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EXPLORING THE DETERMINANTS OF EMPLOYEE ENGAGEMENT IN A VUCA ENVIRONMENT: THE MEDIATING ROLE OF AMBIDEXTROUS LEADERSHIP

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ABSTRACT

This research paper focuses on how the employee engagement of a volatile, uncertain, complex, and ambiguous (VUCA) environment among the employees of the private sector across Klang Valley, Malaysia. The study is based on the Engagement Theory by Kahn; it explores the direct influence of the personal factors (resilience and agility), impactful work, work-life balance and technological safety on employee engagement. The article also examines how ambidextrous leadership mediates the contribution of strengthening such relationships. Simple random sampling was used to select 372 employees who were working in the workforce of the organizations of the private sector in the Klang Valley. Part of the analysis was done in SPSS through descriptive statistics and some basic analysis, the remaining part was done through Partial Least Squares Structural Equation Modelling (PLS-SEM) to test the measurement and structural models along with the mediation effects. The results show that employee engagement is directly correlated with resilience, impactful work, work -life balance, technological safety and ambidextrous leadership. Agility, on the other hand, does not have a significant direct impact on employee engagement. The mediation analysis shows that ambidextrous leadership has a partial mediating role between relationships between resilience, impactful work, and work–life balance and employee engagement and fully mediates the relationship between agility and employee engagement. Nonetheless, the mediation effect between technological safety and employee engagement does not exist. Comprehensively, the research shows the paramount importance of ambidextrous leadership in promoting employee engagement in the organizations in the private sector that are involved in the VUCA environment. The results are a reminder of the relevance of supportive leadership practice, valuable work experiences, and balanced work conditions in promoting the long-term engagement of employees as well as enhancing organizational performance.

Keywords: Resilience, agility, impactful work, technological safety, work life balance, employee engagement, ambidextrous leadership

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INTRODUCTION

Employee engagement has become a critical determinant of organizational effectiveness in increasingly volatile, uncertain, complex, and ambiguous (VUCA) environments. Defined as the extent to which employees invest their physical, cognitive, and emotional energies into their work roles (Kahn,1990), employee engagement has been consistently associated with positive outcomes such as improved performance, productivity, commitment, and employee retention. With constant technological innovation, digital transformation and evolving employee expectations, it is important to know what drives employee engagement today and into the future. Organisations are increasingly struggling with employee turnover, stress in the workplace, talent retention and adoption of changing technologies, especially in the Klang Valley, Malaysia. The rapid and widespread penetration of digital technologies, hybrid working and artificial intelligence has reshaped work and new demands have been placed on employees and organisations. The findings indicate that there is a need to further understand the maintenance of employee engagement in today's work context where change and uncertainty abound. Several studies have found a number of factors that precede employee engagement, such as leadership, organizational support, job characteristics, and workplace culture (Okojie et al., 2023; Saks, 2022). Many of the studies that have investigated these factors, however, have investigated them separately and therefore offer only a partial picture of the interplay among personal resources, work-related experiences, and the technological context and how they collectively relate to engagement. In addition, technological aspects and leadership mechanisms in employee engagement has received comparatively limited attention in the employee engagement literature, especially when it comes to workplaces where technology plays a key role.

To fill this void, the present study investigates the effect of Resilience, Agility, Impactful Work, Technological Safety and Work-Life balance on Employee engagement. The two characteristics of resilience and agility capture employees' ability to adapt to uncertainty and change, while impactful work and work-life balance capture important work resources that help sustain motivation and well-being. Technological safety is defined as how confident employees are in the security, reliability and trustworthiness of technologies in their workplace, which has grown to be a significant element in modern organizations.

