work (Umair et al., 2023). Hence, it is paramount that studies are carried out on the how the Pakistani gig workers' experience is affected by factors such as cultural norms, economic conditions, and infrastructural limitations (Tara & Iqbal, 2023). This research problem reflects the need for tailored theories and interventions that would address the well-being issues experienced by the workers in Pakistan's online gig economy (Koç & Gasimov, 2023).

The study is significant in that it addresses the emerging issue in the online gig economy and gives the perspectives of the well-being of workers amidst technological progress (Batmunkh & Lakner, 2023). Through examining the associations between techno-stress, technology characteristics, and worker well-being, it provides significant practical implications for policymakers, employers, and platform developers aimed at improving the working environment (Yener et al., 2021). Consequently, specific focus on the Pakistani workers allows a better understanding of how cultural and socio-economic factors influence gig workers' experiences and development of context-specific interventions (de la Vega, 2020).

This study research aims at to understanding of the dynamics of the online gig economy, with regard to the relationship between OLM techno-stress, technology characteristics, OLM strain, and worker well-being (de la Vega, 2020). The first objective of the study is to investigate the prevalence and effects of OLM techno-stress on the well-being of employees, which is crucial in defining their experiences within the digital work environment (Ragu-Nathan et al., 2008). Secondly, it aims at examining the impact of OLM technology characteristics on workers' perceptions and experiences, considering the fact that technology plays an important role in shaping their work environment and satisfaction (Adam et al., 2023). Finally, the study aims to investigate the mediating role of OLM strain by going deeply into its mechanism of moderation of the relationship between techno-stress, technology characteristics, and employee well-being (Benson et al., 2020).

2.0 Literature Review

2.1 Online Labor Market (OLM) Techno-Stress

Due to the ubiquitous use of technology in contemporary workspaces, the relationship between Online Labor Market (OLM) Techno-Stress and Workers' Well-Being has become a relevant issue in the literature (Stankevičiūtė, 2022). Techno-stress, a by-product of the internet gig economy in which workers are constantly interacting with digital platforms and tools, has been connected to numerous adverse outcomes for worker well-being (Hussain et al., 2022). Research has indicated that technology overuse, associated with gig work's high work demands and job insecurity, has the potential to cause anxiety, burnout, and reduced job satisfaction among workers (Sánchez-Hernández et al., 2022). Also, techno-stress has been associated with negative physical health measures including musculoskeletal disorders and sleep disturbances. Nevertheless, despite the well-documented destructive consequences of techno-stress on well-being, the mediation processes that explain these effects are rather poorly understood (Rasool et al., 2022). Hence, the role that factors like OLM Strain play is essential in understanding how techno-stress affects well-being among the workers in the online gig economy and is a source of information for developments of intervention and support strategies that will lead to the healthier work environments (Dazzi, 2019).

2.2 Online Labor Market (OLM) Technology Characteristics

The association between characteristics of Online Labor Market (OLM) Technology and Worker Well-Being, via OLM Strain as a mediator, is supported by documented literature (SA, 2011). Research has repeatedly demonstrated that characteristics of the OLM platforms are key variables that determine worker's well-being in the online gig economy (Gomez-Herrera et al., 2017). A favorable quality of technology characteristic like usability, reliability and interface design has been linked with high job satisfaction, low stress levels, and overall well-being among workers (Codagnone et al., 2018). On the other hand negative technology attributes which are related to complex interfaces and unstable platforms, have been associated with increased techno-stress, reduced job satisfaction, and more poor mental health. More importantly, research also indicates that technology characteristics effects on worker well-being are moderated by workers' level of strain (Codagnone et al., 2016). The strains produced by the stressors associated with technology use are high and they can make worse the negative effects on well-being (Claussen et al., 2018). Hence, in the context of the online gig economy where OLM technology is prevalent mediating role of the OLM strain becomes important for a comprehensive study of OLM technology characteristics and worker well-being (Seifried et al., 2024).

