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Examining the Effects of Workplace Redesign on Employees' Productivity: A Mediated-Moderation Model Involving Joy of Work and Control Over Coping with Distractions

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ABSTRACT

The search for an optimal workplace design has advanced from the traditional cubicles to the modern open-office work plan. However, prior research has largely ignored the interplay between workplace redesign, coping with distractions and joy of work, as significant influencers of employee's productivity. Addressing this knowledge gap, the current study relied on the environmental comfort theory to examine the mediating role of joy of work and moderating role of coping with distractions on the relationship between workplace redesign and employee's productivity. Drawing on data of 210 professionals in the leading commercial banks in Pakistan and use of partial least square structural equation modeling (PLS-SEM), the findings indicated that joy of work partially mediates workplace redesign and employee's productivity. Moreover, employees' coping abilities to overcome workplace distractions significantly enhanced the effects of workplace redesign and joy of work on their productivity. The study suggests that workplace redesign can effectively break down the physical and social walls to enhance productivity, when employees are facilitated to experience joy and overcome distractions at work.

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1. Introduction

Individuals spend almost 50 percent of their whole lives in the indoor environment that influences on their capabilities, performance, mental status and actions (Sundstrom et al., 1994). According to Haynes (2008), better working environment can increase 19 percent of employees' productivity. Job related positive outcomes and negative outcomes are linked with work environment of employees (Sultan et al., 2016). As all the organizations want to excel in terms of their productivity, employees' productivity is considered to be the important element of the organizations. Researchers refer productivity as the proportion among input and output (Tangeen, 2005). The perfect form of productivity improvement is maximum output from minimum input (Mistereketal, 1992, as cited in Palvalin, 2017). According to Brunia et al. (2016), employee productivity can be referred as employee's output ratio in terms of input ratio. Hence, efficiency at work can be reffered as employee productivity. Employees' productivity is essential for organizations and societies (Diener, 2012, as cited in Mesthrige& Chiang, 2019). It is considered as an important objective for the business owners to achieve as it suggests the prevalence of healthy working environment and condition. This is why, the first priority of the organizations is to increase the performance of their employees in order to minimize their cost.

Research on employee productivity also shows that community behaviors have an influence on employee productivity. For example, according to Mesthrige & Chiang (2019), studies have been conducted on impact of demographic characteristics, organizational culture and environment, and commuting impact on employee productivity. Since 1930's, the association among office design and work productivity has been recognized, and it is established that offices design directly influences upon the worker's productivity (Peacock, 1930, as cited in Yunus & Eranwati, 2017). Previously, offices were designed in cubical and cellular forms. However, since 1950, open offices plan were introduced. Basically, office design includes office architecture and its functional features (Brunia et. al, 2016). Hence, the implementation of the notion of the workplace redesign may lead to many benefits, such as improved mobility within the work places and cost savings due to less walls, few passages and open spaces. Here, it is important to elucidate that workplace redesign is regarded, as open space offices setting, in this entire study.

On the contrary, due to the redesigned workplaces, employees are facing issues, such as lack of privacy, distraction by co-workers' conversation with each other and by telephone calls, health issues due to poor indoor's air quality, and lack of personal control (Bunburry & Berry, 2005; Brunia et al., 2016). In the academic journals, discussions on the merits and demerits of workplace redesign are continuously evident (Kim & De Dear, 2013; De Been et al., 2016). In this regard, Google and LinkedIn office spaces are commonly discussed as examples of workplace redesign. Nowadays, authors have also been giving significant interest to the topic areas, such as the effects of office working conditions on accident rates, workers' productivity and job satisfaction (Steg & Reser, 2011; Samani et al., 2017). Many organizational behavior researchers have indicated that employees' work environment can influence their wellbeing, satisfaction, productivity, and motivation (Hameed &Amjad, 2009; Kupritz & Hillsman, 2011; Samani et al., 2017). Therefore, it would be of a high scientific and societal interest to find experimental evidence suggesting workplace redesigned environmental conditions that increase employee's job and environmental satisfaction as the literature is lacking the experimental studies in this area (Hongisto et al., 2016).

As previously mentioned, work productivity is directly influenced by workplace redesign. For example, Nigram (2016) study shows the relationship between job design with employee productivity and work outcomes, but very few studies examine the association of job design with job satisfaction and employee productivity. Although, researchers have found the negative association between open offices and workers' productivity. But more studies are needed to understand the employees' perceptions about workplace redesign, and the association between workplace redesign, open spaces and employee productivity (Yunus & Ernawati, 2017).