The findings of this study is based on Engagement Theory proposed by Kahn (1990) which suggests that engagement of employees is determined by psychological meaningfulness, psychological safety and psychological availability. In this context, impactful work helps to experience psychological meaningfulness, technology helps to feel psychologically safe, and resilience, agility and work-life balance help to feel psychologically available. But the pathways that lead from these means to outcomes of engagement are still poorly understood. In view of this, this study proposes ambidextrous leadership as a mediating concept. Ambidextrous leadership is a balance of exploratory behaviors which promote innovation and adaptability and of exploitative behaviors which focus on efficiency and performance. This is especially important in VUCA contexts where organisations are required to be flexible and achieve operational effectiveness. The study makes contribution to literature in three ways. First, it combines personal, work-related and technological aspects into a single framework of employee engagement. Secondly, it will build on Kahn's Engagement Theory, taking a look at technological safety as a modern aspect of psychological safety in digital workplaces. Thirdly, it examines the mediating role of ambidextrous leadership, a construct that has not been explored to a great extent in previous research of employee engagement, especially in the context of the private sector in Malaysia. The study has taken a multi-faceted approach, addressing employees' experience in different organizations that span the Klang Valley, to give insights into the elements that keep employees engaged in the current changing and technology-driven work environment.

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RESEARCH OBJECTIVES

The research objectives of this study are to:

a. Examine the relationship between personal traits (resilience and agility) and employee engagement in the VUCA world.
b. Examine the relationship between impactful work and employee engagement in the VUCA world.
c. Examine the relationship between technological safety and employee engagement in the VUCA world.
d. Examine the relationship between work-life balance and employee engagement in the VUCA world.
e. Examine the relationship between Ambidextrous Leadership and employee engagement in the VUCA world.
f. Examine the mediating effect of Ambidextrous Leadership on the relationship between factors influencing employee engagement in the VUCA world.

RESEARCH QUESTIONS

The research questions to be addressed in this proposed study are:

a. Is there any relationship between personal traits (resilience and agility) and employee engagement in the VUCA world?
b. Is there any relationship between impactful work and employee engagement in the VUCA world?
c. Is there any relationship between technological safety and employee engagement in the VUCA world?
d. Is there any relationship between work-life balance and employee engagement in the VUCA world?
e. Is there any relationship between Ambidextrous Leadership and employee engagement in the VUCA world?
f. Is there any mediating effect of Ambidextrous Leadership on the relationship between factors influencing employee engagement in the VUCA world?

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LITERATURE REVIEW

PERSONAL FACTORS (RESILIENCE AND AGILITY) ON EMPLOYEE ENGAGEMENT

According to Kahn's (1990) Engagement Theory, employees are more likely to engage in their work when they possess sufficient psychological resources to invest their physical, emotional, and cognitive energies into their work roles. Resilience and agility are personal resources in a VUCA world and are important to an employee's psychological availability and adaptability. Resilience is the capacity of a person to bounce back from negative events and continue functioning effectively in stressful situations (Vito et al., 2023). Resilient employees are able to handle more workplace stress, uncertainty and organizational changes and are able to maintain engagement. The working literature consistently shows that there is positive correlation between resilience and employee engagement (Okojie et al.,2023); this implies that employees who are resilient are committed and are motivated to work even in the face of challenges. Agility is the capacity of workers to learn and adjust to varying job requirements and to react to them in an ideal way (Nadzim et al.,2022). In an agile workplace, workers can be more flexible in their approach to change and more positive about the opportunities it brings. Yet previous research in the agility and employee engagement field has yielded mixed results, highlighting the need for additional research in this area, especially for VUCA contexts (Shet,2024).

Based on these arguments, the following hypotheses are proposed:

H1a: There is a positive relationship between resilience and employee engagement.

H1b: There is a positive relationship between agility and employee engagement.

IMPACTFUL WORK AND EMPLOYEE ENGAGEMENT

Impactful work is when employees believe that their job is making a valuable contribution towards organisational goals and to the wider community. In Kahn's (1990) work, impactful work is correlated with psychological meaningfulness, as a feeling of the value and worth of work done by the employee. Employees who feel that their work is meaningful will be more emotionally attached, motivated and committed to their organizations. Prior research has shown that meaningful work has a positive effect on employee engagement, job satisfaction and organisational commitment (Chaudhary & Sahu, 2021; Zhang et al., 2021). When an employee thinks that his work can help someone else and is consistent with his personal values, he is more inclined to put in some extra effort. While the positive impact of meaningful work has been established, studies on meaningful work and its role in employee engagement in VUCA workplaces, which could potentially impact employee perceptions of meaningful work, are scarce.

