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Examining the nomological validity of work engagement drivers: a study on the relevance of covid-19 key factors in the post-pandemic era

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Abstract

Work engagement has become a critical factor in maintaining organizational performance, particularly in the context of unprecedented global challenges such as the COVID-19 pandemic. This study investigates the key drivers of work engagement during the COVID-19 pandemic and their relevance in the post-pandemic era. Using a cross-sectional design, a structural model was developed based on the Job Demands-Resources (JD-R) model, incorporating job satisfaction as a moderating variable between organizational-personal factors and work engagement. Data were collected from 1,484 public sector employees in Indonesia and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that organizational-personal factors significantly influence job satisfaction and work engagement. Job satisfaction also moderates the relationship between these factors and work engagement, enhancing its impact. The findings highlight the importance of prioritizing health support, skill development, and work-life balance to boost employee motivation and engagement. This research contributes to understanding the evolving dynamics of work engagement amidst global crises and provides actionable insights for human resource management practices. The study underscores the need for adaptive strategies to maintain employee well-being and productivity in changing work environments.

INTRODUCTION

Numerous academics have reevaluated the major key drivers of work engagement since the onset of the COVID-19 pandemic in 2019. During the COVID-19 time, numerous studies identified new essential key drivers for work engagement; nevertheless, it must be determined whether these aspects are still relevant when the epidemic is over. The purpose of this article is to examine the applicability of the findings of work engagement key drivers during the COVID-19 era to the pandemic situation post-COVID-19.

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Academics from throughout the globe are investigating the effects of the COVID-19 pandemic on the industrialized world. According to a poll performed by Tower Watson (Wilis in Key, 2021), which revealed that employees are concerned about health, safety, and job security, the corporation is concerned about declining employee morale. Concerning mental health, Ginger (in Key, 2021) discovered that 63% of the workforce questioned reported losing at least one hour of productivity per day owing to stress, while 3% or more reported losing two hours per day.

Carnevale and Hatak (2020) assert that there have been drastic changes in the world of work and the social environment, such as the introduction of new business policies on pandemics and contact limit procedures. The result is that employees have a difficult time separating their job and personal lives, as well as other psychosocial problems created by isolation (ILO, 2020). This is consistent with Fitriani's (2020) result from a study of 42,837 public sector employees about employee engagement that one of the most stressful reasons is the inability to separate work and home life. Prior to the government's WFH policy, people were free of work when they returned home at 16:00. Once work can be performed at home, however, there are no obvious distinctions between work and personal life. They must be prepared to attend a meeting at any time, whether at night, on holidays, or while on leave. Another effect of COVID-19 is the anxiety of catching and infecting family members. Chawla (2020) discovered that important workers feel increased stress owing to increased workload, longer working hours, and shorter relaxation periods, as well as the additional concern of contracting the virus and infecting their families. All of these are issues that affect employees' mental health (Guest, 2017).

A huge number of layoffs and salary cuts exacerbated the mental condition of employees, with respondents expressing emotions of uncertainty about their jobs, which had an effect on their mental health (Carnevale and Hatak,2020). According to the findings of these studies, COVID-19 has created an urgent need for enterprises to adjust to shifting circumstances (Bednall et al., 2021). Companies must be prepared to adapt to new health regulations and adopt ways to preserve the emotional and physical health of their employees in light of the COVID-19 issue (Sasaki et al., 2020)

According to Taylor (2014), human resources are crucial to a company's successful and efficient organizational governance. Before and after the COVID-19 Pandemic, the Human Resources of an organization were the key to its success. However, Duran and Sánchez (2021) assert that managing Human Resources (HR) is significantly more difficult than before COVID-19. In addition, a recent study by Kumar (2021) indicates that due to company losses, many organizations are beginning to disregard the psychological requirements of their personnel. Work engagement must be the organization's primary focus regardless of the working environment.

Cartwright and Cooper (in Cartwright et al., 2006) noted that in order for a corporation to attain success, the correct effort must be made in order to sustain its people resources. Engagement is one of the work attitudes that contributes most to predicting organizational performance (Dalal et al., 2012). Antoni et al. (2017) came to a similar conclusion, stating that employee satisfaction is a barometer of rising organizational performance, and that employee satisfaction has an impact on employee motivation and productivity. The level of employee satisfaction is evidenced by the fact that employees strive to perform their duties correctly and regularly, work diligently, and aim to remain with the firm for a long time, which has consequences for boosting company earnings (Fritzche and Parrish, 2005).

A firm leader must foster an environment that encourages people to be excited about their work for the mutual benefit of the organization and the employees (Baumruk, 2006). In line with this, Macey and Schneider (2008) underlined that work engagement increases employee loyalty, hence decreasing the desire to voluntarily leave the firm. According to the findings of Kular et al. (2008), the level of corporate faith in a high level of work engagement correlates significantly with a favorable level of firm

performance. The relationship between work engagement and organizational success will be at its strongest and most favorable if the organization pays close attention to employee differences and the factors that contribute to work engagement (Castellano, 2009). According to Bano et al., (2015), to secure the process of retaining the greatest talent, the added benefit of implementing talent management is a rise in employee engagement. Markos and Sridevi (2010) claim that work engagement is the key to enhancing organizational performance, and that achieving engagement is a two-way process involving both people and the company. Sahoo and Sahu (2009) emphasize the significance of work engagement for creating an organization with high levels of work engagement.

Robertson et al. (2010) discovered that a mix of work engagement and psychological well-being accurately predicts organizational productivity. This is consistent with the most recent studies regarding organizational key success factors during the COVID-19 Pandemic. According to Nembhard et al. (2020), management research on managing crises in the current COVID-19 period gives insight for firms to prioritize HR, establish teamwork and communication, and implement leadership initiatives. In addition, during the COVID-19 Pandemic, firms must focus on offering training sessions, incentives to engage employees, assisting HR in overcoming their fear of uncertainty, and establishing infrastructure for teleworking (Ahmed et al., 2020). All of them are COVID-19-relevant characteristics that can increase work engagement (Duran and Sánchez, 2021).

Schaufeli and Bakker (2010) define work engagement as a happy, fulfilled, and work-related mental state characterized by excitement, commitment, and appreciation. This mental disorder impacts both the cognitive and affective areas.Work engagement is proportional to job demands. The greater the workload, the more exhausted employees become. Fatigue impacts low enthusiasm, commitment, and appreciation, which in turn impacts low work engagement (Broeck et al., 2008). Work engagement is determined by organizational support and job characteristics (Saks, 2006), as well as employee development, various individual factors, and co-worker support (Andrew and Sofian, 2012), whereas organizational engagement is determined by organizational support and procedural fairness (Saks,2006), as well as various individual factors and peer support (Andrew and Sofian, 2012).

