EXPLORING HOW INTERNAL PERSONAL RESOURCES DRIVE WORK ENGAGEMENT, ACTIVE LEARNING, AND ADAPTIVE PERFORMANCE IN DIGITAL WORKPLACES

Javier Torres [1,2] ✉ 🆔

Universidad de los Andes School of Management, Bogotá, Colombia[1];

ABSTRACT

This study investigates the mechanisms linking individual internal processes specifically self-efficacy and a growth mindset with work engagement, active learning, and adaptive performance in three digital technology companies in Indonesia. Employing a mixed-methods approach, the research integrates quantitative data from a survey of 185 employees analyzed using Structural Equation Modeling (SEM) and qualitative insights from semi-structured interviews with 17 managers. The quantitative results show that work engagement fully mediates the relationship between self-efficacy and growth mindset with active learning, while active learning partially mediates the link between work engagement and adaptive performance. These findings address previous inconsistencies in the literature regarding the direct effect of a growth mindset on work engagement and provide clearer empirical support for their connection. The qualitative phase reinforces these relationships, highlighting that work engagement and active learning are essential mechanisms driving individual adaptive performance. Active learning, in particular, fosters continuous knowledge accumulation and contributes significantly to innovation processes within digital organizations. This study offers important theoretical and practical contributions by clarifying how internal psychological resources influence behavioral outcomes in dynamic work environments. It also strengthens the application of the Job Demands-Resources (JD-R) model, demonstrating that personal resources such as self-efficacy and growth mindset enhance employee adaptability and innovation when supported by strong work engagement and learning behaviors.

Keywords: active learning; growth mindset; self-efficacy; employee engagement; adaptive performance; innovation management.

CORRESPONDING AUTHOR:

Javier Torres
Universidad de los Andes School of Management, Bogotá,Colombia
contact: torresjevie33@gmail.com

1. | INTRODUCTION

In recent years, significant shifts in the global economy combined with the rapid advancement of digital technologies have transformed the ways in which societies and markets function. These shifts require organizations to find ways to enable their employees to become more adaptable, agile, and efficient across all operational processes (van den Heuvel et al., 2020). One of the key constructs used to evaluate how well individuals can respond to such evolving workplace demands is adaptive performance. According to Charbonnier-Voirin and Roussel (2012), adaptive performance includes five primary dimensions: creative problem solving, managing work-related stress and emergencies, interpersonal adaptability, and training effort. Among the various factors influencing adaptive performance, work engagement has been identified as particularly crucial. However, some studies have shown inconsistent or insignificant results regarding the direct impact of work engagement on adaptive performance, especially within organizational change contexts. van den Heuvel et al. (2020) suggested that this could be due to the varying influence of work engagement across different facets of adaptive performance. These findings point to the need for deeper examination into how work engagement interacts with adaptivity in dynamic work environments.

In tandem with these considerations, employee capabilities are often recognized as fundamental drivers of innovation within companies. Employees are seen as the source of ideas and creativity, particularly through structured learning processes that strengthen a company's competitive edge (De Spiegelaere et al., 2015). Furthermore, ongoing learning among employees supports the acquisition of new skills required to meet the evolving demands of technologically driven organizations (Richels et al., 2020). These authors noted that learning behaviors in this context represent a form of behavioral switching that supports adaptive performance on an individual level. Bäckström and Bengtsson (2019) argued that despite the increasing relevance of employee-driven innovation, empirical research exploring the innovation process through learning remains sparse. Moreover, Di Vaio et al. (2021) emphasized the strategic importance of knowledge exploitation for realizing untapped organizational potential, particularly within digital business environments. They underscored that the innovation process in digital-based firms often depends on the combination of various forms of knowledge. Kohli and Melville (2019) further argued that knowledge exploitation is most effective when supported by double-loop learning and active knowledge sharing, particularly with external stakeholders such as customers or clients.

Among the various forms of learning, active learning is considered one of the most effective methods for fostering adaptive performance. It is characterized by individual initiative, self-regulation in the learning process, and the eventual mastery of new skills (Bakker et al., 2012). Bell and Kozlowski (2008) previously contended that active learning offers employees a structured yet flexible opportunity to explore and experiment, especially when reinforced by continual feedback from supervisors. This approach enables employees to revise and adapt their behaviors in response to situational challenges, thereby enhancing their adaptive performance. Bell and Kozlowski (2008) also emphasized the critical need for future research to delve deeper into the internal processes that underpin adaptive capabilities.