Similarly, very little attention has been paid on the effects of distraction and privacy issues in workplace redesign on employee productivity. Current study is grounded in the environmental comfort theory to focus on the impact of workplace redesign on employee productivity, and also to focus on the question that whether joy of work mediates the relationship between workplace redesign and employee productivity or not. Distraction at the open offices is also a main issue of the current study; therefore, the study investigates that whether coping with distraction through personal control helps in providing joy of work at open offices or not. This leads the study to deeply explore the significant influence of workplace redesign on employee productivity. Accordingly, the research questions of the study are: R (1) Does the workplace redesign exercises a negative influence on work productivity of the employees? R(2) Does the joy of work mediates the relationship between workplace redesign and employee productivity?, and R(3) Does the coping with distraction through personal control moderates the association between joy of work and employee productivity?

These research questions make the current research different from the earlier studies. Moreover, limited studies have investigated the moderating role of coping with distraction and mediating role of joy of work in order to determine the association among workplace redesign and employee productivity. Furthermore, a different culture context than the previously focused context, such as western open offices, is being focused in the current study. For example, research is done regarding the influence of open office on employee productivity in the western countries, but there is an apparent research gap in the context of Pakistan. Likewise, very little research has been done on joy of work and coping with distraction. Hence, making the current study different from the earlier studies.

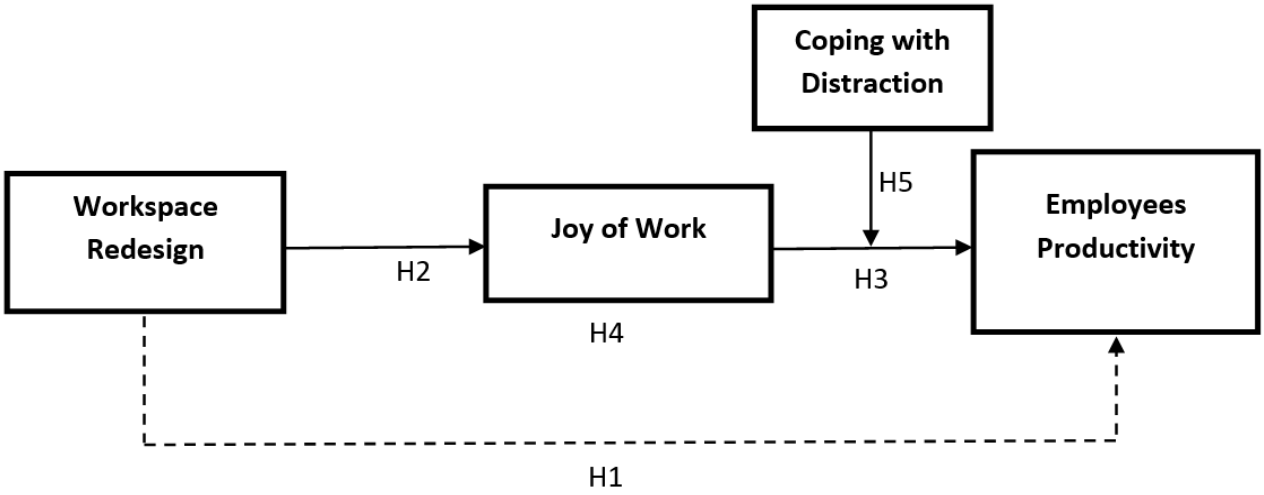

Figure 1: Conceptual Model

2. Research Methodology

This is a quantitative study. The data is collected from the banking professionals working at different banks in Bahawalpur City, Pakistan. Previously, notable studies have used cross-sectional approach and survey method to investigate the employees' productivity (e.g., Kang et al., 2017; Mulville et al., 2016). In the current study, the data is collected through structured questionnaire with the use of snow ball sampling technique. According to Hair et al. (2010), the minimum requirement for a sample size of a quantitative survey is 160 participants. In the consideration of this, a total of 210 questionnaires were distributed in an effort to achieve the response from at least 160 participants. More than our expectations, 170 completely filled questionnaires were collected back. This made a net response rate of 76%.