Britt et al. (2007) defined engagement as an individual's sense of responsibility and care for work performance. This obligation is demonstrated by the act of and dedication to seeking solutions to work-related issues. Therefore, engagement is expressed in a person's sense of responsibility and dedication to their work, as well as how the outcomes of their work influence them. According to Kahn (1990), another definition of engagement is a person's expression regarding his task behavior, which ties his work to his personal existence (physical, cognitive, and emotional) and the function of the self as a whole. The physical, cognitive, and emotional elements provide the energy that can motivate an individual to operate optimally, while psychological conditions reflect the role of the self. Physical, cognitive, and emotional components are represented through identity- and emotion-revealing self-expression. Moreover, Saks (2006) asserts that engagement is multidimensional, that is, engagement at work is distinct from engagement at the organizational level, both of which are interrelated aspects. According to Shorbaji et al. (2011), engagement is related to an individual's self-evaluation.

Exploration of Key Drivers Engagement Prior to COVID-19

Work engagement needs to be distinguished between work engagement as drivers and as outcomes. As work engagement the intended state of work engagement. Meanwhile, as an outcome, work engagement is seen as a psychological condition which is described by several attitude characteristics such as vigor, dedication, and absorption (Castellano (2015) ; Cook (2008) ; Leiter and Bakker (2010) ; Robertson and Markwick (2009) ; Sonnentag and Demerouti (2010) ; Albrecht (2010)). Numerous models describe the connection between work engagement as an antecedent and as an outcome. One of them is the JD-R, which has been studied and developed by numerous academics and scientists for more than two decades. The JD-R model was introduced by Demerouti and colleagues in

2001. (Leiter and Bakker, 2010). The next year, the Utrecht Work Engagement Scale (UWES), a measurement of work engagement, was published (Schaufeli et al., 2002). Then, this model becomes the most extensively utilized theoretical framework for conducting research on engagement. Albrecht (2010), as well as Leiter and Bakker (2010), stressed the significance of understanding the context of engagement as a driver/antecedent, particularly in the industrial environment, where this concept is commonly employed to describe organizational performance. The objective is for the organization to foster circumstances that can boost engagement (Macey and Schneider, 2008).

The primary concerns of organizational leaders are what organizational variables are most significant for predicting employee engagement, why these resources should be prioritized, and why the organization must be developed. One way to answer this question is to conduct a "key driver analysis," which is a statistical approach to identify the key factors for work engagement (important predictors) using a bivariate that seeks to determine the correlation between potential key factors (single drivers) and a work engagement approach full model in which all keying factors, both items and dimensions, are simultaneously tested by regression as key drivers of work engagement (Albrecht, 2010). Using a variety of theoretical methodologies and models, scientists and researchers from all over the world have done studies pertaining to "key driver analysis" to identify important elements that can predict work engagement. The following table describes the meta-analysis of research JD-R variables as key drivers of work engagement in table 1.

Table 1 <Meta-Analysis Study of JD-R Work Engagement>

Predictors	**Overall Score**		**Vigor**		**Dedication**		**Absorption**	
	Study1	**Study 2**	**Study 1**	**Study 2**	**Study 1**	**Study 2**	**Study 1**	**Study 2**
Work Resources		0.35	0.29	0.30	0.34	0.27	0.25	0.25
1. Social support	-	0.37	0.28	0.25	0.32	0.45	0 .20	0.25
2. Autonomy/control	-	0.27	0.37	0.41	0.42	0.46	0.43	0.37
3. Feedback	-	-	0 .40	0.40	0.45	0.29	-	-
4. Innovative work climate	-	-	0.24	-	0.34	-	-	-
Personal Resources								
1. Self-efficacy	-	0.59	0.76	0.50	0.73	0.47	0, 71	0.31
2. Optimism	-	0.44	-	-	-	-	-	-
Workload Work	-	-0.09	-0.07	-0.07	-0.04	-0.24	0.05	-0.07
Load	-	0.19	-0, 06	0.04	-0.05	0.05	-	-
Physical Load	-	-	-0.21	-	-0.26	-	-	-
Emotional Load	-	-	-0.04	-	0.05	-	-	-
Cognitive Load	-	-	-0.26	-	0, 34	-	-	-
WF	-	0.43	-	-0.22	-	-	-	-
FW Conflict Conflict	-	0.25	-	-0.19	-	-	-	-

Source: Christian and Slaughter (2007) in study 1 and Halbesleben (2010) in study 2.

Table 1 demonstrates that job resources and personal resources have a positive link with work engagement, but job demands have a negative correlation. Thus, Schaufeli and Bakker's (2004) model demonstrates that job expectations have a negative impact on state work engagement, whereas personal resources and job resources have a favorable impact.

Proposed Models for Key Engagement Drivers During the COVID-19 Period from Various Nations

Duran and Sánchez (2021), who proposed the 5C model, and Kumar (2021), who proposed the 5V model, are two of the researchers who proposed crucial elements for employee engagement in the

context of COVID-19. According to Duran and Sánchez (2021), Table 2 and Figure 1 are schemes of keys during the COVID-19 period, and Table 3 will provide the essential elements according to Kumar (2021).

Table 2 <5C Model>

Category	Factors	Indicator
Conciliation	• Remote working • Professional-private life • Family diversity	• Physical and relational separation • Productivity • Sustainability
Cultivation	Professional career New technology	Geographical and communication barriers Furlough (ERTE in Spain) vs. redundancy
Confidence	• Development opportunities • Health • Safety • Leadership	• Coaching • Health measures at work • Psychological support • Employee privacy
Compensation	Remuneration	Risk and remote working allowances
Communication	• Endeavor • Non-Monetary benefits • Networking • Job and career feedback • Involvement	• Services and help for parents • Performance incentives • IT resources • Two-way dialogue • Performance reviews

Source: Duran & Sánchez (2021)

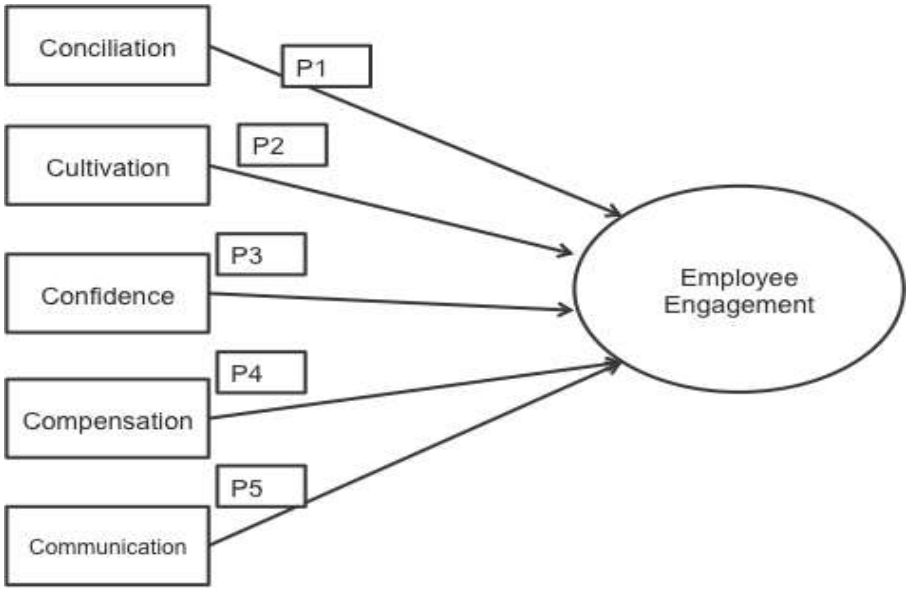

Figure 1 <5C Formative Measurement Model. Source: Duran & Sánchez (2021)>

Table 3 <5V Model>

Elements of Variables	Operational	Definition
Value	Optimism at work	Optimistic workplace creates a possible success scenario rather than an idolized impossible one. In such a workplace, employees feel valued.
	Respect at	Reverence at work for employees by their supervisors, subordinates and colleagues because they are valued for their behavior at work. Social interaction and informal meetings with lower and middle-level