2.3 OLM strain

The relationship between OLM strain and well-being of workers in the online gig economy has been well documented in the existing literature (Nathanson et al., 2021). Many studies have reported a direct relationship between job strain and many aspects of well-being such as physical health, mental health, and job satisfaction (Brown et al., 1996). Job strain which is defined as high psychological demands and hardly any decision latitude is well associated with negative results such as stress, burn out and low job satisfaction amongst workers (Moniz et al., 2021). Strain is a common experience in the context of the online gig economy, where workers are often under pressure to deliver on tight deadlines while multitasking and managing insecure incomes (Willis, 2009). This stress may result from such things as heavy workload, time pressures, absence of freedom, and the mixture of the work and personal life characteristic of the online work platforms (Holmes et al.). As a result, the strain accumulate can adversely affect the total well-being of workers, resulting in negative psychological and physical health outcomes. Hence, realizing the mediating role of OLM strain in the relationship between techno-stress, technology characteristics, and worker well-being is essential for the development of the customized interventions for reducing strain and improving the overall well-being of the gig workers, working in the online environment (Zhou & Mao, 2021).

2.4 OLM techno-stress and workers' well-being, with OLM strain as mediator

The literature provides strong support for the association between online labor market (OLM) techno-stress and workers' welfare, where OLM strain plays a crucial mediator in this process (Feldman et al., 2017). Researches have always proved that the increased usage of digital platforms and technology in the online gig economy contributes to the levels of stress of workers (Wood et al., 2019). Among some of the factors that are known to elicit techno-stress are constant connectivity, information overload and the need to meet strict deadlines, which are also the determinant of the psychological and physiological distress of the worker. In addition, studies show that long-term exposure to techno-stress can lead to strain, which is manifested by symptoms like emotional exhaustion, burnout, and reduced job satisfaction (Holthaus & Stock, 2018). Specifically, these findings support the need to study the mediating role of OLM strain in the relationship between techno-stress and workers' well-being (D'Cruz & Noronha, 2018). The knowledge of this mechanism will allow policymakers and other stakeholders to deploy appropriate interventions to reduce stress, create a good working

environment, and improve the workers' overall well-being in the online gig economy (Braesemann et al., 2022).

2.5 OLM Technology Characteristics and Workers' Well-Being, With OLM Strain as Mediator

The literature strongly suggests that the OLM technology characteristics act as a significant predictor for the well-being of the workers, which is however mediated by the OLM strain (Demirel et al., 2021). The properties of OLM technology such as usability, reliability, and interface design have been revealed to influence on workers in the online gig economy (Williams et al., 2022). Studies indicate that positive technology attributes such as user-friendliness and dependable platforms lead to improved job contentment, productivity, and overall worker well-being. On the contrary, negative attributes, like complicated interfaces and repeated technical problems, may result in annoyance, tension, and disappointment (Christiaens, 2022). Furthermore, researches point out the mediation role of OLM strain in this connection. The high-level techno-stress, associated with technology applied in the workplace, leads to the increased strain on workers which aggravates the adverse effects on the well-being (Christiaens, 2022). Through the understanding of OLM strain as a mediator, this research is aimed at shedding light on multifaceted relationships between OLM characteristics, techno-stress, and worker's well-being in the online gig economy which could be beneficial in developing the interventions and strategies to make the work environment healthier and to improve the worker outcomes (Dewe & Cooper, 2020).

3.0 Methodology

The research employed a quantitative research design to methodically gather and analyse numerical data on the connections among OLM technology attributes, OLM strain, and workers' well-being in the online gig economy. Positivistic in nature, this research philosophy focused on the observation and measurement of phenomena while searching for causal relations and generalizable findings concerning the effect of OLM technology characteristics on worker well-being.

The research was focused on the details of the software industry in Pakistan, understanding its influential position in the economic system of the country. The study also looked at managers and employees involved in online gig work in this industry, which happens to be a huge part of the Pakistani labour force. This decision to focus on this population was not random, given the specific challenges and opportunities of the online gig economy in the software development and technology services industries. We used simple random sampling to select 300 software managers and employees from Karachi, Sindh, to ensure a representative sample. Karachi, Pakistan's largest city and a well-established software industry hub, provided an ideal environment for sampling participants. Its diverse demographics and large number of software-based enterprises guaranteed the respondents a varied and complete research phenomenon. Therefore, through a particular focus on the software industry in Pakistan and a targeted readership of managers and workers involved in online gig work, this study sought to provide a comprehensive overview of the challenges and opportunities presented by this important segment of the workforce in the contemporary context of the online gig economy.

We collected data using a structured questionnaire to elicit quantitative responses from the subjects about OLM technology features, OLM stress, and well-being in the online gig economy. The use of simple random sampling was aimed at making every software manager and developer in Karachi have an equal probability of being selected for the study, thus avoiding bias and increasing the generalizability of the results. The data collected was analyzed using partial least squares structural equation modelling (PLS SEM), which enabled us to study

relationships between the variables and test the proposed hypotheses. The ethical aspect was prominent throughout the research phase by obtaining the informed consent of respondents, guaranteeing the confidentiality and anonymity of responses, and adhering to the ethical guidelines of the institutional review boards that are concerned with the study or research.

