THE IMPACT OF COVID-19 ON ACADEMIC STAFF'S PERFORMANCE ON SAUDI ARABIA UNIVERSITIES

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Abstract

This research aimed to assess the COVID-19 impact on the academic staff performance at Tabuk University, the Kingdom of Saudi Arabia, as well as to analyse the pandemic impact on job stress and job attitude; while considering the personality traits (emotional stability and extroversion) as moderator's factors that either mitigate the negative impact of job stress imposed by COVID-19 on job performance; or boosts the perceived positive impact of job attitude on job performance. Two hundred ninety (290) of Tabuk University academic staff were surveyed. The structural equation modelling (SEM) that adopts the partial least square method (PLS) facilitated the hypothesis testing. The results revealed that COVID-19 has a significant positive impact on job stress. While job stress has a significant negative relationship with job attitude and job performance. Emotional stability moderates the positive impact of job attitude on performance, while job attitude mitigates the negative relationship between job stress and performance.

Keywords: Academicians, COVID-19, Emotional Stability, Extroversion, Job Attitude, Job Performance, Job Stress

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1. INTRODUCTION

Coronavirus disease (COVID-19) is an infectious pandemic caused by a newly discovered strain of the virus. According to the World Health Organization (WHO), in its COVID-19 Weekly Epidemiological update published on the 1st of June 2021, over 169.6 million cases with a death toll of 3.5 cases since the beginning of the pandemic during the 2nd week of January 2020. Despite the declining global trend over the past four weeks of May 2021, the number of cases and deaths remain high, and substantial increases are ongoing in many countries throughout the world. In addition to its impact on public health, COVID-19 has caused a significant economic shock and led to substantial global changes in various facets. COVID-19 has created a challenging workplace environment from the managers' and the employees' perspectives (Gigauri, 2020).

COVID-19 pandemic has imposed radical changes in the work setup as the managers have to support their organizations by adapting and coping with such circumstances. Moreover, the managers have to make many decisions such as achieving tasks, staying at work, working from home, changing to digital, and working remotely in a short time frame. Meanwhile, the employees who were spending all their time working inside their organization suffered to adapt to a new stream of

working remotely (Pandey, 2020). In March 2020, a global survey of 800 HR executives found that 88% of the organizations required or encouraged their employees to work from home during this pandemic (Caligiuri, De Cieri, Minbaeva, Verbeke, & Zimmermann, 2020; Pirzadeh & Lingard, 2021).

The purpose of this paper is to explain how the COVID-19 pandemic changes work practices and socio-psychological status and how these changes influence job performance through job stress and the attitude of employees. The theoretical model is developed to illustrate the relationship between the proposed variables. The effects of COVID-19 on this variable have been analysed independently in previous research and based on that relationship, we were motivated to develop this integrated model.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature to explore the variables and their interrelations. Section 3 presents the research methodology. The researchers provided the attained results of the performed analysis using the partial least square structural equation modelling (PLS-SEM) in Section 4. Section 5 presents the discussion, and finally, Section 6 represents the conclusion.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Impact of COVID-19 on human resources

The COVID-19 pandemic caused tremendous changes and shifted the nature of life. Fear of contracting and transmission of infection dominated the work climate. Such a situation led to radical changes for the human element by either changing work practices or changing the workforce's socio-psychological aspects status. Apparent symptoms of fear, depression, struggle from social contact, loss of security, high risk of job loss, uncertain conditions, worse health, and loss in the family or social group for workers dominated various institutions (Vnoučková, 2020).

Nevertheless, COVID-19 causes various types of fears that make the employees suffer and become stressed. Opatha (2020) classified this stress as "stress by corona — SBC". SBC is what the employee experiences internally in response to coronavirus and the associated difficulty in dealing with it.

2.2. Job attitude

Liao, Lu, Huang, and Chiang (2012) defined the work attitude as "a set of attitudes and thoughts toward work, which are reflected in the form of work involvement and organizational commitment" (p. 5301). Originations fight to enhance their employee's performance in order to improve their competitive advantage and profit, as firms consider the employees as a cornerstone for progress and development. However, many studies stated that the environment affects the employee's performance, as they are affected by the different milieu and psychological factors surrounding them; and that the employees' cognition and feeling are associated with their performance (Susilo, 2020). Several studies examined the attitudes by

investigating the employee's involvement and satisfaction and proved that the job attitude contributes to the achievement of better performance (Velnampy, 2007). Previous research confirmed that job stress has a negative relationship with job attitudes (Khan et al., 2014a).

However, Moore and Lucas (2021) argued that fostering a positive attitude to minimize the adverse psychological feelings that emerged due to the procedures taken to combat COVID-19 is crucial to maintaining an active life and reducing such feelings. Also, Demirović Bajrami et al. (2021) in their study, stated that COVID-19 had a negative impact on employees' work attitudes and turnover intentions. In accordance, Gellert and Schalk (2012) indicated that all attitude-related factors positively affect employee performance.

2.3. Job stress

Beehr and Newman (1978) stated that job stress refers to a situation wherein job-related factors interact with a worker to change (i.e., disrupt or enhance) his or her psychological and physiological condition such that force the person to deviate from normal. While Parker and DeCotiis (1983) indicated that the term "job stress" is used to describe the feeling of a person that deviates from normal or self-desired functioning in the workplace as the result of opportunities, constraints, or demands relating to potentially critical work-related outcomes.