From the discussion above, it becomes evident that successful individual adaptation in the workplace hinges on the effectiveness of the skill acquisition process. In today's work environment, the concept of adaptive performance is closely tied to the need for responsiveness to rapid changes in market demands and technological development. As highlighted by van den Heuvel et al. (2020) and Bell and Kozlowski (2008), adaptive performance may emerge through double-loop learning a process that encourages individuals to reflect, reevaluate, and adopt improved problem-solving strategies in response to fast-paced changes at work. Moreover, this learning model not only facilitates problem-solving but also drives product innovation and capitalizes on emerging market opportunities. Hence, fostering active and reflective learning becomes essential to shaping behavioral changes that allow

individuals to respond effectively to external influences, such as managerial expectations and market fluctuations.

Apart from learning, individual psychological resources especially growth mindset and self-efficacy play a vital role in influencing both work engagement and adaptive capacity. These internal characteristics, which fall under the category of personal resources, are instrumental in boosting adaptive performance (Demerouti et al., 2010). Self-efficacy refers to an individual's belief in their capacity to execute tasks effectively, while a growth mindset reflects the belief that abilities can be cultivated through effort and persistence. According to Hakanen and Roodt (2010), work engagement motivates individuals to invest more of their psychological and personal resources in order to meet job demands. Nonetheless, empirical studies exploring the relationship between growth mindset and work engagement remain scarce. For instance, Caniëls et al. (2018) noted the lack of solid empirical evidence supporting this relationship. Similarly, Bakker and van Wingerden (2021) emphasized that only a few studies have examined how internal psychological mechanisms like growth mindset and self-efficacy influence adaptive performance particularly when mediated through work engagement and learning behaviors like active learning.

A foundational framework that supports exploration of these relationships is the Conservation of Resources (COR) theory, as examined by van den Heuvel et al. (2020). COR theory posits that employees seek to preserve, accumulate, and protect their personal resources, especially when faced with high job demands (Hobfoll et al., 2018). Under such conditions, resource depletion can lead to emotional exhaustion, undermining performance and well-being. However, when viewed through the lens of the Job Demands-Resources (JD-R) model, individuals experiencing high job demands may still achieve positive job outcomes provided that they maintain sufficient personal and job resources. According to Bakker and Demerouti (2007), the JD-R model illustrates how job demands can be balanced by available resources to foster engagement and performance. In this regard, the current research draws upon the JD-R framework to examine how personal resources like self-efficacy and growth mindset influence employee behavior and outcomes. The model also underscores the importance of organizations not only in supporting but also disseminating these resources throughout the workforce, primarily via structured learning initiatives. The ultimate goal is to drive adaptive performance and innovation across all organizational levels.

In addition, the study emphasizes the significance of active learning as an ideal learning model for facilitating digital innovation within modern organizations. Active learning promotes both the reflective (double-loop) learning cycle and the strategic exploitation of knowledge two elements essential for fostering creativity and innovation. As digital organizations strive to remain competitive in an increasingly fast-paced and knowledge-driven economy, learner-centered approaches like active learning become even more critical. Hence, this research seeks to explore how individual internal processes specifically self-efficacy and growth mindset interact with work engagement and active learning to enhance adaptive performance.

To address existing gaps in the literature, the present study is designed to examine the interrelationships among these variables through an integrated framework. The goal is to determine how individual psychological factors shape employee engagement, learning behavior, and ultimately, adaptive capacity. Specifically, the study investigates the mediating roles of work engagement and active learning in translating personal resources into adaptive outcomes. By doing so, this research intends to bridge the conceptual and empirical gap between internal psychological mechanisms and adaptive performance. In summary, the study highlights the dual importance of psychological readiness and proactive learning in equipping employees to thrive in dynamic digital work environments.

2. | LITERATURE REVIEW

2.1. Self-Efficacy and Work Engagement

Human resource management capabilities play a crucial role in optimizing a company's internal assets, particularly by influencing how individuals perceive their own skills and strengths, which directly relates to their engagement at work (Bakker & van Wingerden, 2021). Hakanen and Roodt (2010) describe work engagement through three behavioral dimensions: vigor, referring to high levels of mental energy and resilience at work; dedication, which reflects strong enthusiasm and pride in one's job; and absorption, characterized by deep concentration and immersion in tasks over extended periods. One of the key factors that determine the level of work engagement among employees is self-efficacy, a psychological trait stemming from an individual's inner cognitive processes. According to Del Libano et al. (2012), individuals with high self-efficacy exhibit greater resilience when encountering workplace challenges such as change, conflict, or failure because they trust their ability to cope effectively. This positive self-belief energizes them to remain engaged with their work, even when facing new or complex job demands (Knight et al., 2021).