4.0 Result and analysis

4.1 Measurement Model

Table 4.1. Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
OLM Strain	0.8101	0.8087	0.8628	0.5131
OLM Techno-Stress	0.7636	0.7803	0.8355	0.5024
OLM Technology Characteristics	0.7365	0.7514	0.8252	0.5086
Workers Well-Being	0.7517	0.7603	0.8134	0.5055

This analysis was performed on the data to assess the reliability, internal consistency, and global reliability of the measurement scales used for various constructs under the setting of the occupational stress and well-being. The Cronbach's Alpha values vary from 0.7365 to 0.8101 which suggests a very high level of internal consistency of the items measuring OLM Strain, OLM Techno-Stress, OLM Technologies Characteristics, and Workers Well-Being. Although the rho_A coefficients, as an enhanced reliability index, also appear to consistently exhibit strong reliability among the constructs, with the coefficients varying from 0.7514 to 0.8087. Of particular interest is the set of very high composite reliability values ranging from 0.8134 to 0.8628 that reflects the strength of the measurement scales. In addition, the Average Variance Extracted (AVE) values of between 0.5024 and 0.5131 indicate that the constructs account for a large portion of the variance encapsulated by their measurement items.

Table 4.2 Validity Analysis

	OLM Strain	OLM Techno-Stress	OLM Technology Characteristics	Workers Well-Being
OLM Strain				
OLM Techno-Stress	0.4142			
OLM Technology Characteristics	0.4283	0.4528		
Workers Well-Being	0.3661	0.4398	0.3535	

The analysis of validity using heterotrait-monotrait ratio (HTMT) technique tests the discriminant validity of constructs among a structural model. In the given HTMT matrix, the diagonal entries show the (construct) correlations and off diagonal entries show the heterotraits

correlations. In this part of analysis, all diagonal elements (correlations between constructs) are equal to zero, which should be the case because constructs are separate theoretical concepts and thus, they cannot correlate perfectly. The off-diagonal elements, which measures the relationships between different constructs, are nonzero. More specifically, the correlations between OLM Techno-Stress and OLM Technology Characteristics (0.4142), OLM Technology Characteristics and Workers Well-Being (0.4528), and OLM Techno-Stress and Workers Well-Being (0.4398) are above the threshold for discriminant validity (typically 0.85), indicating potential discriminant validity problems among these constructs This may suggest conceptual redundancy or measurement issues that should be dealt with in the model. More detailed analysis of the correlations and model measurement modifications may be needed to verify the model's validity.

4.3 Factor Analysis

Table 3

	OLM Strain	OLM Techno-Stress	OLM Technology Characteristics	Workers Well-Being
OS1	0.7209			
OS2	0.728			
OS3	0.7758			
OS4	0.7452			
OS5	0.7033			
OS6	0.6139			
OTC1			0.7508	
OTC2			0.7139	
OTC3			0.7409	
OTC4			0.7253	
OTC5			0.5431	
OTS1		0.7022		
OTS2		0.7587		
OTS3		0.7161		
OTS4		0.5027		
OTS5		0.7355		
OTS6		0.6319		
WWB1				0.6074
WWB10				0.5987
WWB2				0.5859
WWB3				0.6043
WWB4				0.4693
WWB5				0.4962

WWB6	0.5971
WWB7	0.544
WWB8	0.5115
WWB9	0.4883

A factor loading table is used to demonstrate the relationship among the various constructs in the research context, often in the area of organizational behavior or workplace dynamics. Each row is assigned to a specific item or indicator (i.e., OLM Strain, OLM Techno-Stress, OLM Technology Characteristics, Workers Well-Being), while the columns are different measures or dimensions to be measured. The non-zero values illustrate the strength of association between the item and factors. For example, OLM Strain is associated with factors OS1 through OS6, while Workers Well-Being is linked with factor WWB1 through WWB10 mostly. On the other hand, some of the items are not associated with certain factors and are denoted by the zeros. This analysis helps to identify the core structure of the constructs being researched and can guide additional examination of the linkages between these variables in relation to organizational behavior and employee well-being.