Elements of Variables	Operational	Definition
	work	staff develop a sense of being a valuable part of an organization in them. Recognizing employees' efforts, diligence and desired behavior at work.
	Interaction Recognition	
Voice	Continuous feedback	Continuous feedback mechanism ensures the opportunity to raise voice for concerns and needs of employees.
	Supervisor's support and cooperation	Support and cooperation from the supervisor creates confidence among the team to raise concerns without fear of negative consequences.
	Inputs on policies and procedures	Employees' voice can be strengthened in a productive way when they are part of the policy-making process related to their work.
Variety	Autonomy	Wide variety of assigned jobs along with ample autonomy and related to that work ensures effortless completion of the job.
	Significance	The new job assigned must have a value or significance in the overall function of the organization so that an employee can feel he is a significant part of the organizational function.
	Task variety	Allotted tasks must ensure utilization of varied skills, knowledge and physical labor to reduce the psychological distress of monotonous work.
	Challenging jobs	Not only a variety of tasks, but the tasks that keep an employee on his toe concerning physical and mental vigilance.
Virtue	Affection	Developing a culture where the feeling of liking and caring for each other prevails, creating a virtuous organization.
	Trust	The moralistic organization considers the dual play of trust within the organization, where the organization trusts its employees' efforts and employees trust organizational policies and procedures.
	Justice	Procedural fairness in the treatment of employees and addressing their needs and concerns without prejudice.
	Harmony	Eliminating unfairness, harassment, unethical behavior and promoting dignity and respect for all to create a harmonious organization.
Vision	Brevity	The vision laid down must be succinct and capable to communicate future goals in a few words.
	Goal Clarity	Avoiding technical jargon must communicate clear and transcendental goals.
	Abstract yet challenging	Must not be too clear. The vision statement must be abstract yet challenging with the flexibility to assimilate.
	Desirable goal	The goal must be desirable but not unattainable or impossible so that the organization can be inspired.

Source: Kumar (2021)

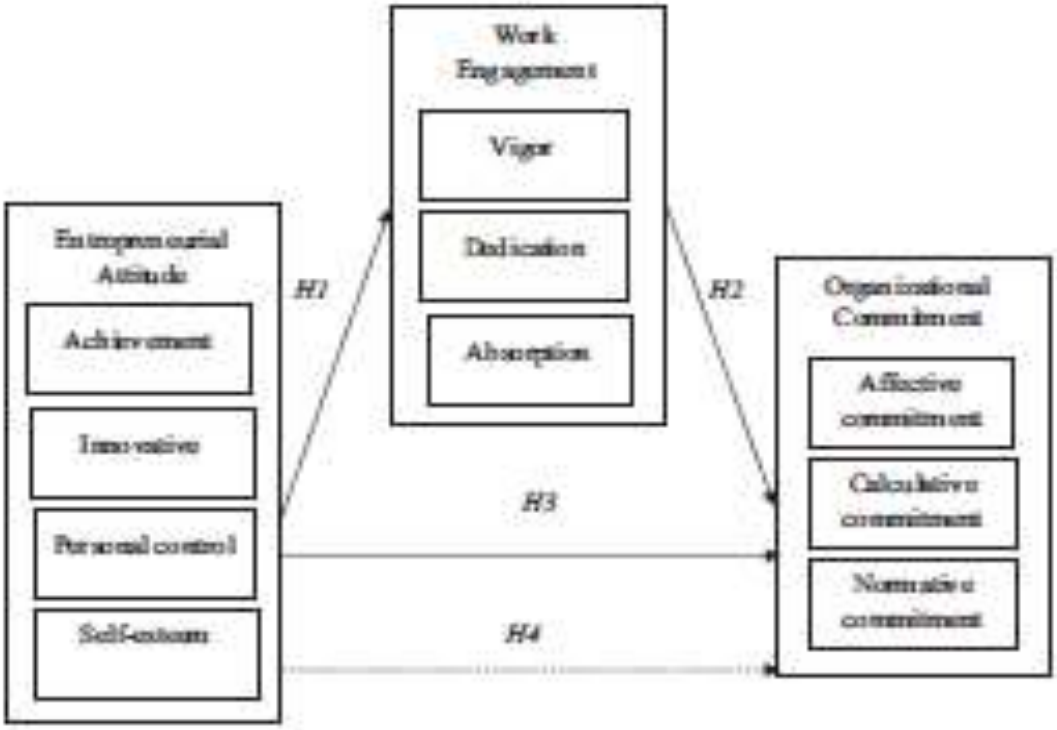

Figure 2 <Model of Key Drivers Work Engagement during the COVID-19 Period in Thailand. Source: (Boonsiritomachai, 2021)>

Several nations have also explored the keys to work engagement in the context of COVID-19, including Thailand, where it was determined that the entrepreneurial attitude with accomplishment, inventive, personal control, and self-esteem aspects is a key to work engagement in the era of COVID-19 (Boonsiritomachai, 2021). Other research originates from the Middle East, where organizational learning, employee resiliency, and psychological empowerment can sustain work engagement during the COVID-19 period (Blaique et al., 2021). Malaysian researchers also investigated the relationship between resilience and work engagement, discovering that family and friend support, supervisor support, facilitating conditions, and self-efficacy functioned as mediating (intervening) variables for work engagement (Ojo et al., 2021). Figures 2 through 4 illustrate the models.