Despite growing interest, research exploring psychological mechanisms related to work engagement, especially through the lens of the Job Demand-Resources (JD-R) Theory, remains somewhat limited. Lupșa et al. (2020) conducted a meta-analysis revealing that interventions targeting personal resources, particularly self-efficacy, have not been sufficiently studied to clarify their role in enhancing work engagement within the JD-R framework. Bandura (2012) emphasizes the importance of investigating self-efficacy specifically in work settings due to its fundamental impact on employee motivation and performance.

JD-R Theory, as articulated by Bakker and Demerouti (2007), serves as a primary theoretical foundation for understanding the levels of employee engagement. This model posits that work engagement is triggered by a dynamic balance between the demands of the job and the resources available to employees. Job demands typically include factors such as time pressure, workload intensity, and emotional strain experienced on the job (Knight et al., 2021). In contrast, job resources encompass personal characteristics like self-efficacy and a growth mindset, which help employees manage these demands effectively. Del Libano et al. (2012) explain that when individuals possess sufficient job resources, particularly psychological ones, the negative effects of high job demands are mitigated, resulting in greater work engagement. Additionally, Caesens and Stinglhamber (2014) found that employees with strong self-efficacy report less frustration despite facing heavy job demands.

Thus, self-efficacy can be understood as a vital process through which employees interpret and respond positively to available job resources. This personal trait enables workers to reduce the perceived burden of job demands, thereby fostering sustained energy, commitment, and involvement in their tasks (Schaufeli & Bakker, 2004; Koyuncu et al., 2006; Halbesleben, 2010; Christian et al., 2011; Bakker & Xanthopoulou, 2013). In summary, self-efficacy functions as a psychological resource that empowers individuals to maintain high levels of work engagement by effectively managing and balancing their job demands and resources.

2.2. Growth Mindset and Work Engagement

A key objective of effective human resource management is to strengthen a company's competitive edge by fostering innovation and creativity (Han & Stieha, 2020). According to these authors, innovation often arises from a process of trial and error during work activities and market exploration. One crucial internal factor that supports innovation within organizations is the growth mindset, which refers to an individual's belief that personal abilities and traits can be developed and improved over time (Dweck, 2006).

A growth mindset is associated with increased enthusiasm, concentration, and effort, all of which contribute positively to work engagement. However, empirical evidence linking growth mindset directly to work engagement remains inconclusive. For instance, Caniëls et al. (2018) found no direct

correlation between growth mindset and work engagement. In fact, their analysis suggested that a growth mindset might limit work engagement, subsequently lowering individual performance. They recommend further investigation of this relationship through five specific mechanisms: enthusiasm for development, positive beliefs, effort, attention, and interpersonal interactions (Keating & Heslin, 2015).

In this study, these mechanisms are incorporated within the concept of adaptive performance (Charbonnier-Voirin & Roussel, 2012). Consequently, the mindset concept in human resource development requires broader exploration, extending beyond traditional educational contexts to include workplace learning environments (Han & Stieha, 2020). Understanding this wider application is essential for leveraging growth mindset as a tool to enhance employee engagement and organizational innovation.

2.3. Work Engagement and Active Learning

Building on the suggestion by Han and Stieha (2020) to explore mindset in workplace learning, this study also examines active learning as a key factor in enhancing employees' skills and competencies (Simmering et al., 2003). Bakker et al. (2012) identify three core features of active learning: intrinsic motivation to learn, autonomy in managing the learning process, and a strong sense of mastery coupled with self-efficacy. These elements emphasize that active learning primarily involves individuals taking control of their own development.

The job demand-control model provides a theoretical framework connecting active learning with work engagement. De Spiegelaere et al. (2015) highlight that when employees experience high levels of control over their jobs, they can engage more effectively in active learning, even under demanding work conditions. This increased control encourages individuals to dedicate more effort to their tasks, which in turn boosts their work engagement (Bakker et al., 2012). Furthermore, employees who are highly engaged tend to actively seek out new knowledge and opportunities for personal growth, enhancing their skills and capabilities (Fredrickson & Losada, 2005).

2.4. Work Engagement and Individual Adaptive Performance

Employees often struggle to adapt to organizational changes due to insufficient behavioral adjustments (Oreg et al., 2011; Vakola, 2013). Work engagement is recognized as a key behavior that facilitates effective adaptation in the workplace. According to the Job Demand-Resources (JD-R) theory, when employees possess abundant job resources such as strong self-efficacy and a growth mindset, they are better able to manage evolving job demands, which leads to enhanced adaptive performance (Christian et al., 2011). However, research examining adaptive performance through the JD-R framework remains scarce (Park et al., 2020). Park and colleagues also note that employees with higher work engagement tend to concentrate their efforts on job tasks and show greater readiness to respond to dynamic market changes.