H2: There is a positive relationship between impactful work and employee engagement.

WORK-LIFE BALANCE AND EMPLOYEE ENGAGEMENT

Work-life balance is about workers' capacity to complete their work duties and take care of their families and personal health. In the current work environment, where the demand for work is growing by the minute, work-life balance has emerged as a crucial aspect that affects employee engagement and wellness. Kahn (1990) argued that psychological availability is the key, meaning that employees are more apt to be involved if they have enough emotional and physical resources. When employees are facing too much work-life conflict, they are likely to become stressed and burned out, and be less able to contribute to their work. On the other

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hand, workers who reach a higher level of balance tend to keep their energy, attention and drive. There is a consistent positive correlation between WLB and EE from empirical studies, as cited by Akhtar et al. (2022) and García et al. (2023). Those who feel there's a healthy balance between work and life are more likely to feel committed and less burned out.

H3: There is a positive relationship between work-life balance and employee engagement.

TECHNOLOGICAL SAFETY AND EMPLOYEE ENGAGEMENT

Digital technologies have become an integral part of modern organizations, making technological safety crucial. Technological safety is the experience of employees that technologies in their organizations and digital systems are safe, reliable and trustworthy. Kahn's (1990) psychological safety condition asserts that employees will be more likely to engage if they feel safe in their work environment. Psychological safety is not just between people, it's also about trust in technologies used in the organization. Trust in digital systems leads to increased openness to technology and increased cooperation and participation among employees in processes within the organization. In the past, the relationship between technological infrastructure and employee confidence, as well as organizational effectiveness, has been investigated and the results suggest that high-quality technological infrastructures improve employee confidence and organizational effectiveness (Zhu et al., 2021; Chen et al., 2023). But little empirical study has focused on the direct link between technological safety and employee engagement, especially in a VUCA context.

H4: There is a positive relationship between technological safety and employee engagement.

AMBIDEXTROUS LEADERSHIP AS A MEDIATOR

Ambidextrous leadership is the capacity of a leader to perform both exploratory and exploitative behaviors in a balanced manner, to foster innovation and adaptability, on the one hand, and efficiency, stability and performance, on the other hand. This leadership is especially important in VUCA (volatile, unpredictable, complex, ambiguous) organizations where it is crucial to be responsive to change while still being efficient. Resilience, agility, impactful work, work-life balance and technological safety offer valuable resources to employees, but these resources do not necessarily lead to engagement. Leaders have a significant influence on the use of resources and employee attitudes and perceptions of the workplace. Ambidextrous leaders provide a setting that fosters psychological meaningfulness, safety and availability, three conditions suggested by Kahn (1990). The findings from past research indicate that ambidextrous leadership positively impacts employee adaptability, trust, innovation, and engagement, which is done by balancing flexibility with performance requirements (Khairy et al., 2023; Zhang & Yang, 2021). Thus, the expectation is that the ambidextrous leadership will enhance the linkage between resources in the workplace and employee engagement by helping employees to use the workplace resources in dynamic organizations.

H5: Ambidextrous leadership positively influences employee engagement.

H6a: Ambidextrous leadership mediates the relationship between resilience and employee engagement.

H6b: Ambidextrous leadership mediates the relationship between agility and employee engagement.

H6c: Ambidextrous leadership mediates the relationship between impactful work and employee engagement.

H6d: Ambidextrous leadership mediates the relationship between work-life balance and employee engagement.

H6e: Ambidextrous leadership mediates the relationship between technological safety and employee engagement.