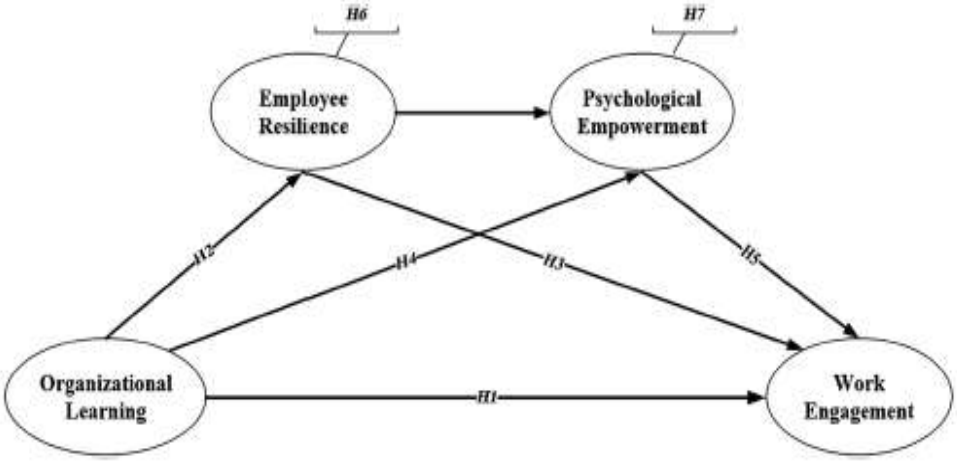

Figure 3 <Model of Key Drivers Work Engagement during the COVID-19 Period in the Eastern Region Central. Source: (Blaique, et al., 2021)>

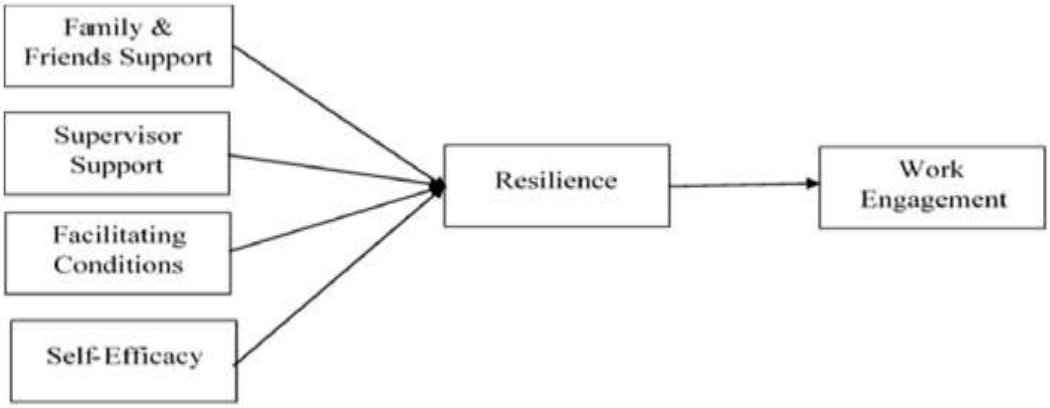

Figure 4 <Model of Initiating *Work Engagement* during the COVID-19 Period in Malaysia. Source: (Ojo, et al., 2021)>

This study proposes a model by adapting the JD-R model Bakker & Demeoruti (2007), where job demand becomes a moderator variable between job and personal resources. Job resources are replaced with organizational factors, while personal factors are still used. According to numerous academics (Buelens & Van den Broeck, 2007; Houston, 2000), public employees are, in fact, primarily motivated by work-related resources, such as job content, recognition, autonomy, and exciting work. Job resources positively impact work engagement more than organizational resources, such as career development possibilities, supervisory assistance, and performance monitoring (Conway et al., 2016; Lavigna, 2013). To see if adding job satisfaction as a moderator between organizational-personal characteristics and work engagement can improve the influence of these elements in boosting work engagement in government servants, we aim to explore this idea. We also follow the same directionality between job satisfaction and burnout in JD-R Model (Schaufeli et al., 2002; Bakker & Demerouti, 2007), considering that work engagement is the antipode of burnout (Bakker & Demerouti, 2008). Job satisfaction is a known risk factor for burnout (Lee & Ashforth, 1996), making it more probable to be a moderator between organizational-personal characteristics and work engagement. When employees are more satisfied with different aspects of their jobs and are more engaged at work, the business might start an exchange by providing resources.

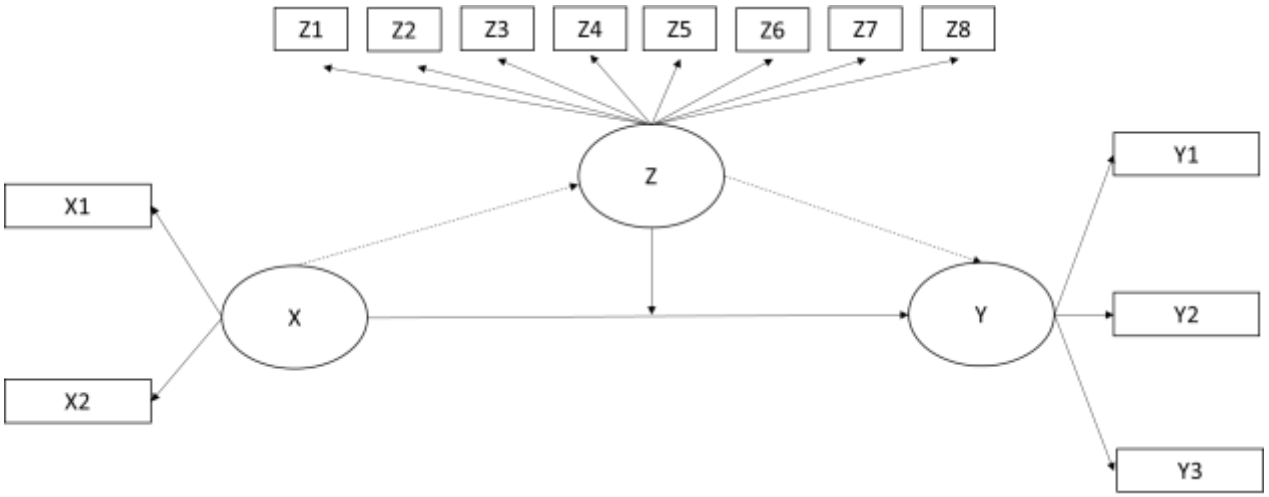

Figure 5 <Structural Model>

Note : (1) X : Organizational-Personal Drivers Of Engagement ; X1 : Organizational factors; X2 : Personal Factors; (2) Y : Work Engagement ; Y1 : Vigor ; Y2 : Dedication ; Y3 : Absorption; (3) Z : Job

Satisfaction ; Z1 : Nature of work ; Z2 : Knowledge and skill development ; Z3 : Coworkers ; Z4 : Superior ; Z5 : Pay and benefit ; Z6 : Working Conditions ; Z7 : Promotion ; Z8 : Health Support

According to Figure 5, we suggest a conceptual model where job satisfaction serves as an antecedent variable as well as moderating the relationship between organizational-personal factors based on the literature review (Bakker & Demerouti, 2007; Schaufeli et al, 2002; Spector, 1997; Sageer, Rafat & Agarwal, 2012; Schaufeli, 2015). Organizational and personal factors can also significantly improve job satisfaction and engagement.