The questionnaire is adopted from the previous relevant studies in the area. It consists of two parts. First part is used for collecting the basic information of the participants, such as age, gender, qualification, and so forth. Second part is used to measure the relationships among independent variable, mediator, moderator and dependent variables. A 5-point likert scale is exercised for the second part of the questionnaire to measure the attitudes of the participants on each question on a scale of 5 points or attitude statements, such as strongly agree, agree, neutral, disagree, and strongly disagree. The minimum age of the participants who responded was 23 years while the maximum age was over 50 years. Among them, 52% participants were male and 48% were female. More than half of the participants were unmarried (e.g., 53%). As far as their qualification and work experience is concerned, majority of the participants were graduates, with average 5 years of job experience.

The questions posed in the questionnaire regarding workplace redesign were grouped under three of its features, Privacy, Distraction, and Departmental layout. Privacy scale was based on 4 items' scale by O'Neil (1994). Distraction scale was based on 5 items' scale by Lee and Brand (2010). And Departmental layout scale was based on 3 items' scale by Morrow and McElory (2010). For measuring the Joy of work, 18 items' scale by Pardhan and Jena (2017) was utilized while Lee and Brand's (2010) Personal control scale was used to access the personal control of the employees with regard to coping with distraction at the workplace. Moreover, employee's productivity was measured through employee's performance and absenteeism. Employee performance scale was based on 4 items' scale by Brill et al. (1984) whereas Employee absenteeism was accessed through a 6 items' scale by Lalic and Hromin (2012). Additionaly, this vast data was analysed using Smart PLS software. With regard to analysis, Hair et al. (2010) proposed that factor loading items, which have values less than 0.5, should be deleted. Thus, the items used in the current study for the analysis were the ones which have had factor loading values greater than 0.5 and lied within the confirmatory analysis acceptance range. The factor loading items with the values less than 0.5 were deleted from the analysis.

3. Results

3.1. Measurement Model Assessment

The PLS-SEM approach has been deployed in the study as it reduces the error term and facilitate the path analysis estimation (Sarstedt et al., 2017). Hence, PLS-SEM has become a eminent technique for the estimation of complex path models with latent variables and their associations (Sarstedt et al., 2017). Moreover, PLS-SEM provides regression-based path analysis and principal component analysis in structure equation model (Mateos-Aparicio, 2011), and helps in estimation of complex model with the accessibility of graphical interface, such as "PLS-Graph", "Smart PLS"," Wrap PLS" and "XLSTAT" (Sarstedt et al., 2017).

3.2. Reliability and Validity

The reliability and validity of the constructs has been assessed for the reflective modeling in the current study. According to Hair et al. (2010), the inter-item consistency of the constructs can be used to measure reliability. On the other hand, validity can be tested through convergent validity and discriminant validity which are essential requirements to assess the construct validity. Table 1 illustrates the outcomes of the quality criteria of the measurement's model. Furthermore, Cronbach's Alpha is usually used to test the internal consistency for a sample of respondents (Cronbach, 1951). Basically, internal consistency measures that how consistently individuals respond to the items of a scale. According to the rule, reliability coefficient of 0.7 or above is considered as acceptable. Table 1 shows the results of Cronbach's Alpha of the entire constructs. All the values indicate that the inter-item consistency of all the variables is acceptable.

Table 1
Reliability and Validity

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
CD	0.962	0.971	0.870
EP	0.785	0.860	0.607
JOW	0.835	0.879	0.649
WPR	0.987	0.990	0.962

CD=coping with distraction, EP= employee productivity, JOW=joy of work, WPR= workplace redesign

3.3. Convergent and Discriminant Validity

In order to test the measurement model, it is essential to check the convergent validity. Convergent validity is typically used to measure the correlation among multiple indicators of the same construct (Hair et al., 2013). And when the values of composite reliability (CR) and average variance extracted (AVE) are greater than 0.5 it is said that there is indication of convergent validity (Hair et al., 2013). Thus, the results of the current study confirm the convergent validity. Additionally, as for the discriminant validity, the widely used approaches to evaluate the discriminant validity of the measurement model are Fornell-Larcker's 1981 criterion, cross-loadings, of indicators (Sarstedt et al., 2017), and Heterotrait-monotrait (HTMT) ratio of correlation which was proposed by Henseler, Ringle and Sarstedt in 2015 (Ab Hamid et al., 2017). Discriminant validity is mainly used to confirm the relationships of different reflective constructs with their indicators with an aim to ensure that the reflective constructs have the strongest relationships with their own indiators when they are compared with other constructs and their indicators (Sarstedt et al., 2017).