4.4 Direct effect SEM

Table 4

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
OLM Strain -> Workers Well-Being	0.2153	0.2106	0.0413	5.2155	0.0004
OLM Techno-Stress -> OLM Strain	0.2479	0.2453	0.0353	7.0192	0.000
OLM Techno-Stress -> Workers Well-Being	0.2295	0.2415	0.029	7.9187	0.000
OLM Technology Characteristics -> OLM Strain	0.2481	0.2598	0.0637	3.8964	0.003
OLM Technology Characteristics -> Workers Well-Being	0.1319	0.1171	0.0249	5.3013	0.0003

The results show substantial immediate effects under the structural equation model (SEM). To begin, OLM strain has a positive effect on workers' well-being ($\beta = 0.2153$, $p= 0.0004$), indicating that higher levels of strain within OLM processes are linked with lower worker well-being. Further, techno-stress has a significant positive direct effect on both OLM strain ($\beta = 0.2479$, $p < 0.001$) and worker's well-being ($\beta = 0.2295$, $p < 0.001$), implying that increasing techno-stress leads to higher levels of strain and lower well-being. Furthermore, technology attributes in the organizational setting directly impact OLM strain ($\beta = 0.2481$, $p = 0.003$) and workers' well-being ($\beta = 0.1319$, $p = 0.0003$) showing that certain technological features determine levels of strain and well-being. The results stress that managing techno-stress and

optimizing technology characteristics are crucial for reducing strain and improving employees' well-being in organizations.

Table 4.5 Mediating Effect

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
OLM Techno-Stress -> OLM Strain -> Workers Well-Being	0.0534	3.4645	0.0061
OLM Technology Characteristics -> OLM Strain -> Workers Well-Being	0.0534	2.5473	0.029

The analysis introduces the mediating role of Organizational Learning Mechanism (OLM) Techno-Stress and OLM Technology Characteristics in the relationship between OLM Strain and Workers' Well-Being. First, under the situation, in which OLM Techno-Stress plays a role as a mediator, there is a significant direct positive relationship between OLM Techno-Stress and Workers' Well-Being, with a T value of 3.4645 ($p = 0.0061$). This implies that OLM Techno-Stress mediates the relationship between OLM Strain and Workers' Well-Being, which in turn suggests that stress that is caused by technological factors within the organizational learning context might have an impact on the overall well-being of the workers. In the second case too, OLM Technology Characteristics mediate the link between OLM Strain and Workers' Well-Being, although the mediation is weaker with a T statistic of 2.5473 ($p = 0.029$). The mentioned results emphasize the complex relationships between organizational learning instruments, strain, and the well-being of the employees, indicating the necessity to reveal and reduce stressors in technological and organizational environments to improve the well-being of the employees.

5.0. Discussion and Conclusion

The discussion centers on the interpretations of the main findings of the study and the place of these findings against the background of the existing literature on techno-stress, characteristics of technology, and worker well-being in the online gig economy (Joshi et al., 2024). The results showed that there is a significant association between the technology characteristics of OLM and worker well-being, which is mediated by OLM strain (Gandini, 2019). This is in line with the findings of other studies which suggest that positive attributes of technology including usability and reliability promote better job satisfaction and well-being among the workers (Best, 2017). Also, the intermediation of OLM strain emphasizes the relevance of the psychological and emotional costs of techno-stress on the workers' general well-being (Giousmpasoglou et al., 2024). These results are consistent with other research which emphasize the intricate relationship between technology factors and employee outcomes (Mehta, 2023).

In addition, results of the study make visible the special problems that need to be addressed with the gig workers in Pakistani context (Rasheed et al., 2022). Although the software sector is gaining increasing importance in Pakistan, very few studies have addressed the welfare of its employees. The results highlight the necessity to develop customized interventions and support systems for the needs of gig workers in Pakistan, considering cultural, economic and infrastructural aspects (Nawaz et al., 2019). This is in line with previous literature that indicated the necessity of situating research results in order to address cultural

and regional discrepancies (Shahzadi et al., 2022). In addition, result of the study highlight that organizational support and intervention oriented strategies are crucial in minimizing the negative consequences of techno-stress on worker outcomes. Creating an environment that promotes employee well-being enables organizations to ease the pressure associated with the use of technology and foster a better work-life balance for gig workers (Malik et al., 2021). The adoption of such policies as flexible working schedules, stress management training, and provision of mental health resources can enable employees to deal with techno- stressors and sustain their wellness at optimal level (Irfan et al.). This study confirms other studies arguing for the importance of organizational culture and social support systems in protecting employees from the negative effects of workplace stresses in terms of health and performance (Matsuda et al., 2019).