Charbonnier-Voirin and Roussel (2012) characterize adaptive performance by five key dimensions: creativity, responsiveness to emergencies, interpersonal flexibility, commitment to training, and managing work-related stress. These dimensions are crucial for sustaining efficient work processes amid organizational changes and fluctuating market demands (Frese, 2008). In this context, work engagement supports employees in maintaining optimal performance during periods of change.

2.5. Active Learning and Individual Adaptive Performance

Employee adaptability is crucial for organizations to sustain performance over time and to capitalize on emerging market opportunities (Babeľová et al., 2015; Babeľová & Stareček, 2021). There has been growing interest in understanding the factors that influence individual adaptive performance (Richels et al., 2020). Specifically, Baard et al. (2014) highlight an increasing focus on personal traits and learning processes that enhance an individual's capacity to adapt. More recently, Park et al. (2020) emphasize the need for future research to investigate learning strategies that effectively improve

adaptive performance at the individual level. One such approach is active learning, which empowers employees with greater control over their learning journey and encourages experimentation through trial and error in exploring markets, acquiring new knowledge, and developing skills (Keith & Wolff, 2014). This method supports positive behavioral responses to workplace changes, resulting in improved adaptive performance. Consequently, active learning is proposed as a valuable factor in enhancing adaptive capabilities.

This study aims to explore the relationships and underlying mechanisms linking growth mindset and self-efficacy as personal resources with work engagement, active learning, and adaptive performance through the lens of the Job Demand-Resources (JD-R) Theory. Personal resources are defined as internal positive factors that individuals possess, including growth mindset and self-efficacy. Van Wingerden et al. (2017) assert that these personal resources are critical in boosting work engagement by buffering job demands and leveraging job resources. Moreover, the concept of job demands can stimulate the active learning process by serving as an intrinsic motivator. Personal resources also act as motivational drivers, enhancing individuals' learning efforts and their ability to adapt in dynamic work environments (Taris & Schaufeli, 2015; Park et al., 2020).

3. | METHODS

This research investigates the mechanism between an individual's internal process, work engagement, active learning, and adaptive performance in digital technology-based companies. Details of the research questions are provided below:

RQ1: *What is the relationship between an individual's internal processes (i.e., growth mindset, self-efficacy), work engagement, active learning, and adaptive performance?*

RQ2: *What is the mechanism linking an individual's internal processes (i.e., growth mindset, self-efficacy), work engagement, active learning, and adaptive performance?*

This study adopts a pragmatic approach to deepen the understanding of the underlying mechanisms involved (Feilzer, 2010). Melão and Reis (2020) highlight that a qualitatively-driven explanatory sequential mixed-method design enables researchers to use rich qualitative insights to better interpret quantitative results. While qualitative research offers detailed and nuanced explanations of mechanisms, it can be limited by a smaller participant pool, which may introduce bias. To address this limitation, the mixed-method approach integrates quantitative research, which provides a broader, more generalizable understanding of the relationships among variables (Nunfam, 2021).

Specifically, the research addresses two main questions: the first "What is the relationship between an individual's internal processes, work engagement, active learning, and adaptive performance" is examined through quantitative methods. The second question "What is the mechanism linking an individual's internal processes, work engagement, active learning, and adaptive performance" is explored via qualitative methods. This sequence of quantitative data collection followed by qualitative exploration is characteristic of the explanatory mixed-method design, which helps uncover deeper insights and clarifies the mechanisms and relationships involved in the study.

For data collection, quota sampling was employed to ensure representation of key population characteristics (Acharya et al., 2013). This technique also helps reduce bias during participant selection. In this study, the quota was defined by having a minimum of two years' work experience in the industry. To capture a range of work experiences within the companies involved, respondents were categorized into three groups: those with less than one year, one to three years, and more than three years of experience. The survey sample consisted of 185 employees selected through this quota sampling method.

For the qualitative phase, semi-structured interviews were conducted with 17 top management professionals from three digital startups in Indonesia. Purposive sampling was used to select these participants, focusing on managers with more than five years of industry experience. Due to the constraints of the pandemic, both surveys and interviews were administered online, using digital forms for surveys and virtual platforms for interviews.

Measurement instruments for the survey were adapted from established scales. Active learning was measured with four items taken from Taris et al. (2003) and Bakker et al. (2003). Self-efficacy was assessed using four items based on Bandura's (2006) scale. The growth mindset was quantified using three items adapted from Dweck (2006). Work engagement was evaluated through five items from Schaufeli et al. (2006), capturing dimensions of vigor, dedication, and absorption. Finally, individual adaptive performance was measured using five items from Charbonnier-Voirin and Roussel (2012), including creativity, emergency reactivity, interpersonal adaptability, training effort, and stress management.