According to Krohne (2001), "stress is viewed as a relationship between individuals and their environment" (p. 15164). One of the sources of employees' stress originates from working in uncertain contexts; on the other hand, employees' stress tends to increase due to managers' actions that usually tend to increase the employee's commitment to their origination (Alam, 2016). While Westman and Eden (1991) found that manager commitment levels differ under different stress conditions and that the stress on employees raises due to the conditions associated with the current pandemic to excessive stress rates, leading to lower employee commitment. Rahman, Ibrahim, and Masri (2020) confirmed this by stating that occupational stress is a trigger of job turnover and lower the workers satisfaction. Khan et al. (2014a) in their study, stated that that job stress has significant negative relationship with job performance, job satisfaction, and life satisfaction. Regarding the relationship between stress and performance, Jamal (1984) stated, "if individual experiences a high level of job stress, he may spend more time in coping with stresses and his efforts for job performance may be reduced, resulting in low job performance" (p. 2). Jamal's (1984) findings suggest that performance will be affected as the employees' or managers' low performance is associated with high stress. A similar conclusion was attained by Dollard and Metzer (1999), Jamal (1984), and Yozgat, Yurtkoru, and Bilginoğlu (2013) that there is a negative correlation between job stress and job performance. This negative tie would probably exacerbate by the "stress by corona" (SBC).

2.4. Job performance

Job performance influences an employee's contribution and output as according to Khan et al. (2014b), job performance is "the evaluation of work that generates an exciting and happy situation for employee" (p. 191). Spector (1997) stated that job performance is about the employees liking and disliking their job. In this regard, performance is related to an employee's health during this pandemic, when the employee is worried about his inflexion, which in return influences his psychological status and would consequently impact job performance. Whereas Jayaweera (2015) and Muchtar (2016) stated that the work environment positively influences job performance, indicating that a healthy and safe work environment helps employees increase their performance. Muttaqin, Taqi, and Arifin (2020) stated that increased job satisfaction and some other variables are needed in improving the job performance of start-up companies during the COVID-19 pandemic. Deniz Günaydin's (2021) results showed that COVID-19 fear had a negative impact on job performance.

2.5. Personality traits

Many contemporary personality psychologists believe that there are five basic dimensions of personality, often referred to as the "Big 5" personality traits: extraversion, also often spelled "extroversion", agreeableness, openness, conscientiousness, and neuroticism (Judge & Erez, 2007). Judge and Erez (2007) focused on the role of emotional stability and extraversion in predicting performance; they indicated that both measures predicted performance, suggesting that the combination of emotional stability and extraversion may be more important to performance than either trait in isolation. Meymandpour and Bagheri (2017) stated that personality can either be extroverted or introverted. The extrovert type tends to spend more time with other people, spend more time engaged in social activities, and have more friends; while the introvert type prefers one's companionship, does not enjoy significant social events, and is seen as quiet and remote. Supported by Deniz Günaydin's 2021) study, we also found that extroversion positively affected job performance.

Aleem (2005) and Yang et al. (2020) mentioned that an emotionally stable personality would have fewer negative mood states, be less sensitive to negative information, and maintain a lower risk of mental illness. Moreover, an emotionally stable individual can withstand delay in satisfaction of needs, tolerate a reasonable amount of frustration, believe in long-term planning, and is capable of delaying or revising his expectations in terms of the demands of the situations. Flesia et al. (2020) confirmed that emotional stability and acceptance could help reduce the stressful impact of the COVID-19 pandemic.

Shokrkon and Nicoladis's (2021) findings indicated that the individuals who scored higher in extroversion were experiencing minor mental health issues during the emotionally stressful situations during the COVID-19 pandemic. Shokrkon and Nicoladis (2021) attributed this to their tendency to have more friends and social networks, higher perceived social support, and rely on their social support to maintain their positive mental health.

2.6. Hypotheses

According to the conceptual model, the researchers built the study hypotheses for assessing the direct influence of COVID-19 on the dependent variable (*job performance*) and its indirect impact through the mediating variables (*job attitude* and *job stress*). The researchers considered the personality traits variables (*emotional stability* and *extroversion*) as mitigators of COVID-19 impact on performance.

H1: COVID-19 impact on work practices significantly influences job attitude, job stress, and job performance.

H1a: COVID-19 impact on work practises negatively influences job performance.

H1b: COVID-19 impact on work practises negatively influences job attitude.

H1c: COVID-19 impact on work practises negatively influences job stress.

H2: COVID-19 impact on the socio-psychological aspects significantly influences job attitude, job stress, and job performance.

H2a: COVID-19 impact on the socio-psychological aspects negatively influences job performance.

H2b: COVID-19 impact on the socio-psychological aspects negatively influences job attitude.

H2c: COVID-19 impact on the socio-psychological aspects negatively influences job stress.

H3: Job stress significantly influences job attitude and job performance.

H3a: Job stress negatively influences job attitude.

H3b: Job stress negatively influences job performance.

H4: Job attitude positively influences job performance.

H5: Personal traits significantly influence job performance.