METHODOLOGY

The method used in this research was positivistic method with a research paradigm that was based on the positivist paradigm where the steps of research were carried out systematically in an empirical manner and it was assumed that reality was objective, measurable and could be examined through the systematic empirical method. In accordance with this paradigm, a quantitative cross-sectional research design was used to explore the relationships among resilience, agility, impactful work, technological safety, work-life balance, ambidextrous leadership and employee engagement with regard to the VUCA environment. The target population were the employees from private sector organizations within the Klang Valley region in Malaysia. Klang Valley was chosen because it is the main economic and commercial hub in the country, where there are a large number of organisations that are going through digital transformation, technological innovation and workforce restructuring. These qualities are significant in the context of considering employee engagement in volatile and unpredictable workplaces. It was decided to use non-probability sampling (convenience sampling) because it was not possible to identify all the private sector employees in the Klang Valley, in a complete sampling frame. Respondents were approached through social media platforms, and online survey distribution channels. The participation was voluntary and respondents were asked to be working in the private sector at the time of the study in order to be included in the study. The minimum sample size was determined using Krejcie and Morgan's (1970) table for the sample size, the minimum sample size recommended for large populations with a 95% confidence level at a 5% margin of error was 384 respondents. Overall, 372 usable responses were collected and stored for analysis, which is 96.9% of the targeted responses. Based on the minimum requirements for PLS-SEM analysis and the adequate statistical power to test the proposed relationships, this sample size was considered to meet the minimum requirements (Hair et al., 2022). A structured questionnaire with previously validated measurement scales from previously conducted studies was used to collect data. Each construct was rated on a six-point Likert scale (1 = Strongly Disagree; 6 = Strongly Agree). The questionnaire comprised seven sections – resilience, agility, impactful work, technological safety, work-life balance, ambidextrous leadership, employee engagement and the respondent's demographics. The participants were explained the purpose of the study and assured that it was a voluntary study before data were collected. Completed questionnaires were the result of informed consent. There was no indication on all responses, and they were assured that their responses would not be shared or linked to any personal information collected, and that they could withdraw from participation at any time without penalty. Two software packages, SPSS and SmartPLS, were used for data analysis. Demographic profiles were created using SPSS and the measurement and structural models were tested using SmartPLS. PLS-SEM has been applied in this study due to the presence of multiple latent constructs, multiple mediation relationships, and the predictive research objective. What is more, PLS-SEM is deemed to be suitable for complicated models, and it does not assume multivariate normality (Hair et al., 2022).

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FINDINGS

Demographic Analysis

Table 1. Demographic Profile

Demographic Factors	Category	Frequency	Percentage
Age	Below 25	59	15.9%
	25-34	199	53.5%
	35-44	84	22.6%
	45-54	30	8.1%
	55 and above	0	0.0%
Gender	Male	210	56.5%
	Female	162	43.5%
Marital_Status	Single	188	50.5%
	Married	184	49.5%
Highest_Education	Master	37	9.9%
	Bachelor	182	48.9%
	Diploma	97	26.1%
	STPM	6	1.6%
	Matriculation	1	0.3%
	SPM	47	12.6%
	Professional Certificate	2	0.5%
Job_Sector	Public	63	16.9%
	Private	297	79.8%
	Self-Employed	12	3.2%
Position	Entry	97	26.1%
	Executive	162	43.5%
	Manager	59	15.9%
	Senior Manager	17	4.6%
	Director	12	3.2%
	Others	25	6.7%
YearOfWorkingExperience	Less than 1 year	47	12.6%
	1-5 years	117	31.5%
	6-10 years	109	29.3%
	11-15 years	58	15.6%
	More than 15 years	41	11.0%

As shown in the respondent profile, most of the respondents were young to mid-career employees. The majority of the respondents were in the age group 25 to 34 years (53.5%) with 22.6% aged between 35 and 44 years. The males made up 56.5% and females 43.5% of the respondents. Most of the sample was fairly even with 50.5% of the respondents being single and 49.5% being married. The majority of respondents had a bachelor's degree (48.9%) and worked in the private sector (79.8%). The organizational level of the employees showed that 43.5% were at the executive level and 26.1% at entry level. When asked about work experience, 60.8% of the respondents had 1-10 years of experience. Overall, the sample belongs to workforce actively operating in today's organizational context, making it appropriate to analyse employee engagement in VUCA's organizational context.