Table 2
Discriminant Validity Using HTMT Approach

Constructs	CD	EP	JOW	WPR
CD				
EP	0.479			
JOW	0.226	0.231		
WPR	0.146	0.121	0.346	

CD=coping with distraction, EP= employee productivity, JOW=joy of work, WPR= workplace redesign

Table 2 below represents the discriminant validity using HTMT approach. Henseler et al. (2015) debated that both Fornell-Larcker criterion and cross-loadings are not sufficient for evaluating discriminant validity, and so researchers need to report HTMT ratio of correlation. It

is necessary that the results of bootstrapping for the HTMT approach should show the upper confidence intervals as less than 1 (Valaei&Jiroudi, 2016). If HTMT's worth is greater than 1, not only it suggests that the null hypothesis is accepted, but also it demonstrates the absence of discriminant validity (Henseler et al., 2015). As Table 3 shows the HTMT results less than 1; therefore, the discriminant validity of the constructs is met (Valaei&Jiroudi, 2016).

The measurement model in Figure 2 represents the factor loading of the study. As previously mentioned, the factor loading items which had the values less than 0.5 were deleted from the analysis.

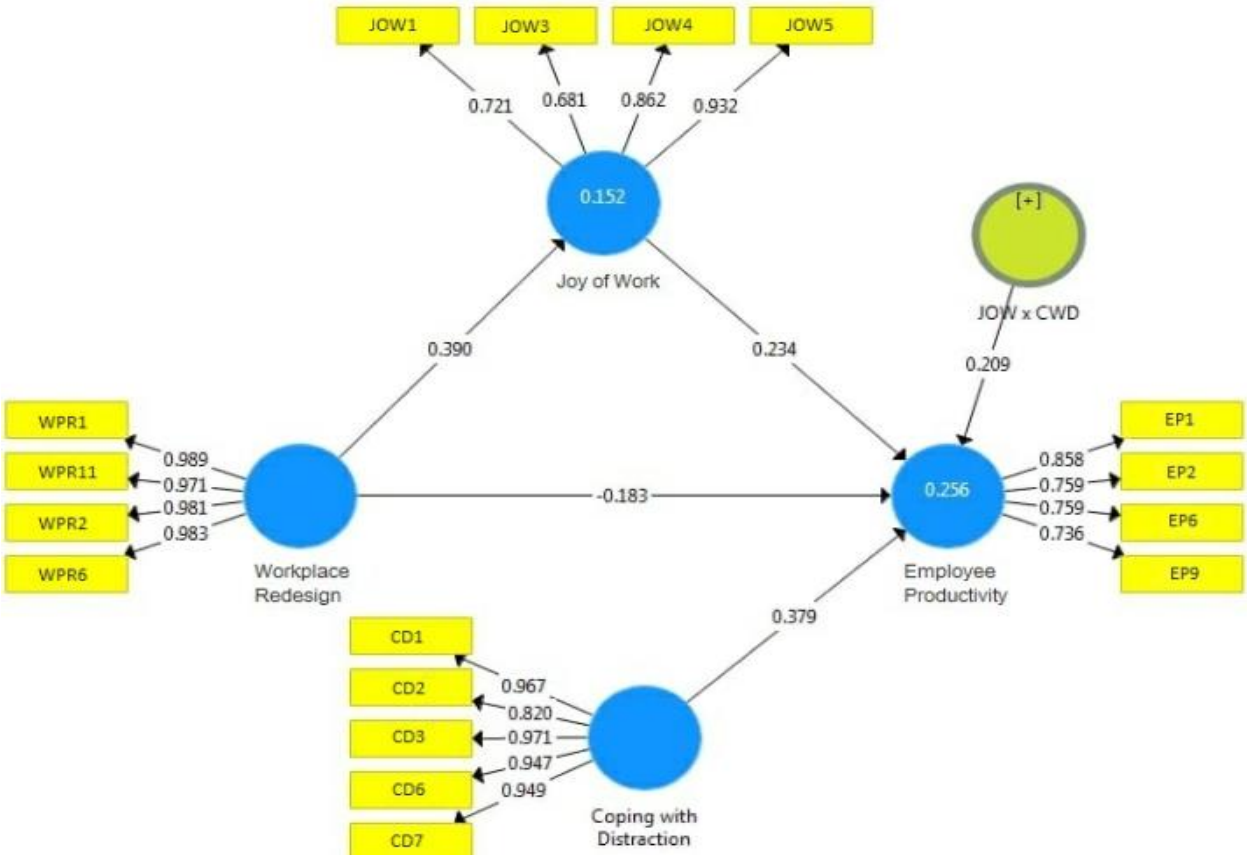

Figure 2: The Measurement Model

3.4. Structural Model Assessment and Hypotheses Testing

Workplace redesign (WPR) has a direct and negative relationship with employee productivity (EP). According to this hypothesis, it can be assumed that WPR has an influence on EP. Table 3 shows the significant, direct and negative relationship between WPR and EP as the beta value is -0.183 (t= 2.37; p= 0.018) which confirms the strength of relationship. Therefore, it can be said that employees' productivity has been affected due to the workplace redesign. This finding of the study is similar to the findings of the prior studies, so it confirmed that WPR and EP are empirically negatively associated with each other (Vischer, 2007; Samani et al., 2017), even in the context of Pakistani organizations. As the beta in this relationship is negative, it means that an increase in WPR, will decrease the EP. Hence, again, it is proved that WPR influences EP in a direct and negative manner, and so, clearly, the first hypothesis is accepted.

Workplace redesign (WPR) has a negative relationship with joy of work (JOW).According to this hypothesis, it could be assumed that WPR influences on JOW at the workplace. Previous studies indicated that moving towards workplace redesign increased employees' dissatisfaction at work (Bergstroma et al., 2015). In the current study, the results showed enormously significant and negative relationship between WPR and JOW as the beta value is 0.390 (t=

7.583; p= 0.000) which confirms the strength of relationship. Hence, it can be stated that JOW is affected due to WPR. This result is aligned with the second hypothesis, and so it is accepted.