H5a: Emotional stability significantly influences job performance.

H5b: Extroversion significantly influences job performance.

H6: Personal traits moderate the relations between job stress and performance, job attitude and performance.

H6a: Emotional stability moderates the relationship between job stress and performance.

H6b: Extroversion moderates the relationship between job stress and performance.

H6c: Emotional stability moderates the relationship between job attitude and performance.

H6d: Extroversion moderates the relationship between job attitude and performance.

H7: Personal traits mediate the relations between the impact of COVID-19 and job performance, job stress, and job performance.

H7a: Job stress mediates the relationship between the impact of COVID-19 and job performance.

H7b: The job attitude mediates the relationship between job stress and job performance.

3. RESEARCH METHODOLOGY

3.1. Method

The instrument used for collecting data for this study was a 5-item Likert scale questionnaire administered in Arabic. The tool went through several rounds of pre-tests and refinement taken by a panel of academics and practitioners to check for ease of use and ensure its accurate interpretation.

3.2. Sample

The population size of academic staff at Tabuk University is 1995. The sample size (322) was determined by using the Steven Thompson equation. The stratified random sample was taken and the online questionnaires were distributed to faculties in the University; the number of questionnaires returned was 290 (90%).

3.3. Measures

The researchers operationalized the study constructs with published scales as follows: Liao et al.'s (2012) 5-item, Likert-type scale comprised of job attitude measurement. The job stress measurement was through Parker and DeCotiis's (1983) scale. The researchers adapted the scale developed by Dubinsky and Mattson (1979), modified by Singh, Verbeke, and Rhoads (1996), Wu (2011), and Liao et al. (2012) to measure job performance. The researchers also adopted the 5-item scale-based scales developed by Abdel-Khalek (2015) and Cohen (2013) for measuring the respondents' personality traits.

4. DATA ANALYSIS AND RESULTS

Data analysis started by testing univariate normality through Kurtosis and Skewness, as normality is a basic assumption to perform factor analysis (Yong & Pearce, 2013). The result indicated that only two variables labelled *"I pay great attention to my work"* and *"In general, I am satisfied with my performance"* were beyond the acceptable Kurtosis range that lies between -2 and +2. Hence, the researchers eliminated them from the data set, which remained with 40 variables.

4.1. Exploratory factor analysis

The researchers performed the exploratory factor analysis (EFA) to test the unidimensionality of the study constructs and examine the factors-variables relationship of the proposed theoretical model, which are among the purposes for conducting EFA as indicated by Taherdoost, Sahibuddin, and Jalaliyoon (2014).

The applied EFA criteria were: principal component analysis, Varimax with Kaiser normalization as a factor rotation method, and an eigenvalue equal to 1.

The researchers adhered to the EFA conditions suggested by Hair, Anderson, Tatham, and Black (2010) as follows: Kaiser-Meyer-Olkin (KMO) (the measure of sampling adequacy) scored 0.922 compared to the minimum threshold of 0.500.

Bartlett's test of sphericity proved to be significant at 0.05, indicating sufficiency of correlations among the study variables. The study variables provided an acceptable level of explanation as their commonalties were above the minimum acceptable level of 0.50 except for one item labelled *"I accept things as they are"*. The factor loadings were above the acceptable condition of 0.50, except for one variable labelled *"My family burdens increased during the pandemic"* (Appendix). Hence, the researchers eliminated those two variables from the dataset.

The EFA result revealed that the extracted factors (with eigenvalues greater than 1) contributed to explaining 75% of the total variance among the studied variables, which exceeded the minimum level of 60% indicated by Hair, Hult, Ringle, and Sarstedt (2017).

The EFA provided seven extracted factors that matched the theoretical model of this research. However, only one variable shifted from the job attitude construct to the job performance construct. The analysis proved that the extracted factors were uni-dimensional. The items constituting the factors tended to attain much higher outer loadings than their loadings in the other factors. The researchers retained the factor/constructs names as per the theoretical model. They are abbreviated as follows: F1: Performance (PF); F2: The socio-psychological impacts of COVID-19 (SP); F3: Job stress (JS); F4: COVID-19 impact on work practices (CW); F5: Emotional stability (ES); F6: Job attitude (JA), and F7: Extroversion (XT).

The researchers tested the internal consistency and reliability of the obtained constructs by calculating their Cronbach's alphas. Table A.2 (Appendix) reveals that Cronbach's alpha test values for all variables were above Nunnally and Bernstein's (1994) suggested thresholds of 0.70. This result confirms that the data collection tool and procedure were internally consistent and reliable.

Before delving into confirming the EFA results through the confirmatory factor analysis, the researchers investigated the necessary assumptions for the multivariate data analysis as suggested by Hair et al. (2010). First, the writers detected the outliers by calculating the Mahalanobis distance (D^2) of the extracted variables. Then, we compared the attained D^2 value to the chi-square distribution with seven degrees. The result indicated four records as outliers as their chi-square significance value was less than 0.001. The data set size was reduced from 290 to 286 accordingly.

The multicollinearity test across the extracted factors revealed that the least scored tolerance was 0.98, above the minimum acceptable value of 0.20. The highest variance inflation factor (VIF) was 4.502 (i.e., below the maximum threshold of 5); hence, the extracted factors were considered free from the multicollinearity problem.