This study's measurement model is two stages with latent variables and manifest variables or indicators. For example, X1 and X2 are latent variables, each with an indicator. Nevertheless, they are simultaneously an indicator of the latent variable X. Likewise, Z1, Z2. For Z, it also applies to Y.

Based on the diagram in Figure 5, there are three models in this structural model, namely: (1) The model of the effect of X on Z. So Z is an endogenous latent variable, while X is an exogenous latent variable; (2) Model of the effect of X and Z on Y. So Y is the endogenous latent variable, while X and Z are the exogenous latent variables; (3) Model of the influence of X, moderated by the variable Z on Y. So Y is the endogenous latent variable, while X is the exogenous latent variable.

Exploration of Key Engagement Drivers During the COVID-19 Period

After the COVID-19, a number of academics attempted to remap additional specific elements that evolved as a result of changes in organizational policy and behavior in response to efforts to adjust industrial processes. Using a cross-sectional study of 532 health workers, Barello et al. (2020) assessed the applicability of the JD-R to engagement. The purpose of this study was to determine whether the increased job demands during COVID-19 had an effect on mental fatigue as a mediator variable and personal resources in the form of a professional orientation as a moderator, which then became a predictor of engagement. The results indicated that job demands and personal resources were significant predictors of engagement (OR = 2.359 and 0.563, p 0.001) in patients where professional orientation was a significant moderator. Galanti et al. (2021) developed and validated metrics of work engagement utilizing WFH as job demands and job resources using the JD-R. According to the findings of the study, WFH became one of the new characteristics that contributed to job resources and influenced job needs. Family work conflict, social isolation, and a distracting environment comprised the crucial aspect, namely WFH during the COVID-19 period, which was included in the category of employment demands. In the meantime, job autonomy and self-leadership for personal resources were discovered as a result of WFH during COVID-19.

According to Galanti's (2021) research, there are new aspects in job-demands, notably social isolation and a distracting environment, which differ from the original idea at table 1. Regarding work-family conflict, it is true that the research in table 1 also exists, but there is a new definition, namely the presence of the WFH factor. In addition, additional, non-table 1 factors were identified for personal resources, notably self-leadership, where during a pandemic that necessitated WFH, accountability and self-leadership to achieve work objectives were factors that may support the trend of improving work engagement.

METHODS

In order to develop a structural model that explains the relationship between job satisfaction as an antecedent and a variable that moderates key drivers originating from organizational-personal factors (Bakker & Demerouti, 2007; Schaufeli et al., 2002; Spector, 1997; Sageer, Rafat & Agarwal, 2012; Schaufeli, 2015) in the post-pandemic situation, this research uses a cross-sectional design (Creswell et al., 2003) The structural model suggested in this study was tested on a state-owned business, a company in the public sector that meets community demands pension funds, investments, insurance, and banking. One thousand five hundred thirty-nine (1539) questionnaires were sent, and 1507 were returned. Twenty-

three (23) respondents left blanks on the survey, which were treated as missing values and removed from the overall number of respondents. Therefore, 1484 respondents—or 96% of the total intended respondents—were employed in the study. The Ethics Committee, Gadjah Mada University, has reviewed this study (2437/UN1/SPS1.1/AKM/PT/2023). It has been under the ethical standards of the Leadership - Innovation Policy and Positive Psychology discipline in the Research Ethics Code of Gadjah Mada University.

The job satisfaction measurement tool was developed using Spector (1997) theoretical construct. Seven relevant factors were selected based on exploratory research using the focus group discussion method of 122 respondents who stated satisfaction factors in civil servants. Nature of work, coworkers, superiors, pay and benefits, operating conditions, and promotion are Spectors's (1997) factors utilized in measuring. Based on the findings of the FGD, the following two satisfaction elements are developed: skill and knowledge development (Koopmans et al., 2013) and health support (Durán & Sánchez, 2021).

We also create our measurements of organizational-personal characteristics utilizing various theoretical materials. The grand theory of (Sageer, Rafat & Agarwal, 2012; Bakker & Demerouti, 2007) assesses organizational-personal factors. Organizational Factors items are based on the opinions of numerous theories (Kliestik et al., 2020; Chiang & Birtch, 2011; Bhardwaj, Mishra & Jain, 2021; Thant & Chang, 2021; Foreman & Money, 1995; Nemteanu, Dinu & Dabija, 2021; Testa, 1999; Albrecht, 2010). Personal elements are made up of opinions (Johanna & van der Heijden, 2000; Albrecht, 2010). To assess work engagement, measuring instruments developed by Schaufeli et al., 2002 were used.

Partial least squares-based structural equation modelling was used to estimate the model (Hair et al., 2017; Garson, 2016; Fornell & Larcker, 1981) in SmartPLS 4.0 (Sharma et al., 2022). A two-step process was used to analyze the data: first, the measurement model was used to determine the validity and reliability of the operationalized measures, and then the links between the latent components were confirmed. Confirmatory factor analyses were carried out to evaluate the outer model's validity and reliability.

RESULTS AND DISCUSSIONS

Demographic

An overview of the demographics of the respondents who took part in this survey is shown in Table 1.

Table 4 <Demographics of the Respondents>

Demographic n = 1484		Frequency	Relative Frequency (%)
Gender	Male	853	57,5
	Female	631	42,5
Employment Status	Permanent	1382	93,1
	Non Permanent	102	6,9
Working Period	<10 years	766	51,6
	11 - 20 years	351	23,7
	21 - 30 years	10	0,7
	>30 years	326	22,0
Educational Level	Senior High School	317	21,4
	Diploma Degree	230	15,5
	Bachelor Degree	869	58,6
	Master Degree	67	4,5
	Doctoral Degree	1	0,1

Table 1 shows nearly equal numbers of male and female responders (57.5% males, 42.5% women). 58.6% of respondents have a bachelor's degree or above. 93.1 % of responders are permanent employees, and 58.6% have less than ten years of experience.