Joy of work (JOW) has a positive relationship with employees' productivity (EP).Job satisfaction is one of the types of JOW. Previous studies showed that JOW increased employee performance (Siengthai&Pila-Ngarm, 2016). Current study's results showed that the value of beta is 0.234 (t= 3.168; p= 0.002) which means that there is a significant and positive relationship among these variables in the context of Pakistani organizations, especially banks, too. Moreover, the coefficient value indicated that an increase in JOW can lead to changes in EP. In other words, with more JOW, employees can be more productive. Hence, organizations can enhance the JOW for elevating the levels of their employees' performance. This result is aligned with the third hypothesis of the study, and so, on the basis of the result, the third hypothesis is accepted.

Joy of work (JOW) mediates the relationship between workplace redesign (WPR) and employees' productivity (EP).

As the mediator variable helps to simplify and/or recognize the nature and understanding of association between independent and dependent variables, the combined effect of WPR and JOW is measured on EP. The significant value of beta coefficient for the dependent variable (DV) is observed as 0.091 (t=2.900; p=0.004) which indicated indirect relationship. So, it proved that JOW has a strong role in the relationship between WPR and EP. The results also confirmed that the influence of WPR is reduced, as the value of variance accounted for (VAF) mediation is 33.21%, which clarified that there is a partial mediation of JOW between WPR and EP. In short, the fourth hypothesis is accepted because JOW played a significant role of mediation. Accordingly, it can be said that in the banking organizations of Pakistan, JOW mediates the relationship between WPR and EP.

Coping with distraction (CD) moderate the relationship between joy of work (JOW) and employees' productivity (EP).With regard to the fifth and final hypothesis, the analysis showed the beta value as 0.209 (t=2.362; p=0.019) which indicated that CD moderates the relationship between JOW and EP. The control over distractions (or CD) strengthens the relationship between JOW and EP. The organizations can increase JOW effects on their employees' productivity by facilitating them with the abilities of CD. Thus, the results of the study support that CD moderate the relationship between JOW and EP. In view of this, it can be said that the fifth hypothesis is accepted. Furthermore, through such results, it can be advocated that the banking organizations in Pakistan should direct their efforts in increasing JOW effects on EP by assisting their employees to cope with distractions well.