The multivariate normality was examined through the Shapiro-Wilk test as, according to Razali and Wah (2011), it is the most potent normality test. The results revealed that the only normally distributed factors were job stress (JS) and COVID-19 impact on work practices (CW).

The researchers used the SmartPLS software based on partial least square-structural equation modelling "PLS-SEM" (Ringle, Wende, & Becker, 2017) upon failing to fulfil the data normality assumption

for testing the theoretical model. According to Hair et al. (2017), normality is not an assumption in PLS-SEM.

4.2. Structural equation modelling (SEM)

The researchers commenced the PLS-SEM analysis by examining the relationships between the seven constructs and their constituting variables, as this relationship can either be reflective or formative.

The researchers implemented the confirmatory tetrad analysis (Table A.3) to determine the constructs types. Hypothesizing that the construct measures are formative when the upper and lower Bonferroni-adjusted confident intervals "CI low adj." and "CI up adj" do not include zero. Rejecting the null hypothesis in a tetrad test implies that the construct is reflective (Gudergan, Ringle, Wende, & Will, 2008). Thus, the attained results confirmed that the entire study constructs were reflective.

The researchers conducted the measurement model assessment (to verify the relationships between the constructs and their items) by checking the internal consistency reliability (Cronbach's alpha "α" and composite reliability "Pc"). Table A.4 reveals that the constructs were reliable and internally consistent as the attained measurement levels were above 0.700, the minimum α and Pc thresholds suggested by Hair et al. (2017).

The verification of the convergent validity followed via checking how a variable correlated positively with its alternative ones in the same construct by assessing two criteria.

Namely, the average variance extracted (AVE) against its minimum acceptable level of 0.5; and the variables' outer loadings, which should be at least 0.708 to be retained in the model as indicated by Hair et al. (2017). The researchers deleted three variables (*CW1, CW2,* and *JS7*) as their outer loadings were less than the acceptable threshold of 0.708. However, the constructs' AVE score proved to be over 0.5 (Table A.4).

The measurement model assessments concluded by empirically verifying the discriminant validity, i.e., how the study constructs are unique and distinct from each other. The outer loadings (Table A.5) indicate that each variable loading was higher on its intimate construct than on the other ones.

In addition, the Fornell-Larcker criterion (Table A.6) shows that the square root of each construct's AVE is higher than its highest correlation with any other construct (Hair et al., 2017). Hence, the researchers deemed robust establishment of discriminant validity.

The researchers delved into the structural model evaluation to assess the latent variables' relationships and the model's predictive power. The process started by examining and eliminating the collinearity problem to improve the model well-fitting by applying the maximum VIF of 5.0 as suggested by Garson (2016). Accordingly, 7 variables ((PF: 2, 3, 6), (CW6), (SP6) and (JA: 3, 5)) were deleted.

The models resulted in a significant coefficient of determination (R^2) (Table 1) as the performance construct tended to explain 76% of the models' inputs, while the job stress and job attitude explained 43% and 19%, respectively.

The analysis result indicated that f^2 (effect sizes) which is calculated by the following formula:

$$f^2 = (R^2 included - R^2 excluded)/ (1 - R^2 included) \tag{1}$$

that tells (according to Daly's (1978) scale) how the performance (FP) as the target (endogenous) is affected by any of the other (exogenous) constructs.

Table 1. Coefficient of determination R-square

Variables	R-square	R-square adjusted
Job attitude	0.190	0.182
Job stress	0.426	0.422
Performance	0.761	0.753

The results revealed that the deletion of the job attitude construct has a medium-size effect ($f^2 = 0.674$)) on FP as its R^2 dropped from 0.761 to 0.600. The deletion of other constructs slightly impacted FP as their effect sizes ranged between 0.138 and 0.0250 for emotional stability and job stress. Hence, all the in-depended constructs surpassed the minimum acceptable level of 0.0200 (small f^2) according to Daly's (1978) scale.

The researchers inspected the predictive relevance indicated by Stone-Geiser's Q^2 (by using the SMART-PLS blindfolding technique). The obtained Q^2 values for JA (0.148), JS (0.293), and FP (0.563) confirmed the predictive relevance of the indicated constructs, as they were larger than zero; the threshold suggested by Hair et al. (2010).

The researchers also calculated the relative measure of reflective relevance (q^2) through the formula:

$$q^2 = (Q^2 included - Q^2 excluded)/ (1 - Q^2 included) \tag{2}$$

to detect how the deletion of any of the exogenous constructs affected the PF construct. The results revealed that the JA has a moderate impact (based on Daly's (1978) suggested scale) on the predictive relevance of PF as its Q^2 score altered from 0.563 to 0.451 by the deletion of the JA construct.

Figure 1 and Table A.7 show the hypothesis tests results. The bootstrap resampling procedure with 5000 sub-samples was implemented and enabled determining the t-values and significance of the causal relationships.

The bootstrapping analysis revealed that the coefficients of the mediation paths: CW→JS→JA (-0.238), SP→JS→JA (-0.115), and JS→JA→PF (-0.147) are significant with t-values of 5.168, 3.903, and 2.957, respectively. The indirect effects 95% boot CI bias.