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Reliability and Validity

Table 2. Reliability and Validity

Constructs	AVE	Cronbach's Alpha	Composite Reliability	Number of Items
Agility	0.503	0.945	0.950	19 items
Ambidextrous Leader	0.564	0.918	0.933	11 items
Employee Engagement	0.629	0.962	0.967	17 items
Impactful Work	0.681	0.948	0.952	10 items
Resilience	0.507	0.918	0.923	13 items
Technological Safety	0.630	0.972	0.976	23 items
Worklife Balance	0.643	0.957	0.959	14 items

Convergent validity and reliability were satisfactory for all constructs in the measurement model. As shown in Table 2, the Cronbach's alpha values and composite reliability values were greater than 0.70, which is considered as acceptable level of internal consistency among the measurement items. In addition, the Average Variance Extracted (AVE) for each construct was greater than the minimum criterion of 0.50, indicating the constructs had acceptable convergent validity (explain over 50% of the variance of the indicators). All the findings together are evidence that the measurement items were reliable and representative of their constructs. The findings also confirm the validity of the measurement model and a justification for testing the structural relationships between constructs in the proposed research model.

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Discriminant Validity

Table 3. Fornell Lacker

	Agility	Ambidextrous Leadership	Employee Engagement	Impactful Work	Resilience	Technological Safety	Worklife Balance
Agility	0.709						
Ambidextrous Leadership	0.628	0.751					
Employee Engagement	0.745	0.690	0.793				
Impactful Work	0.680	0.659	0.835	0.825			
Resilience	0.809	0.671	0.787	0.765	0.712		
Technological Safety	0.790	0.706	0.866	0.895	0.814	0.794	
Worklife Balance	0.751	0.778	0.783	0.733	0.764	0.813	0.802

Discriminant validity was assessed by using the Fornell-Larcker approach and is presented in Table 3. The results show that there is sufficient separation between each of these constructs and the other constructs in the model. This means that the items of the measurement reflect the theoretical constructs in the items and have a moderate degree of separation from some of the related constructs. In establishing the validity of the model, it is important to ensure that the structural relationships observed in the model are a meaningful relationship between conceptually different variables, not because of the overlap of the variables measured. The findings overall show support for the validity of the measurement model, and warrant moving forward with testing the hypothesized relationships between constructs.

Path Coefficient

Table 4. Path Coefficient (Employee Engagement)

Construct	Path Coefficient	T values	P values	Significance (p<0.05)
Resilience -> Employee Engagement	0.125	2.482	0.013	Yes
Agility -> Employee Engagement	0.052	1.048	0.295	No
Impactful Work -> Employee Engagement	0.282	5.157	0.000	Yes
Worklife Balance -> Employee Engagement	0.150	2.875	0.004	Yes
Technological Safety -> Employee Engagement	0.296	3.489	0.000	Yes
Ambidextrous Leadership -> Employee Engagement	0.068	1.998	0.033	Yes