Table 3
Hypothesis Testing Results

		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistics	*p* values	VAF %	Decision
H1	OR -> EP	-0.183	-0.06	0.077	2.37	0.018		Accept
H2	OR -> JOW	0.390	-0.051	0.051	7.583	0.000		Accept
H3	JOW -> EP	0.234	0.006	0.074	3.168	0.002		Accept
H4	OR->JOW -> EP	0.091		0.031	2.900	0.004	33.21	Partial mediate
H5	JOW x CD -> EP	0.209	-0.037	0.089	2.362	0.019		Accept

CD=coping with distraction, EP= employee productivity, JOW=joy of work, WPR= workplace redesign

4. Theoretical Implications

The current study makes several contributions to the literature on workplace redesign (WPR), joy of work (JOW) and coping with distraction (CD). Firstly, the study's analysis supports the mediating effect of JOW, and so suggests that environment comfort theory (ECT) is a relevant framework to explain the effects of WPR and CD on employees' productivity (EP). Recent studies also adopted ECT to examine the effects of WPR on employees' performance and their behaviors (Samani et al., 2017). Particularly, these studies focused on the effects of employees' perception of their office designs and environment on their performance and behavior.

Similarly, the current study contributes to the basic tenets of ECT by demonstrating employees' psychological comfort factor, such as JOW, as a key mediator which links WPR to EP. Moreover, the current research corroborates the ECT by establishing functional comfort, such as control over coping with distractions (CD) as a moderator which links JOW to EP. Hence, by proposing and validating ECT as an overarching framework for describing the mediating effect of JOW on WPR and EP and the moderating effect of CD on JOW and EP, the current study implies major theoretical contributions in terms of enhancing the existing literature on the subject.

4.1. Practical Implications

With regard to the practical perspective, the current study has examined the theoretical relationship between independent variable (IV) and dependent variable (DV) in a new research context, Pakistan. And in doing so, the study has found the negative relationship between the IV and DV (Yunus&Ernawati, 2018). Moreover, the results of the study also indicate the positive relationship of the mediator and moderator with the IV and DV in the context of Pakistani organizations, such as banks. Therefore, the results of the current research advocate several implications for the employers, policy and decision makers, and management of the banks in Pakistan. For example, employers are advised to provide JOW to their employees as this can lead the banks to enhance their employees' performance and decrease their absenteeism at work, which, in turn, can have a positive impact on the overall productivity of the banks. In addition, policy and decision makers are advised to provide their employees with both functional comfort (e.g., control over coping with distractions) and psychological comfort (e.g., JOW).

Moreover, the results of the current study imply that since JOW has mediating effect on WPR and EP, so it can be healthier for the organizations to focus on their employees' satisfaction and happiness at work. Also, banks should adopt strategies which ensure that their employees have control over coping with distractions while performing their work responsibilities. In other words, banking organizations can maintain a joyful or relaxing environment for their employees to work with the adequate utilization of resources to reduce the adverse effect of WPR or open space offices on EP. Similarly, the top management of the banks should intervene in the matter and develop the human resource management (HRM) practices to facilitate their employees with regard to attaining JOW and control over CD at work. As distractions at work effect EP negatively (Kim & Dear, 2013), so control over CD should be essentially provided to the employees working in the banks of Pakistan so as to reduce the distractions they face at their work and increase their productivity.

4.2. Limitations and Future Directions

Current study has some limitations. Cross sectional design is generally used for capturing the data for a specific point in time so it may not be appropriate to study the changing behaviors over a long period of time. However, it assisted in proving the hypothesis of the study, and didn't cost much in terms of time and money. Also, the data collected for the current research can be used for various types of relevant studies happening around the same time. Similarly, snowball sampling technique used in the study had been a quicker and economical way to collect the data. So the limitations discussed in the current study design may be overcome in the future studies. Therefore, they provide a general direction for future studies in this area. In order to authenticate the present study's results from a practitioner's perspectives, a case-study approach can be used for the closer examination of open-plan office effects (e.g., offices area without doors, fences and walls) on employee productivity in the future. Moreover, a mixed method approach, such as qualitative interview and quantitative survey, with large sample size may be able to provide wide-ranging findings in the future studies. Last but not least, future studies may adopt longitudinal research design for studying this particular area.

5. Conclusions

Current study focuses on the mediation-model of joy of work as a mediator and coping with distraction as moderator on the relationship between workplace redesign and employee productivity. In doing so, the study is based on environmental comfort theory to examine the effects of workplace redesign on employee productivity. Empirical data is collected through cross sectional survey. Participants of the study were bank professionals while snowball sampling technique was used for the study. Assessment of the direct and mediating effects PLS-SEM

software was used. The results show that workplace redesign can have negative effects on employees' joy of work and productivity. However, by coping well with distraction, these issues can be reduced. Therefore, the study has important implications for the policy makers, practitioners and parties involved in the workplace redesign. For example, they should integrate or prioritize employees' needs of joy of work and ways of coping well with distraction in the process of workplace redesign.

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