Figure 1. Structural model estimation
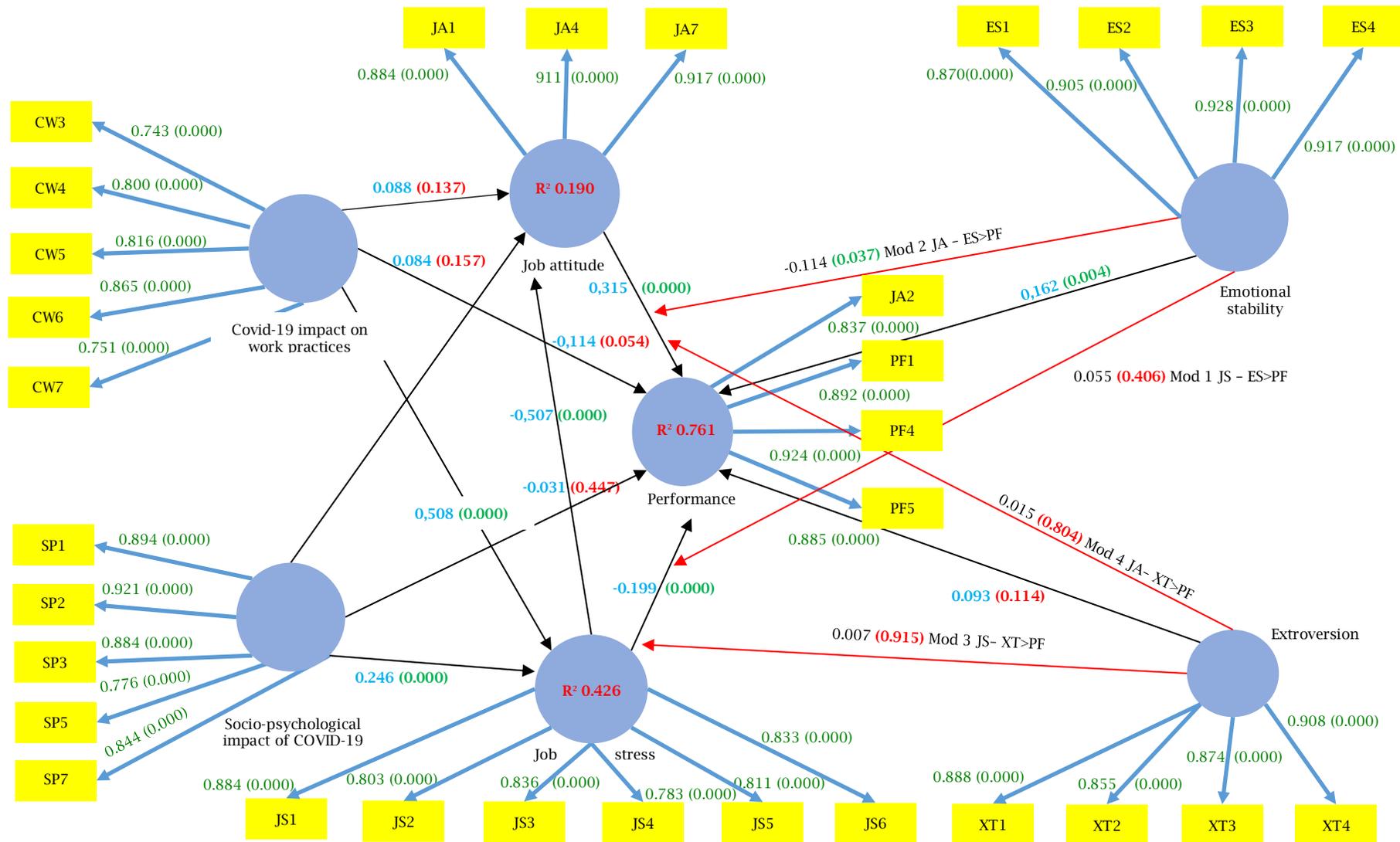
Corrected: [LL = -0.333, UL = -0.156], [LL = -0.182, UL = -0.066], and [LL = -0.270, UL = -0.071] do not include zero in between each pair of levels indicating there is statistically significant mediation (Preacher & Hayes, 2004, 2008). The researchers detected the mediation type through the mediator analysis procedure suggested by Zhao, Lynch, and Chen (2010) and Nitzl, Roldán, and Cepeda (2016) which indicated that fully mediation existed in the first two mediation paths (see above), with JA played a regulatory partial mediation role between JS and PF.

5. DISCUSSION

This study represents an effort to examine the impact of COVID-19 on job stress, job attitude, and the job performance of academic staff at Tabuk University. The developed model has proven its capacity as it explains 76% of the job performance variance.

The results show that both hypotheses *H1b* and *H2c* were supported. However, the magnitude of CW's positive influence on JS was higher (0.508) compared to that of SP (0.246). This result is in line with the previous studies that found that the fear of transmission of infection or depression from social contact or uncertain conditions leads to job stress (Vnoučková, 2020). Parker and DeCotiis (1983) indicated that job stress of employees describes their feeling that deviates from normal work practice situations. In addition, the literature showed that COVID-19 causes various types of fear that made employees suffer and become stressed, which is classified as SBC (Opatha, 2020). The result indicated the elements of hypothesis *H3* were supported, indicating the adverse relationship between job stress and job attitude (*H3a*); this is compatible with previous studies by Blomberg, Kallio, Kroll, and Saarinen (2015), Chen, Leu, and Chiou (2006), and Min Oh (2019). Hypothesis *H3b* was supported, indicating a negative relationship between job stress and job performance (Dollard & Metzer, 1999; Jamal, 2011; Kalyar, Shafique, & Ahmad, 2019; Khan et al., 2014a; Shafique, Kalyar, & Ahmad, 2018; Yozgat et al., 2013).