The results of the model of structure suggest that the most influential predictors of Employee Engagement were Technological Safety ($\beta = 0.296$, $p < 0.001$) and Impactful Work ($\beta = 0.282$, $p < 0.001$). This indicates that employees will stay in the job when they feel that their work is significant and the technology they use in their work is safe, reliable, and is supporting their performance. The findings underscore the significance of meaningful experiences and digital environment in the workplace for employee engagement in today's work context. The effects of Resilience ($\beta = 0.125$, $p = 0.013$) and Work-Life Balance ($\beta = 0.150$, $p = 0.004$) were also positive, but smaller in magnitude, with respect to Employee Engagement. The results provide indications that those who are more resilient and derive more from balancing work and personal life show higher engagement. The findings confirm the need for individual and organizational resources to maintain employees' participation and commitment in situations of dynamic work. Agility, on the other hand, did not reveal a significant direct correlation with Employee Engagement ($\beta = 0.052$, $p = 0.295$). This discovery suggests that rapid adaptation to changing conditions may not lead to better engagement results. The importance of agility to counter environmental uncertainty may depend on other organisational mechanisms or factors. The result revealed that Employee Engagement had a positive relationship with Ambidextrous Leadership ($\beta = 0.068$, $p = 0.033$) but the effect was not significant. This indicates that leadership factors which combine flexibility and operations effectiveness can influence employee engagement, but not as much as the factors at the workplace and at the individual level. In general, the results suggest that there are a number of factors that affect employee engagement, such as personal characteristics, work experiences, and organizational factors, where meaningful work and technological security stand out as factors of importance in the scope of the present study.

Table 5. Path Coefficient (Ambidextrous Leadership)

Construct	Path Coefficient	T values	P values	Significance (p<0.05)
Resilience -> Ambidextrous Leadership	0.112	1.609	0.108	No
Agility -> Ambidextrous Leadership	-0.024	1.048	0.672	No
Impactful Work -> Ambidextrous Leadership	0.096	1.436	0.151	No
Worklife Balance -> Ambidextrous Leadership	0.575	8.405	0.000	Yes
Technological Safety -> Ambidextrous Leadership	0.080	0.972	0.331	No

The findings show that Work-Life Balance is the only factor that has a significant positive relationship with Ambidextrous Leadership ($\beta = 0.575$, $p < 0.001$). A relatively high coefficient indicates that the higher the level of balance between work and life, the greater the possibility of employees feeling that the leaders are practicing well-balanced flexibility, innovation and operational effectiveness. The finding underscores the need for supportive working environments that support leadership practices that allow for both organizational productivity and individual employee health and wellbeing. In contrast, Resilience ($\beta = 0.112$, $p = 0.108$), Agility ($\beta = -0.024$, $p = 0.672$), Impactful Work ($\beta = 0.096$, $p = 0.151$), and Technological Safety ($\beta = 0.080$, $p = 0.331$) did not demonstrate significant relationships with Ambidextrous Leadership. These factors had positive coefficients, except for the factor 'Agility', but these factors did not have statistically significant effects in the present sample. The results indicate that individual adaptive capability, meaningfulness of work and confidence in technologies used in the workplace may not directly affect employees' perceptions of ambidextrous leadership behaviours. Based on results of this study, it can be concluded that among the factors studied Work-Life Balance has a more dominant influence on explaining the variations of Ambidextrous Leadership. This implies that the experiences of employees regarding the workplace support and balance may be more related to leadership practices that are concerned with "exploratory" and "exploitative" aspects than to individual and technological aspects. The results also suggest that the influences of Ambidextrous Leadership have different characteristics than those influencing Employee Engagement, pointing to the unique role of leadership in the proposed research model.

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Table 6. Mediation Analysis

Hypothesis Statement	Direct Effects	t value	p-value	Signification (p<0.05)	Indirect Effects	t value	p-value	Signification (p<0.05)	Mediation Type
Resilience -> Ambidextrous Leadership -> Employee Engagement	0.125	2.482	0.013	Yes	0.108	2.708	0.007	Yes	Partial Mediation
Agility -> Ambidextrous Leadership -> Employee Engagement	0.052	1.048	0.295	No	0.112	2.338	0.035	Yes	Full Mediation
Impactful Work -> Ambidextrous Leadership -> Employee Engagement	0.282	5.157	0.000	Yes	0.227	1.912	0.037	Yes	Partial Mediation
Worklife Balance -> Ambidextrous Leadership -> Employee Engagement	0.150	2.875	0.004	Yes	0.039	1.971	0.011	Yes	Partial Mediation
Technological Safety -> Ambidextrous Leadership -> Employee Engagement	0.296	3.489	0.000	Yes	0.005	0.708	0.479	No	No Mediation