Reflective Model Measurement

Table 5 <The Validity and Reliability of the Job Satisfaction Construct>

Construct	Item	1	2	3	4	5	6
Z1: Nature of Work (Spector, 1977)	Z1.1	0,738	2,454	0.861	0.861	0.915	0.783
	Z1.2	0,744	2,639				
	Z1.3	0,763	3,024				
Z2: Knowledge and Skills Development (Koopmans, et al., 2013)	Z2.1	0,759	2,844	0.929	0.930	0.947	0.780
	Z2.2	0,777	3,524				
	Z2.3	0,798	4,602				
	Z2.4	0,793	4,205				
	Z2.5	0,764	3,468				
Z3: Coworkers (Spector, 1977)	Z3.1	0,778	3,379	0.941	0.941	0.955	0.809
	Z3.2	0,763	3,870				
	Z3.3	0,780	4,180				
	Z3.4	0,798	4,172				
	Z3.5	0,770	3,994				
Z4 : Superior (Spector, 1977)	Z4.1	0,746	6,602	0.968	0.968	0.975	0.887
	Z4.2	0,784	8,029				
	Z4.3	0,784	6,043				
	Z4.4	0,772	7,046				
	Z4.5	0,779	5,098				
Z5: Pay and Benefit (Spector, 1977)	Z5.1	0,809	4,178	0.937	0.938	0.953	0.801
	Z5.2	0,833	4,773				
	Z5.3	0,791	5,185				
	Z5.4	0,764	4,547				
	Z5.5	0,773	3,020				
Z6: Working Conditions (Spector, 1977)	Z6.1	0,768	4,044	0.931	0.931	0.947	0.783
	Z6.2	0,789	4,393				
	Z6.3	0,786	3,464				
	Z6.4	0,824	4,427				
	Z6.5	0,793	3,788				
Z7: Promotion (Spector,1977)	Z7.1	0,827	4,000	0.935	0.936	0.951	0.795
	Z7.2	0,764	2,819				
	Z7.3	0,805	4,340				
	Z7.4	0,833	4,311				
	Z7.5	0,822	4,372				
Z8 : Health Support (Duran & Sanchez, 2021)	Z8.1	0,779	3,309	0.926	0.928	0.945	0.773
	Z8.2	0,764	2,865				
	Z8.3	0,818	3,573				
	Z8.4	0,744	3,069				
	Z8.5	0,816	4,529				

Note : 1 = Outer loading (>0.7) ; 2 = VIF (<10) ; 3 = Cronbach's-Alpha (>0.7) ; 4 = Rho_A (>0.7) ; 5 = Composite Reliability (>0.7) ; 6 = AVE (>0.5)

Reflective measurement is the initial PLS-SEM model measurement in the outer model. The measurement model is evaluated based on its validity and reliability (Hair et al., 2017). Cronbach's Alpha can be used to measure reliability. This value indicates the consistency of all the model's indicators. The optimal value is 0.8 or 0.9, whereas the minimum is 0.7. The value of c (composite reliability), which has the same meaning as Cronbach's Alpha, is frequently employed in addition to Cronbach's Alpha (Henseler & Sarstedt, 2013). Convergent validity and discriminant validity are the two types of validity in PLS-SEM. A collection of indicators must represent both the underlying latent variable and one latent variable in order to have convergent validity. This representation may be shown to be unidimensional by utilizing the average extracted variance value (Average Variance Extracted / AVE) to express it. At least 0.5 or below is the AVE value (Chin, 1998). The results of estimating the structural model's validity and reliability in this study are presented in Tables 5, 6, and 7.

Table 6 <The Validity and Reliability of the Organizational and Personal Factors>

Construct	Indicator	Item	1	2	3	4	5	6
X1 : Organizational Factors (Sageer et al., 2012 ; Bakker & Demerouti, 2007)	Reward Management (Kliestik et al., 2020; Chiang & Birtch, 2011; Bhardwaj et al., 2021; Thant & Chang, 2021) Employee Performance Management (Foreman & Money, 1995; Nemțeanu & Dabija, 2021) Organizational Culture & Vision (Testa, 1999 ; Albrecth, 2013)	X1.1	0,82	3,80	0.975	0.976	0.978	0.744
		X1.2	0,76	2,58				
		X1.3	0,81	4,15				
		X1.4	0,82	3,74				
		X1.5	0,79	3,30				
		X1.6	0,86	4,97				
		X1.7	0,84	5,54				
		X1.8	0,87	5,97				
		X1.9	0,85	4,19				
		X1.10	0,83	3,94				
		X1.11	0,89	5,36				
		X1.12	0,87	4,58				
		X1.13	0,81	3,37				
		X1.14	0,86	4,20				
		X1.15	0,89	4,89				
X2 : Personal Factors (Sageer et al., 2012 ; Bakker & Demerouti, 2007)	Professional Expertise (Van der Heijden, 2000)	X2.1	0,76	2,66	0.965	0.965	0.969	0.722
		X2.2	0,80	3,47				
		X2.3	0,79	3,79				
		X2.4	0,78	4,20				
		X2.5	0,80	4,16				
	Dedicated Towards Organization (Albrecht, 2013)	X2.6	0,80	4,28				
		X2.7	0,83	5,03				
		X2.8	0,83	4,66				
		X2.9	0,81	4,06				
		X2.10	0,81	4,05				
		X2.11	0,86	4,85				
		X2.12	0,85	4,68				

Tables 5, 6, and 7 show that all items or indicators have outer loading values greater than 0.7, indicating that all items are convergently valid. There is no multicollinearity issue at the outer model level since there are no indications with Outer Model VIF values of more than 10. Latent variable construct reliability is measured using construct reliability. If the research is still in the early stages of development, the value can be considered reliable at a limit of more than 0.6 (Hair et al., 2017) or above 0.70 (Fornell & Larcker, 1981). Internal consistency, as defined by (Memon et al., 2020), reliability assesses an indicator's

capacity to capture its latent component. Cronbach's Alpha and composite reliability are the tools used to evaluate this. The projected Cronbach's alpha value is over 0.7 (Ghozali & Latan, 2014), and a composite reliability value of 0.6 to 0.7 is regarded as having good reliability *Hair et al., 2017). Tables 2, 3, and 4 show that all constructs have Cronbach's Alpha values greater than 0.6 or even above 0.7, indicating that all of these constructs are reliable.

Table 7 <The Validity and Reliability of the Work Engagement Construct>

Construct	Indicator	Item	1	2	3	4	5	6
Y : Work Engagement (Schaufeli et al. 2002)	Y1 : Vigor (Schaufeli et al., 2002)	Y1.1	0,87	5,65	0.945	0.946	0.957	0.786
		Y1.2	0,89	6,75				
		Y1.3	0,87	4,19				
		Y1.4	0,80	2,77				
		Y1.5	0,87	4,34				
		Y1.6	0,83	3,39				
	Y2 : Dedication (Schaufeli et al., 2002)	Y2.1	0,89	4,81	0.952	0.953	0.963	0.839
		Y2.2	0,90	5,93				
		Y2.3	0,89	5,19				
		Y2.4	0,88	5,27				
		Y2.5	0,83	3,14				
	Y3 : Absorption (Schaufeli et al., 2002	Y3.1	0,84	3,17	0.928	0.930	0.943	0.735
		Y3.2	0,86	3,95				
		Y3.3	0,87	4,11				
		Y3.4	0,76	4,15				
		Y3.5	0,75	4,30				
		Y3.6	0,75	2,89				

Note : 1 = Outer loading (>0.7) ; 2 = VIF (<10) ; 3 = Cronbach's-Alpha (>0.7) ; 4 = Rho_A (>0.7) ; 5 = Composite Reliability (>0.7) ; 6 = AVE (>0.5)

The purpose of the unidimensionality test is to make sure that there are no measuring issues (Fitriani & Situmorang, 2023). UtilizingCronbach's Alpha and composite reliability indicators, a unidimensionality test was conducted. The cut-value for these two indicators is 0.7. The composite reliability score is > 0.7, meaning all constructs have satisfied the unidimensionality criteria according to Tables 2,3 and 4.