The hypothesis stipulating that job attitude positively influences job performance (*H4*) was also supported and consistent with the studies of Commer, Sci, and Dinc (2017), Khan et al. (2014b), Shafique et al. (2018), and Rahiman and Kodikal (2017), which stated a significant and positive relationship between job attitude and job performance.

Our results show that emotional stability, as one of the Big 5 personality traits, positively influences job performance (*H5a*); this finding is

in line with Aleem (2005), Yang et al. (2020), and Chandrasekara (2019). The moderation effect of the emotional stability between the job attitude and performance (*H6c*) proved to be supported, and this confirms Flesia et al.'s (2020) study, which indicated a strong positive relationship between attitude and performance moderated by the emotional stability status of the employees.

A full mediation role of job stress was proved to exist between the COVID-19 impact on work practices and job attitude (*H7a*), which means that the adverse impact of work practices wouldn't significantly reduce the employees' positive attitude towards their work unless exposed to stresses related to inappropriate health environment at workplace COVID-19 pandemic. Whereas the results present partial mediation on job attitude between job stress and performance that the positive job attitudes would lessen the negative impact of job stress on performance (*H7b*); however, this adverse impact would exist through the direct supported relationship between job stress and performance (*H3b*).

6. CONCLUSION

The education institutions struggled during the COVID-19 pandemic that affected the workplace to maintain their staff's productivity and performance. The results of this study showed that the pandemic struck the staff's stress and attitude, which directly influenced job performance, indicating strong relationships between COVID-19 impact on work practice and the socio-psychological aspects of job stress. Also, our results elucidated that emotional stability, as one of the Big 5 personality traits, positively influences job performance.

The contribution of this research is represented in developing a proposed model which illustrates the relationships between the variables during the COVID-19 pandemic. The developed model has proven its capacity as it explains 76% of the job performance variance.

Even with this study's contributions, it has some limitations. First, the sample represented the academic staff of Tabuk University, which is acceptable to test study variables; however, the extension to other universities might have provided results that can be generalized.

Also, the findings of this research need to be validated in through further research in other contexts. A comprehensive study would be useful that included public and private universities. Also, to elaborate the model by adding the demographic factors (age, gender).

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APPENDIX

Table A.1. Rotated component matrix

Statements	Component						
	PF	*SP*	*JS*	*CW*	*ES*	*JA*	*XT*
PF3 *"I can preserve performing well"*	.886				.223	.168	.130
PF2 *"I can accomplish the assigned tasks promptly and efficiently"*	.884				.224	.165	
PF1 *"I have good discipline in my work during the coronavirus pandemic"*	.874		.115		.205	.194	
PF4 *"I acquired new knowledge and new work-related skills during the pandemic"*	.854		.175		.193	.148	.193
PF6 *"I maintain the university's reputation with my discipline at work"*	.828		.123		.194	.323	.189
PF5 *"I collaborate with my colleagues to complete work assignments"*	.812		.110		.165	.101	.250
JA 2 *"My life is closely related to my current job"*	.546		.216		.258	.469	.226
SP 7 *"COVID-19 makes me anxious"*		.862	.152	.138			
SP 3 *"I am afraid of the news about the spread of the virus"*		.848	.103			.110	
SP 2 *"I am afraid of socializing with my colleagues"*		.839	.213	.161			
SP 1 *"I am afraid of being infected by either me or any of my family members with the coronavirus"*	.129	.803	.184		.146	.183	
SP 6 *"COVID-19 makes me nervous at work"*		.801	.225	.233		-.132	
SP 5 *"COVID-19 makes me distressed while I work"*		.800	.193	.245		-.153	
SP 4 *"My family burdens increased during the pandemic"*	.137	.463*	.327	.403			
JS 6 *"I feel exhausted as a result of my work"*		.291	.791	.256			
JS 5 *"Many of my colleagues are overwhelmed by the demands of the job"*	.177	.229	.742	.239	.141		.108
JS 1 *"It's hard to spend enough time with my family because of work"*	.197	.146	.736	.296		.180	.121
JS 3 *"My job leaves me little time for other activities"*	.201	.124	.722	.190		.281	
JS 4 *"Sometimes, I'm afraid my phone will ring at times outside of work because the call may be related to it"*	.142	.235	.718	.315		-.102	
JS 7 *"There are a lot of times my job causes me to lose my temper"*	-.107	.281	.715	.224			
JS 2 *"I spend a lot of time at work"*	.442	.150	.540	.151	.274	.313	.121
CW5 *"It is challenging to work as a team while working remotely"*	.104	.149	.145	.779			
CW6 *"Social distancing reduces collaborative behaviours between myself and my colleagues"*	.129	.206	.247	.751			
CW7 *"There are tasks that I cannot accomplish while working remotely"*		.117	.159	.741	.156		
CW2 *"I suffer from not having a designated place in the house to do business"*	-.247	.109	.162	.682			
CW3 *"It is challenging to maintain the boundaries between work and private life when working from home"*	-.102	.143	.325	.680		.150	
CW1 *"Work from home (WFH) is uncomfortable for me"*				.679			.112
CW4 *"The workload increased further during the pandemic"*	.124	.283	.380	.561		.101	
ES1 *"I'm calm in most situations"*	.293				.772	.232	.153
ES3 *"I can control my reactions"*	.375		.112		.749	.232	.210
ES4 *"I can adapt to difficulties in my life"*	.326				.728	.278	.285
ES2 *"I have the ability to handle difficult situations"*	.372				.685	.175	.341
ES5 *"I accept things as they are"***	.178				.664		.149
JA4 *"I am ready to work extra hours to get my duties done"*	.439				.321	.736	.170
JA6 *"I am happy to accept any tasks assigned to me by my bosses, as long as I have the ability to do them"*	.480				.296	.718	.190
JA5 *"I am willing to put in the extra effort to accomplish my duties"*	.527				.334	.671	.172
JA7 *"I am happy to continue in the university"*	.521				.263	.665	.216
JA3 *"I feel proud of belonging to the university"*	.523				.213	.626	.314
XT4 *"I love to socialize with people"*	.201				.191	.134	.879
XT2 *"I take the initiative to make new friendships"*					.220	.145	.843
XT1 *"I like talking to others"*	.351				.234	.188	.734
XT3 *"I have the ability to beam joy in boring situations"*	.393				.269	.116	.715