For data analysis, the study employed Smart-PLS software, as developed by Ringle et al. (2015). The analysis included assessing the reliability and validity of the measurement model, path coefficients, and model fit indices. Convergent validity was tested by examining indicator loadings and Average Variance Extracted (AVE), with a threshold of at least 0.5 following Fornell and Larcker (1981). Reliability was assessed using Cronbach's Alpha, adopting a minimum value of 0.5 as suggested by Hair et al. (2010). The structural model was evaluated using bootstrapping with 5,000 resamples at a 95% confidence interval to ensure robustness of the estimates.

To ensure the validity of the qualitative findings, the study employed data and theoretical triangulation (Oevermann, 1979; Fielding & Fielding, 1986). The qualitative data were collected to complement and enrich the quantitative results by providing deeper explanations of the mechanisms linking the variables examined. The integration of these data is visually summarized in Figure 1, illustrating the explanatory mixed-method design used to enhance the comprehensiveness of the study's findings.
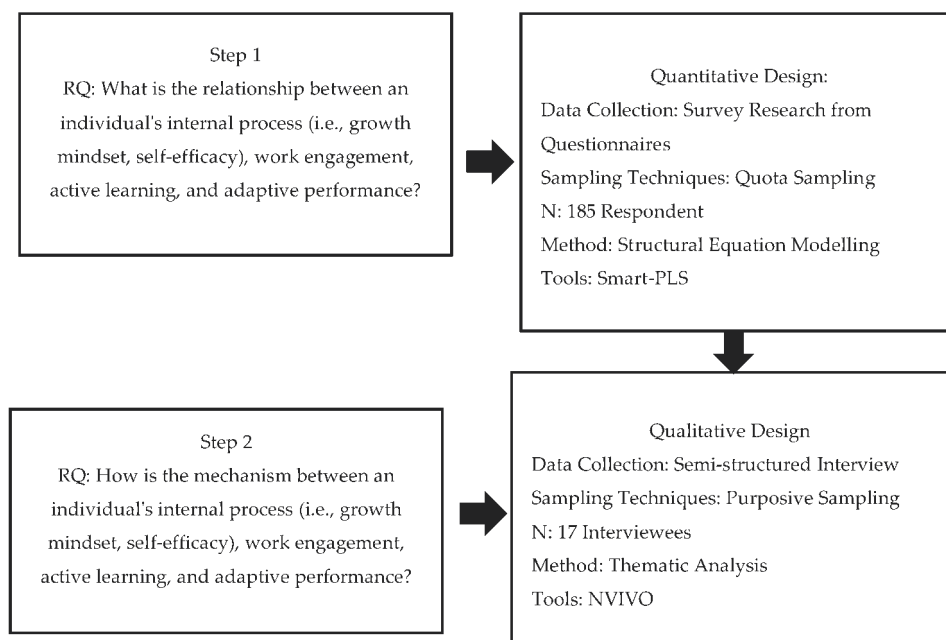

Figure 1. Research design.

Following the approach of Babeľová and Stareček (2021), this study applies triangulation in two phases. The first phase quantitatively examines the relationships among self-efficacy, growth mindset, active learning, work engagement, and adaptive performance. The second phase uses qualitative methods to explore and clarify the underlying mechanisms connecting these variables. This paper presents and integrates findings from both phases to provide a comprehensive understanding of the studied phenomena.

4. | RESULTS

4.1. Survey Result

The survey results demonstrated that the indicators for reliability, internal consistency, and convergent validity were all satisfactory. Each of the five variables active learning, work engagement, adaptive performance, self-efficacy, and growth mindset showed indicator loadings exceeding 0.6 and Cronbach's Alpha values above 0.6, confirming their validity and reliability (see Figure 2 and Table 1).
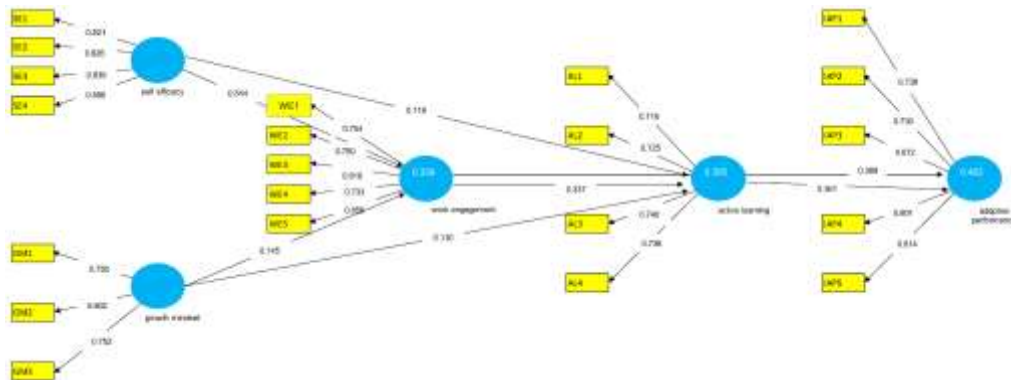

Figure 2. Smart-PLS result.