Discriminant Validity

Based on the idea that each indicator must have a high correlation with its construct alone, discriminant validity seeks to ascertain whether a reflective indicator is a good measure of its construct. The correlation between several concept measures should be manageable (Ghozali & Latan, 2014). Cross-loading values, the Fornell-Larcker Criterion, and Heterotrait-Monotrait (HTMT) are used in the SmartPLS 3.2.7 application's discriminant validity test (Henseler, Ringle & Sarstedt, 2015). The Fornell Larcker Criterion (Henseler, Ringle & Sarstedt, 2015) contrasts the square root value of the Average Variance Extracted (AVE) of each construct with the correlation between other constructs in the model in order to evaluate discriminant validity. The model is said to have good discriminant validity if each construct's AVE square root value is higher than the correlation value between the constructs and other constructs in the model (Fornell & Larcker, 1981). Table 8 displays the findings of the correlation between variables versus the AVE's roots.

Table 8 shows that for each construct, all AVE (Fornell-Larcker Criterion) roots are more significant than the correlation with other variables. For instance, X1 is 0.744 according to Table 3's PLS Construct Reliability and Validity Table. Thus, AVE CONS has a root of 0.863. Conclusion regarding this model: There

is no multicollinearity between indicators, and all items or indicators have complied with the requirements for validity and reliability. The analysis of the PLS model comes next.

Table 8 <Fornell-Larcker Criterion>

	X1	Y2	X	Z8	Y1	Z3	Z	Z4	Y3	Z6	Mod_Z_Y	X2	Z1	Z7	Z2	Z5	Y
X1	0.863																
Y2	0.789	0.916															
X	0.972	0.858	0.826														
Z8	0.826	0.739	0.848	0.879													
Y1	0.821	0.894	0.881	0.764	0.886												
Z3	0.741	0.716	0.778	0.733	0.719	0.900											
Z	0.904	0.794	0.911	0.893	0.818	0.865	0.784										
Z4	0.700	0.614	0.700	0.656	0.626	0.740	0.821	0.942									
Y3	0.752	0.854	0.810	0.696	0.847	0.659	0.750	0.561	0.857								
Z6	0.836	0.686	0.818	0.810	0.724	0.689	0.896	0.650	0.657	0.885							
Mod_Z_Y	-0.474	-0.414	-0.483	-0.415	-0.430	-0.420	-0.484	-0.404	-0.349	-0.433	1.000						
X2	0.855	0.875	0.953	0.805	0.885	0.761	0.845	0.641	0.817	0.728	-0.454	0.850					
Z1	0.745	0.689	0.762	0.710	0.698	0.740	0.846	0.669	0.651	0.720	-0.402	0.719	0.885				
Z7	0.855	0.764	0.865	0.812	0.783	0.729	0.909	0.692	0.725	0.805	-0.483	0.806	0.718	0.892			
Z2	0.784	0.688	0.781	0.728	0.708	0.734	0.882	0.685	0.665	0.742	-0.396	0.712	0.778	0.783	0.883		
Z5	0.832	0.669	0.822	0.782	0.702	0.691	0.888	0.640	0.646	0.837	-0.429	0.741	0.710	0.798	0.739	0.895	
Y	0.826	0.959	0.892	0.769	0.961	0.733	0.826	0.630	0.942	0.724	-0.418	0.901	0.713	0.795	0.720	0.706	0.844

Note : *X : Organizational-Personal Drivers Of Engagement ; X1 : Organizational factors; X2 : Personal; Factors; Y : Work Engagement ; Y1 : Vigor ; Y2 : Dedication ; Y3 : Absorption; Z : Job Satisfaction ; Z1 : Nature of work ; Z2 : Knowledge and skill development ; Z3 : Coworkers ; Z4 : Superior ; Z5 : Pay and benefit ; Z6 : Working Conditions ; Z7 : Promotion ; Z8 : Health Support*

Path Analysis

Based on the dimensions of each independent variable constructed on the dependent variable, Table 6 displays the reflecting outer loading of the EIC variable.

Table 9 <Path Analysis (Total Effect)>

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Organizational-Personal (X) -> Work Engagement (Y)	0.902	0.903	0.015	58.307	0.000
Organizational-Personal (X) -> Job Satisfaction (Z)	0.911	0.912	0.007	121.533	0.000
Job Satisfaction (Z) -> Work Engagement (Y)	0.986	0.985	0.046	101.874	0.000
Mod_Z_Y -> Work Engagement (Y)	0.914	0.914	0.023	110.613	0.000

Table 9shows the p-value of the effect of X on Z is 0.000 (p<0.05), so accepting H1 means that there is a significant influence Organizational-Personal Factors on Job Satisfaction. The p-value of the influence of Z on Y is 0.000 (p< 0.05), so accepting H1 means that there is a significant influence on job satisfaction and Work Engagement. The p-value of the effect of X on Y is 0.000 (p<0.05), so accepting H1 means that

there is a significant influence of Organizational-Personal Factors on Work Engagement. The p-value of the influence of moderator Z on the relationship X on Y is 0.000 (p<0.05), so accepting H1 means Job Satisfaction moderates the influence of Organizational-Personal Factors on Work Engagement. Figure 2 illustrates the relationship between the variables.

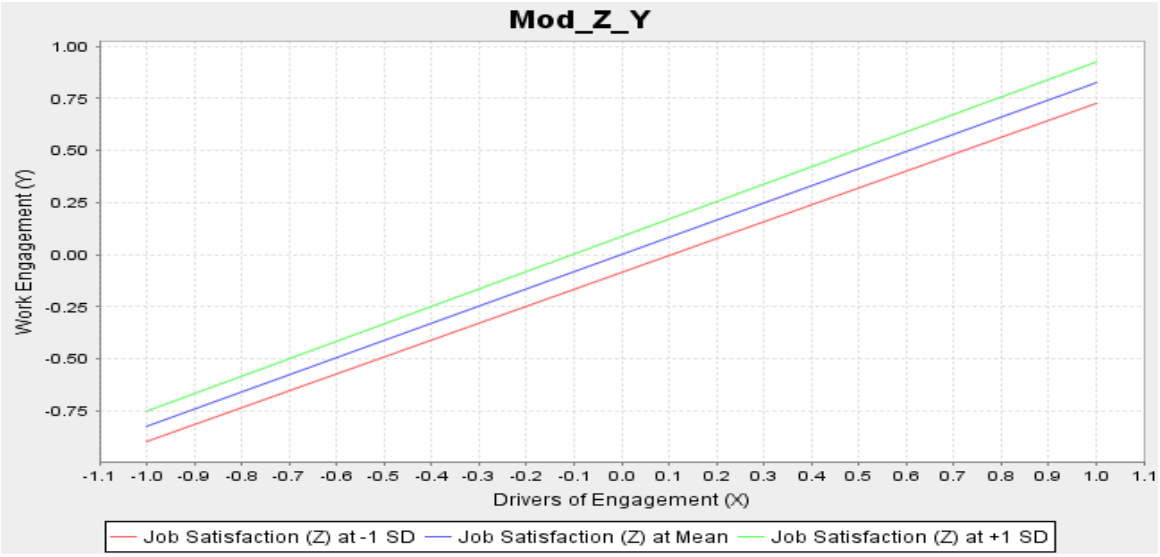

Figure 6 <The Relationship between the Variables>

Figure 6 demonstrates a linear relationship between each aspect, with a more substantial impact of organizational and personal **elements** forming work engagement behaviour as job satisfaction rises.