*Note: Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization. a. Rotation converged in 8 iterations. * Loading is below the acceptable minimum threshold of 0.5; ** commonalties are above the maximum threshold of 0.5.*

Table A.2. Internal consistency and reliability

Construct	Number of items	Cronbach's alpha
Performance	6	.969
The socio-psychological impacts of COVID-19	6	.933
Job stress	7	.910
COVID-19 impact on work practices	7	.874
Emotional stability	4	.926
Job attitude	6	.963
Extroversion	4	.911

Table A.3. Confirmatory tetrad analysis (CTA)

COVID-19 impact on work practices	Original sample (O)	z(1-alpha)	CI low adj.	CI up adj.
1: CW3, CW4, CW5, CW6	0.550	2.586	0.171	0.945
2: CW3, CW4, CW6, CW5	0.647	2.586	0.280	1.027
4: CW3, CW4, CW5, CW7	0.339	2.586	-0.001	0.694
6: CW3, CW5, CW7, CW4	-0.038	2.586	-0.269	0.182
10: CW3, CW5, CW6, CW7	0.094	2.586	-0.150	0.336
Emotional stability				
1: ES1, ES2, ES3, ES4	-0.126	2.248	-0.219	-0.038
2: ES1, ES2, ES4, ES3	0.002	2.248	-0.063	0.063
Extroversion				
1: XT1, XT2, XT3, XT4	-0.093	2.248	-0.222	0.026
2: XT1, XT2, XT4, XT3	0.073	2.248	-0.007	0.153
Job stress				
1: JS1, JS2, JS3, JS4	0.080	2.785	-0.121	0.272
2: JS1, JS2, JS4, JS3	-0.099	2.785	-0.334	0.128
4: JS1, JS2, JS3, JS5	0.003	2.785	-0.167	0.172
6: JS1, JS3, JS5, JS2	-0.117	2.785	-0.302	0.066
7: JS1, JS2, JS3, JS6	0.102	2.785	-0.113	0.311
10: JS1, JS2, JS4, JS5	0.395	2.785	0.126	0.673
16: JS1, JS2, JS5, JS6	0.438	2.785	0.201	0.679
22: JS1, JS3, JS4, JS6	0.398	2.785	0.137	0.663
26: JS1, JS3, JS6, JS5	0.500	2.785	0.288	0.720
Socio-psychological impacts of COVID-19				
1: SP1, SP2, SP3, SP5	0.064	2.586	-0.181	0.317
2: SP1, SP2, SP5, SP3	0.186	2.586	-0.027	0.404
4: SP1, SP2, SP3, SP7	0.073	2.586	-0.142	0.298
6: SP1, SP3, SP7, SP2	0.030	2.586	-0.196	0.256
10: SP1, SP3, SP5, SP7	0.684	2.586	0.339	1.042

Table A.4. Reliability and validity assessment

	Outer loading	Cronbach's alpha	rho_A	Composite reliability	AVE
F1 Performance (PF)		0.908	0.915	0.935	0.783
PF1	0.892				
PF4	0.924				
PF5	0.885				
JA2	0.837				
F2 Socio-psychological impacts of COVID-19 (SP)		0.917	0.947	0.937	0.749
SP1	0.894				
SP2	0.921				
SP3	0.884				
SP5	0.776				
SP7	0.844				
F3 Job stress (JS)		0.907	0.919	0.928	0.682
JS1	0.884				
JS2	0.803				
JS3	0.836				
JS4	0.783				
JS5	0.811				
JS6	0.833				
F4 COVID-19 impact on work practices (CW)		0.856	0.869	0.896	0.634
CW3	0.743				
CW4	0.800				
CW5	0.816				
CW6	0.865				
CW7	0.751				
F5 Emotional stability (ES)		0.926	0.929	0.948	0.820
ES1	0.870				
ES2	0.905				
ES3	0.928				
ES4	0.917				
F6 Job attitude (JA)		0.888	0.890	0.931	0.818
JA1	0.884				
JA4	0.911				
JA7	0.917				
F7 Extroversion (XT)		0.906	0.924	0.933	0.777
XT1	0.888				
XT2	0.855				
XT3	0.874				
XT4	0.908				