The mediation analysis shows Ambidextrous Leadership has a meaningful but selective role to explain Employee Engagement. Some indirect effects were found for these individual and workplace factors: Resilience, Agility, Impactful Work, and Work-Life Balance, meaning that the leadership behaviours play a part in driving these factors up and leading to increased engagement. Of these relationships, the strongest indirect one was found to be between impactful work experiences and leadership practices bringing flexibility and performance, indicating that meaningful work experiences are further improved when complemented by leadership practices that balance the flexibility and performance. One important finding is that Ambidextrous Leadership fully mediates the link between Agility and Employee Engagement. Although Agility had no direct impact on Employee Engagement, it did have an indirect impact via Ambidextrous Leadership, indicating that employees' adaptability may need to be facilitated by some leadership mechanisms to manifest in employee engagement outcomes. Ambidextrous Leadership, on the other hand, showed no effect on the relationship between Technological Safety and Employee Engagement, suggesting that perceptions of technology security and reliability directly affect employee engagement, and that this does not require leaders to intervene. The results underscore the role of Ambidextrous Leadership as a mediator between selected workplace resources and employee engagement, with the mediating effect being different for each of the selected workplace resources.

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Table 7. Summary of Hypotheses Testing Results

	Hypothesis Statement	P-value	Findings
H1a	There is a relationship between resilience and employee engagement.	0.013	Supported
H1b	There is a relationship between agility and employee engagement.	0.295	Not Supported
H2	There is a relationship between impactful work and employee engagement.	0.000	Supported
H3	There is a relationship between work-life balance and employee engagement.	0.004	Supported
H4	There is a relationship between technological safety and employee engagement.	0.000	Supported
H5	There is a relationship between ambidextrous leadership and employee engagement.	0.033	Supported
H6a	There is a relationship between agility and ambidextrous leadership.	0.108	Not supported
H6b	There is a relationship between resilience and ambidextrous leadership.	0.672	Not supported
H7	There is a relationship between impactful work and ambidextrous leadership.	0.151	Not supported
H8	There is a relationship between work-life balance and ambidextrous leadership.	0.000	Supported
H9	There is a relationship between technological safety and ambidextrous leadership.	0.331	Not Supported
H10a	There is a mediation effect of ambidextrous leadership on the relationship between resilience and employee engagement.	Partial Mediation	Supported
H10b	There is a mediation effect of ambidextrous leadership on the relationship between agility and employee engagement.	Full Mediation	Supported
H10c	There is a mediation effect of ambidextrous leadership on the relationship between impactful work and employee engagement.	Partial Mediation	Supported

H10d	There is a mediation effect of ambidextrous leadership on the relationship between work-life balance and employee engagement.	Partial Mediation	Supported
H10e	There is a mediation effect of ambidextrous leadership on the relationship between technological safety and employee engagement.	No Mediation	Not Supported

The results of the hypothesis tests support the hypothesis in part. The direct relationships found were Resilience, Impactful Work, Work-Life Balance, Technological Safety, and Ambidextrous Leadership, all of which were significant predictors of Employee Engagement which was not the case for Agility. Interestingly, Technological Safety and Impactful Work turned out to be most predictive, indicating that these two factors are critical for employee engagement: the tea in which employees work, and the work itself.

Of the antecedents of Ambidextrous Leadership, the only one that exhibited a significant positive correlation was Work-Life Balance. However, there were no significant relationships between Resilience, Agility, Impactful Work, Technological Safety, and Ambidextrous Leadership. The results indicate that leadership actions that combine flexibility with operational effectiveness might be more correlated with employees' perception of operationally oriented support and work lives balance than with their personal skills and technology.

The mediation analysis also showed that Ambidextrous Leadership plays a significant mediating role between the various antecedents and Employee Engagement. Resilience, Agility, Impactful Work and Work-Life Balance were found to have significant mediation effects. The full mediation effect was identified for Agility, suggesting that the key pathway to engagement is through leadership-related processes as opposed to a direct pathway. In contrast, no mediation effect was found for Technological Safety, suggesting that this relationship between Technological Safety and Employee Engagement is direct and not indirect. The results reveal that there is a combination of individual resources, work environment and leadership mechanisms that contribute to employee engagement, albeit with varying degrees and forms of relationship between them and the constructs analyzed.