Predictive Relevance or Q Square (Q^2)

$Q^2 > 0$ indicates that the observed values have been accurately reconstructed, so the model has predictive importance. While the value of $Q^2 < 0$ indicates that there is no predictive relevance. The value of Q^2 is used to determine the structural model's relative effect on observational measurements of latent dependent variables (endogenous latent variables). The model's Q2 findings are displayed in Table 7.

Table 10 <Predictive Relevance>

	SSO	SSE	Q^2 (=1-SSE/SSO)
X	6585,249	2557,205	0,612
X1	22.260.000	6.755.099	0.697
X2	17.808.000	6.243.176	0.649
Y	25.228.000	11.058.292	0.562
Y1	8.904.000	2.496.478	0.720
Y2	7.420.000	1.749.003	0.764
Y3	8.904.000	3.185.094	0.642
Z	56.392.000	27.828.161	0.507
Z1	4.452.000	1.980.667	0.555
Z2	7.420.000	2.959.198	0.601
Z3	7.420.000	2.971.471	0.600
Z4	7.420.000	3.025.695	0.592
Z5	7.420.000	2.779.858	0.625
Z6	7.420.000	2.804.906	0.622
Z7	7.420.000	2.584.708	0.652
Z8	7.420.000	2.889.729	0.611
Mod_Z_Y	242,232		1,000

According to Hair et al., 2017, the Q^2 value > 0.05 denotes the model's correct predictive relevance to certain constructs, whereas the Q^2 value < 0.05 denotes the model's lack of predictive relevance. One must consider prediction relevance to determine whether or not the predictions made are relevant. Q Square is used in the PLS-SEM computation. Based on the Q Square value in Table 7, predictions for all variables in this model are valid or accurate (Q^2>0.05).

Discussion

The results of this investigation demonstrate the model's fit and the fact that every variable has predictive value for the latent construct. All items have demonstrated high reliability and validity indices. Therefore, all propositions are viable. This model explores the differential between satiation and activation regarding job satisfaction as an antecedent of work engagement. Work engagement is a motivational condition associated with activation, whereas job satisfaction is an emotional evaluation of the job and is linked to the satiation state (Macey & Schneider, 2008; Salanova, Llorens & Schaufeli, 2011). This indicates that after evaluating their work, employees are prepared to enter a motivational state or become involved, or they may not be, depending on their level of satisfaction.

Additionally, the description of job satisfaction in this research model as a moderator variable is consistent with the theory from (Seers, Petty & Cashman, 1995), which contends that positive work attitudes are predicted by reciprocity-based relationships between an organization and its employees in the context of job satisfaction. Employees may therefore provide higher levels of work engagement to the organization when they are happy with the various aspects of their jobs. This model also extends comparable findings from the JD-R (Bakker & Demerouti, 2007) model, in which job demands are replaced with work satisfaction as the antipode of job demand (Bakker & Demerouti, 2008).

The study's findings can be used to support HR governance rules for public sector personnel. Despite the findings, there are some limitations to this study. The number of responders must be increased for the policy to become evidence-based. Furthermore, considering that there are still quite a few factors and items in this study, it is necessary to examine which factors and items are most relevant in shaping the engagement of public sector employees so that when this instrument is applied to State-Owned Enterprises as government organizations engaged in the public sector, respondents are concerned will have difficulty filling out the entire statement.

CONCLUSIONS

This study investigates the key drivers of work engagement during and after the COVID-19 pandemic, emphasizing their relevance in post-pandemic contexts. By adapting the Job Demands-Resources (JD-R) model, the research highlights the significant influence of organizational and personal factors on job satisfaction and work engagement. The findings demonstrate that job satisfaction serves as both an antecedent and a moderating variable, strengthening the relationship between organizational-personal factors and work engagement.

The results confirm the importance of prioritizing employee well-being, health support, skill development, and work-life balance to enhance motivation and engagement among public sector employees. Furthermore, the study supports the predictive relevance of the proposed structural model, with all variables showing high reliability and validity. These insights contribute to human resource governance strategies, particularly for public sector organizations, by offering evidence-based recommendations to improve employee engagement and performance.

While this study provides valuable insights into the key drivers of work engagement during and after the COVID-19 pandemic, it is not without limitations. First, the sample size, although substantial, was drawn primarily from public sector employees in Indonesia, which may limit the generalizability of the findings to other sectors or geographic regions. Future research should aim to expand the sample to include participants from diverse industries and countries to enhance the external validity of the results.

Second, the study relied heavily on self-reported data, which can introduce bias, such as social desirability or recall bias. To mitigate this limitation, future studies could incorporate objective measures of work engagement, such as performance metrics or supervisor evaluations, alongside self-reported surveys. Third, the cross-sectional design of this research limits the ability to draw causal inferences. Longitudinal studies are recommended to better understand how work engagement evolves over time and how factors like job satisfaction mediate these changes in different phases of the pandemic and post-pandemic periods.

Additionally, while the model incorporates several organizational and personal factors, some potentially relevant variables, such as cultural dimensions, leadership styles, and technological adaptations, were not explicitly examined. Including these variables in future research could provide a more comprehensive understanding of work engagement dynamics. Finally, the study identified numerous factors and items influencing engagement, which, although robust, may be cumbersome for practical application in organizations. Streamlining the measurement tools by prioritizing the most impactful variables could improve usability in real-world settings, particularly in state-owned enterprises or large-scale organizations.

In light of these limitations, future research should focus on refining theoretical models, expanding demographic diversity, and adopting mixed-method approaches to validate findings. Organizations are encouraged to use these insights to develop tailored strategies that address employee well-being and engagement, particularly in times of crisis or significant change.

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AUTHOR CONTRIBUTION STATEMENT

Arbania Fitriani played a central role in conceptualizing the research idea, designing the study, and overseeing the data collection process. She also contributed significantly to the analysis of the results and the drafting of the manuscript. Dominikus David Biondi Situmorang provided critical insights into the theoretical framework and assisted in refining the literature review, ensuring its alignment with the study's objectives. Yola Eka Putri and Ani Yani contributed to the interpretation of the findings, particularly in contextualizing the implications for public sector human resource governance, and played an active role in revising and finalizing the manuscript. All authors reviewed and approved the final version of the article for submission.

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