Table A.5. Outer loadings

	Performance (PF)	Socio-psychological impacts of COVID-19 (SP)	Job stress (JS)	COVID-19 impact on work practices (CW)	Emotional stability (ES)	Job attitude (JA)	Extroversion (XT)
PF4	0.924						
PF1	0.892						
PF5	0.885						
JA2	0.837						
SP2		0.921					
SP1		0.894					
SP3		0.884					
SP7		0.844					
SP5		0.776					
JS1			0.884				
JS3			0.836				
JS6			0.833				
JS5			0.811				
JS2			0.803				
JS4			0.783				
CW6				0.865			
CW5				0.816			
CW4				0.800			
CW7				0.751			
CW3				0.743			
ES3					0.905		
ES4					0.928		
ES2					0.917		
ES1					0.870		
JA7						0.917	
JA4						0.911	
JA1						0.884	
XT4							0.908
XT1							0.888
XT3							0.874
XT2							0.855

Table A.6. Fornell-Larcker criterion

	COVID-19 impact on work practices	Emotional stability	Extroversion	Job attitude	Job stress	Performance	The socio-psychological impacts of COVID-19
COVID-19 impact on work practices	0.796						
Emotional stability	-0.173	0.905					
Extroversion	-0.122	0.618	0.881				
Job attitude	-0.202	0.701	0.575	0.904			
Job stress	0.614	-0.394	-0.273	-0.425	0.826		
Performance	-0.174	0.665	0.593	0.845	-0.457	0.885	
The socio-psychological impacts of COVID-19	0.436	-0.168	-0.090	-0.131	0.467	-0.165	0.865

Table A.7. Hypothesis testing

	Hypothesis	*Original sample (O)*	*Sample mean (M)*	*Standard deviation (STDEV)*	*T-statistics (|O/STDEV|)*	*P-values (Significant at 0.05)*	*Status*
H1	*COVID-19 impact on work practices significantly influences job attitude, job stress, and job performance*						
H1a	*COVID-19 impact on work practices → Performance*	0.114	0.119	0.059	1.929	0.054	Rejected
H1b	*COVID-19 impact on work practices → Job stress*	0.508	0.509	0.044	11.461	0.000	Accepted
H1c	*COVID-19 impact on work practices → Job attitude*	0.088	0.092	0.059	1.491	0.137	Rejected
H2	*COVID-19 impact on the socio-psychological aspects significantly influences job attitude, job stress, and job performance*						
H2a	*Socio-psychological impacts of COVID-19 → Performance*	-0.031	-0.033	0.041	0.760	0.447	Rejected
H2b	*The socio-psychological aspects of COVID-19 → Job attitude*	0.084	0.084	0.059	1.418	0.157	Rejected
H2c	*The socio-psychological aspects of COVID-19 → Job stress*	0.246	0.245	0.050	4.900	0.000	Accepted
H3	*Job stress significantly influences job attitude and job performance*						
H3a	*Job stress → Job attitude*	-0.507	-0.475	0.075	6.233	0.000	Accepted
H3b	*Job stress → Performance*	-0.199	-0.201	0.066	3.022	0.003	Accepted
H4	*Job attitude → Performance*	0.315	0.312	0.074	4.254	0.000	Accepted
H5	*Personal traits significantly influence job performance*						
H5a	*Emotional stability → Performance*	0.162	0.166	0.056	2.887	0.004	Accepted
H5b	*Extroversion → Performance*	0.093	0.095	0.059	1.583	0.114	Rejected
H6	*Personal traits moderate the relations between job stress and performance, job attitude and performance*						
H6a	*Mod1 JS-ES → Performance*	0.055	0.065	0.066	0.832	0.406	Rejected
H6b	*Mod3 JS-XT → Performance*	0.007	0.006	0.069	0.106	0.915	Rejected
H6c	*Mod2 JA-ES → Performance*	-0.114	-0.111	0.055	2.094	0.037	Accepted
H6d	*Mod4 JA-XT → Performance*	0.015	0.015	0.062	0.248	0.804	Rejected
H7	*Personal traits mediate the relations between the impact of COVID-19 and job performance, job stress, and job performance*						

		Original sample (O)	*Standard deviation (STDEV)*	*T-statistics (|O/STDEV|)*	*Confidence interval*		*Mediation type*
					Lower level	Upper level	
H7a	*COVID-19 impact on work practices → Job stress → Job attitude*	-0.238	0.046	5.168	-0.333	-0.156	Full Mediation
H7b	*Job stress → Job attitude → Performance*	-0.147	0.05	2.957	-0.270	-0.071	Competitive (Regulatory partial mediation)