CONCLUSION

This study explored how resilience, agility, impactful work, technological safety and work-life balance affect employee engagement, and explored the mediating effect of ambidextrous leadership in the context of the private sector in Malaysia. The study takes place in an environment of VUCA, i.e., volatile, uncertain, complex, and ambiguous circumstances in which the world of technology is constantly changing, there are uncertainties, and the demands of employees evolve over time.

The results show that there are many factors influencing employee engagement, both individual, the work and organizational. Technological safety and impactful work were among the most important variables that were found to predict employee engagement, underscoring the necessity for safe technical workplaces and meaningful working experiences to create both emotional and cognitive attendance to the job of employees. Resilience and work-life balance also had a positive influence on employee engagement, meaning that a strong sense of personal resources and a positive work-life balance increase an employee's likelihood of being engaged.

One of the key outcomes of this study is that agility did not have a significant direct effect on employees' engagement. This finding indicates that adaptation to change does not necessarily mean engagement. Instead, supportive organizational mechanisms have to be in place before employee adaptability can manifest in meaningful outcomes of engagement. The mediation findings support this interpretation, as the agility to employee engagement relationship was fully mediated while the relationships between employee engagement and resilience, impactful work and work-life balance were partially mediated. The results of this research demonstrate the importance of leadership as a pathway to mobilizing individual and workplace resources to create positive employee outcomes.

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Theoretically, the study is an extension of the work of Kahn, in which he found that traditional psychological factors are not the only factors that affect employee engagement in the modern workplace, but also technological and leadership factors. The importance of technological safety is particularly relevant, and psychological safety goes beyond personal experiences to the confidence people have in the technology and systems they use in the workplace. Moreover, the study is a first in the field of ambidextrous leadership literature because it provides a valid role as an explanatory mechanism between selected workplace resources and employee's engagement.

In practice, the results indicate that organizations looking to improve employee engagement should focus on creating meaningful work experiences, improving technological trust and reliability, support work-life balance programs, and foster leadership development programs that focus on innovation while maintaining operational efficiency. Organizations involved in dynamic and uncertain environments in which employee engagement is now a critical factor in determining the organization's sustainability and performance may find these strategies especially relevant.

Finally, the study offers a more holistic picture of employee engagement by combining personal, organizational, technological, and leadership aspects in one conceptual framework. This study provides insightful data for academics and practitioners in the field of employee engagement, especially when working in a modern, digital and complex context.

RECOMMENDATION FOR FUTURE RESEARCH

Several research avenues are suggested based on the results of this study. First, future studies could use longitudinal designs to better understand the changes in employee engagement and its predictors over time, in particular in organizations with fast changing environments. This would lead to a better understanding of the temporal dynamics of resilience, technological safe and work-life balance.

Second, the present model can be expanded in the future, where researchers may consider other organizational and contextual factors that can affect the employee's engagement, such as organizational culture, perceived organizational support, psychological empowerment, or readiness for digital transformation, among others. These factors might help to understand how engagement is developed and maintained.

Thirdly, future research could use multilevel research design to explore the dynamics of leadership behaviors at the individual, team and organisational levels. These would make a valuable contribution to the understanding of the impact of ambidextrous leadership on employee attitudes and behaviours in complex organizational systems.

In conclusion, future studies could be conducted in other industries, organizations, or countries to determine the extent to which the results of this study would apply to other situations. Comparative studies across organizations in the public sector or across countries may be informative for understanding how contextual factors may influence these relationships between employee engagement and leadership and workplace resources.

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CONFLICT OF INTEREST

The author confirms that there are no known conflicts of interest, financial or otherwise, that could have influenced the design, data collection, analysis, or interpretation of the findings presented in this thesis.

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