Table 1. Indicator reliability and convergent validity.

Construct	Items	Loadings	Cronbach's Alpha
Active Learning	AL1	0.716	
	AL2	0.725	
	AL3	0.740	
	AL4	0.738	0.708
Work Engagement	WE1	0.754	
	WE2	0.750	
	WE3	0.818	
	WE4	0.733	
	WE5	0.858	0.841
Individual Adaptive Performance	IAP1	0.738	
	IAP2	0.730	
	IAP3	0.672	
	IAP4	0.601	
	IAP5	0.804	0.758
Self-Efficacy	SE1	0.823	
	SE2	0.823	

Construct	Items	Loadings	Cronbach's Alpha
	SE3	0.828	
	SE4	0.887	0.862
Growth Mindset	GM1	0.750	
	GM2	0.802	
	GM3	0.752	0.657

Path analysis was conducted to achieve a suitable goodness-of-fit model, as presented in Figure 1 and Table 2. The Standardized Root Mean Square value was 0.076, which is below the 0.10 threshold, indicating that the model meets the fit criteria (Cangur & Ercan, 2015).

Table 2. Testing the significance of path coefficient relationships.

Relationships	Beta	S.D.	T-Stat	p-Value	Decision
Self-Efficacy → Work Engagement	0.537	0.066	8.083	0.000	Supported
Growth Mindset → Work Engagement	0.183	0.064	2.838	0.005	Supported
Work Engagement → Active Learning	0.418	0.074	5.549	0.000	Supported
Self-Efficacy → Active Learning	0.058	0.074	0.791	0.429	Not Supported
Growth Mindset → Active Learning	0.097	0.069	1.416	0.157	Not Supported
Work Engagement → Adaptive Performance	0.367	0.064	5.759	0.000	Supported
Active Learning → Adaptive Performance	0.454	0.060	7.624	0.000	Supported

The regression analysis results presented in Table 2 reveal five direct relationships, with significance determined by T-statistics exceeding 1.96 and p-values below 0.05. These significant relationships include the impacts of self-efficacy and growth mindset on work engagement, the influence of work engagement on both active learning and adaptive performance, and the effect of active learning on adaptive performance. Additionally, the findings demonstrate that work engagement fully mediates the relationship between self-efficacy and growth mindset with active learning, as indicated by the non-significant direct effects of self-efficacy and growth mindset on active learning. Furthermore, active learning partially mediates the relationship between work engagement and adaptive performance, supported by the significant direct effect of work engagement on adaptive performance. These results highlight the pivotal role of work engagement as a mediator within these relationships, emphasizing its importance in linking personal resources to learning and performance outcomes.

4.2. Interview Result

The content analysis of interviews revealed detailed insights into the mechanisms connecting self-efficacy, growth mindset, work engagement, active learning, and adaptive performance. The following sections provide an explanation of these findings, focusing on the interactions among these variables (see Appendix A).

4.2.1. The Mechanism between an Individual's Internal Processes, Work Engagement, and Active Learning

The findings indicate that an individual's internal processes, particularly a growth mindset combined with strong self-efficacy, significantly enhance work engagement. This is reflected in heightened enthusiasm (vigor), dedication to new tasks, and sustained focus during extended working hours (absorption). These positive internal traits also foster openness to acquiring new knowledge and adapting to changes in the external environment, promoting self-initiative and experimentation, which align with active learning principles. As a result, employees are able to quickly adjust to dynamic conditions, especially within digitally-driven companies.

To support digital innovation, employees exhibit a willingness to independently learn and explore new ideas. This autonomous learning is complemented by an ongoing process of knowledge sharing through active learning, which facilitates the combination of market insights, novel knowledge, and emerging technologies. Such integration aids in developing digital innovations that effectively address market challenges and demands. Thus, internal resources like self-efficacy and a growth mindset are essential for sustaining high work engagement and adaptive learning behaviors that drive continuous innovation in digital business environments.

4.2.2. The Mechanism between Work Engagement, Active Learning, and Adaptive Performance

The analysis reveals that work engagement is crucial in enabling employees to adapt effectively to dynamic market conditions and changing client demands through its three behavioral dimensions. Firstly, vigor motivates individuals to proactively engage in trial-and-error learning, which facilitates acquiring new knowledge and meeting increased job demands. Secondly, dedication encourages a sense of responsibility and fosters active learning, thereby enhancing adaptability in the workplace. Lastly, absorption is associated with high self-regulated learning, where individuals view challenges in their tasks as opportunities for further development.