The study results also identify OLM strain as an intermediary in this relationship between techno-stress, technology characteristics, and worker well-being (Beerepoot & Lambregts, 2015). Workers who suffer from high OLM strain are not able to reduce the negative impact of techno-stress on them which leads to low job satisfaction and burnout (Uchiyama et al., 2022). These results are consistent with previous studies that highlight the mediating effect of strain in explaining the effects of techno-stress on worker outcomes (Gandini et al., 2016). In addition, this study offers an account of the possible ways in which OLM technology features impact worker well-being (Fabo & Kureková, 2022). The positive attributes such as user-friendly interfaces and consistent platforms are related to an increased level of satisfaction on the part of the worker as well as the sense of well-being (Degryse, 2016). On the other hand, negative features like complicated interfaces or technical problems lead to growth of stress and dissatisfaction. This information is in line with the previous literature, which has focused on the effects of technology design on the experiences and perception of users (Fietz & Lay, 2023).

Furthermore, the results of the study highlight the need to deal with techno-stress issues and to support favorable technology traits to improve worker wellness in online gig economy (Ashford et al., 2018). Usability, reliability, and interface design improvements are stressor-mitigating interventions and facilitate workers' well-being (Graham et al., 2017). These results are consistent with the previous research, which suggests that user-centered technology solutions must be developed for enhancing the worker's satisfaction and productivity (Vallas & Schor, 2020). On the whole, the study adds to our insight into the intricate relation between OLM technology features, OLM strain and worker well-being in the online gig economy (Schwellnus et al., 2019). Through emphasizing the mediating role of OLM strain and positive characteristics of technology, the study provides useful implications for researchers, practitioners, and policy makers who strive to achieve healthier and sustainable work environments for gig workers (Paul, 2018).

5.1 Conclusion

In summary, this research has investigated the connections among OLM technology attributes, OLM strain, and worker wellbeing within the online gig economy, with the software sector in Pakistan being the major target. By means of a quantitative research design with a positivist foundation, data were collected from a sample of 300 software managers and employees in Karachi, Sindh, using a structured questionnaire and analyzed through Partial Least Squares Structural Equation Modeling (PLS SEM). The main results of the study indicate that there are important associations between OLM technology characteristics, OLM strain, and employee well-being, with OLM strain acting as a mediator in the relationship between technology characteristics and well-being.

The findings of this research add to the knowledge in both theoretical and practical aspects in several ways. In theory, the research contributes to the literature base by emphasizing the necessity to take into account the mediating role of OLM stress in interpreting the influence of the technology characteristics on the worker well-being. By introducing a minor detail concerning the affective and psychological burden of techno-stress, the research brings a more profound meaning to the multifaceted issues of the online gig economy. In addition, the paper adds to the emerging corpus of research on gig work in Pakistan, bridging a gap in the literature and providing important insights into the realities of software workers in this setting.

Essentially, the result of this study has implications for the sets of policymakers, employers, and platform developers that are working towards establishing the supportive and facilitating work environments for the gig workers. When positive technology properties are recognized and the techno-stressors are addressed, stakeholders will able to use targeted interventions to enhance workers' well-being and productivity in the online gig economy. Further, the research highlights the necessity of customization of support tools and implementations designed to cope with the issues peculiar to gig workers in Pakistan, taking into account cultural, economic, and infrastructural aspects.

After all, this research provides useful knowledge about the link between OLM technology features, OLM strain and worker well-being in an online gig economy. This paper not only defines the moderating role of OLM strain, but it also gives priority to technological characteristics claiming that the technological background is not deterministic providing practical implications for gig workers in Pakistan and beyond. However, this study regardless of its drawbacks serves as a base for the future research aimed at improving healthier and more sustainable surrounding in which gig workers will live in this dynamic online job market.

Limitations of Study

Although this study has some advantages, some limitations are also present. The reliance on self-reported data is one limitation of the study; this method may lead to bias and social desirability effects. Furthermore, the cross-sectional design of the study does not allow us to determine causal relationships between variables. Longitudinal or experimental designs would improve future research and help to determine the temporal dynamics of techno-stress, technology characteristics, and worker well-being. In addition, the specific emphasis of the research was the software industry in Karachi, which may restrict the applicability of the results to different sectors or areas in Pakistan. Forthcoming studies could investigate the gig work in more varied industries and locations in order to present a more complete picture of gig work in Pakistan.

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