This combination of behaviors supports employees in adjusting their product features to keep pace with evolving digital technologies. Furthermore, work engagement promotes better interpersonal adaptability within diverse team settings. These team dynamics contribute to the accumulation of new knowledge, which individuals utilize to generate innovative ideas. This knowledge accumulation process is driven by the active learning mechanism.

Highly engaged individuals tend to adopt independent, explorative learning approaches, enabling them to respond effectively to client and market needs by introducing digital innovations in their products. Consequently, this engagement fosters enhanced active learning and contributes to greater creativity in problem-solving and improved interpersonal skills application. Through these mechanisms, work engagement not only supports individual adaptability but also drives innovation and team collaboration in digitally-oriented workplaces.

4.3. Triangulation of the Findings

This section presents the triangulation of findings by comparing quantitative and qualitative results. The quantitative data revealed an insignificant direct relationship between self-efficacy and growth mindset with active learning. However, the qualitative data from interview transcripts (see Appendix A Table A1) illustrated that employees who are engaged at work willingly pursue and commit to acquiring new knowledge related to product features or development processes, whereas disengaged employees may be aware of the information but do not actively convert it into new knowledge. This suggests that the influence of internal personal resources, such as self-efficacy and growth mindset, on active learning is indirect. Rather, these internal processes first foster a positive psychological state

work engagement which then motivates individuals to actively engage in learning behaviors. This supports the Job Demand-Resources Theory, which posits that personal resources enhance work engagement and adaptive performance while buffering against job stress and demands.

The findings also highlight the existence of two distinct employee profiles regarding active learning. The first group possesses high self-efficacy and a growth mindset but exhibits low work engagement, making them aware of necessary learning but unlikely to act upon it. Conversely, the second group combines high personal resources with high work engagement, resulting in proactive participation in active learning. This underscores the critical role organizations play in sustaining employee engagement and creating policies that foster effective active learning environments.

Further supporting these conclusions, the relationship between work engagement, active learning, and adaptive performance revealed that work engagement significantly influences both active learning and adaptive performance, as indicated by quantitative analysis. Interview data confirmed that employees with strong work engagement actively engage in learning processes that enhance their skills, thereby improving their ability to adapt to rapidly changing market conditions. This adaptability, in turn, benefits product innovation directly. Overall, these findings emphasize that organizations should prioritize maintaining high levels of work engagement and facilitating active learning opportunities to optimize adaptive performance and innovation capacity.

5. | DISCUSSION

This section aims to elaborate and discuss the key findings of this study, which reveal two distinct mechanisms connecting growth mindset, self-efficacy, work engagement, active learning, and adaptive performance. The first mechanism involves the interplay among self-efficacy, growth mindset, work engagement, and active learning. Drawing on the Job Demand-Resources (JD-R) and Job Demand-Control theories, personal resources such as a growth mindset and self-efficacy significantly influence work engagement levels and shape individuals' active learning behaviors (Caesens & Stinglhamber, 2014; Keating & Heslin, 2015). The qualitative findings align with this framework, showing that a growth mindset and strong self-efficacy directly boost employees' initiative and effort, enhancing their work engagement in the face of dynamic and challenging job demands (Del Libano et al., 2012). Employees who exhibit enthusiasm, dedication, and concentrated focus on resolving novel job-related problems are more inclined to engage in active learning behaviors.

Quantitative results further indicate that work engagement fully mediates the relationship between a growth mindset, self-efficacy, and active learning. This suggests that the optimization of active learning is not solely dependent on individual self-regulation traits but is also critically influenced by how engaged employees feel in their workplace roles. Thus, employees who are highly engaged are more motivated to explore and acquire new knowledge, especially in adapting to advances in digital technology, which in turn facilitates more effective innovation processes within organizations (Han & Stieha, 2020). Active learning here becomes a crucial mechanism that enables employees to apply and expand their knowledge, resulting in enhanced organizational innovation outcomes.

Our qualitative data highlight that active learning involves knowledge sharing among employees, fostering the emergence of new and innovative ideas, particularly in product development. This process resonates with the concept of knowledge combination as described in prior studies (Zheng et al., 2011). Active learning encourages both knowledge exploitation and exploration, which are essential for developing organizational capabilities that underpin digital innovation (Dezi et al., 2019). In essence, the individual active learning processes contribute to the generation of diverse knowledge within the organization, which is subsequently integrated to produce novel digital innovations (Tortora et al., 2021).

The second mechanism observed is the relationship among work engagement, active learning, and adaptive performance. Our findings underscore the significant role of work engagement in promoting

employees' active learning behaviors and enhancing their adaptive performance in dynamic work environments (Frese, 2008; Fredrickson & Losada, 2005). Quantitative analysis reveals that active learning partially mediates the impact of work engagement on adaptive performance, indicating that both factors contribute to employees' ability to adapt effectively at work (Bakker et al., 2012; van den Heuvel et al., 2020). Additionally, our findings emphasize the importance of interpersonal capabilities in the digital innovation process (Boeker et al., 2021), while reinforcing that learning interventions aligned with digital technological advancements are most effective when they incorporate active learning strategies.

The active learning process facilitates the continuous accumulation of dynamic new knowledge, enabling employees to engage in problem-solving activities that drive digital innovation (De Spiegelaere et al., 2015; Di Vaio et al., 2021). Our research supports the JD-R model in explaining the linkage between personal resources and adaptive performance through work engagement, offering an important counterpoint to the Conservation of Resources (COR) theory, which traditionally addresses work engagement within organizational change contexts. The JD-R framework highlights that the indirect influence of an individual's internal processes on adaptive performance is mediated and balanced by work engagement and active learning.

Specifically, this study illuminates the pivotal role of work engagement as an intervention mechanism that connects individuals' internal processes such as a growth mindset with positive workplace behaviors like active learning, ultimately resulting in enhanced job outcomes including adaptive performance. These findings stress the importance of fostering a positive psychological state in employees, which encourages constructive behaviors and leads to optimal adaptability in the workplace.

To cultivate employees with higher adaptive performance, organizations must implement supportive policies and provide an environment that enhances work engagement and facilitates active learning processes. Moreover, our results highlight the critical function of job resources as buffering agents that mitigate the effects of high job demands. By supplying adequate job resources, organizations empower employees to engage in more positive behaviors, maintain high levels of engagement, and effectively respond to workplace challenges.

In conclusion, this study confirms that personal resources like a growth mindset and self-efficacy alone are insufficient to drive active learning and adaptive performance unless they are coupled with high levels of work engagement. Active learning acts as a vital behavioral mechanism that bridges internal personal characteristics and effective adaptation to changing work demands, especially in digital and innovation-driven environments. Thus, fostering an engaged workforce and promoting active learning are key strategic priorities for organizations aiming to enhance adaptability and sustain innovation in a rapidly evolving marketplace.

6. | CONCLUSION

This study identified two fundamental mechanisms behavioral and learning processes that contribute to optimizing individual adaptive performance, especially within digital technology-driven organizations. The first mechanism operates through internal psychological attributes, such as a growth mindset and self-efficacy, which significantly influence both work engagement and employees' active learning behaviors. Our findings suggest that a key intermediary linking internal psychological processes to active learning is a positive mental state, particularly work engagement. In this framework, personal resources enhance work involvement, which subsequently promotes proactive learning behaviors. The second mechanism demonstrates how work engagement and active learning directly foster adaptive performance. These results underscore that the optimization of adaptive capacity relies heavily on active learning, which serves as a pathway for skill development and innovation. The continual acquisition of new knowledge through active learning plays a crucial role in encouraging digital innovation. Furthermore, organizations should not only encourage active learning but also

establish systems, practices, and environments that support this process as a core strategy for increasing adaptive performance and driving innovation.

In terms of practical implications, the findings indicate that fostering active learning is a vital strategy for organizations aiming to maintain employees' adaptive performance in fast-evolving digital environments. Our qualitative data also uncovered that active learning supports knowledge combination, a key aspect in enhancing innovation capabilities. This research reinforces the relevance of the Job Demand-Resources (JD-R) Model in understanding how personal resources interact with psychological states and learning behaviors during organizational change. However, this study has several limitations. The sample size was relatively small, limiting the generalizability of the results. Future studies should consider a larger and more diverse respondent base to validate the mechanisms identified here. Moreover, this study focused solely on internal personal factors such as self-efficacy and growth mindset. Future research should explore external influences including organizational structure, climate, culture, and job resources that may further strengthen employees' work engagement and encourage active learning behaviors (Van Woerkom et al., 2016). Investigating these contextual variables may provide a more comprehensive understanding of how both internal and external drivers shape adaptive performance and digital innovation outcomes.

Author Contributions

Conceptualization, W.N. and D.S.; methodology, A.G.; software, W.N.; validation, W.N., A.G., D.S.; formal analysis, A.G.; investigation, W.N.; resources, W.N.; data curation, D.S.; writing—original draft preparation, W.N.; writing—review and editing, A.G. and D.S.; visualization, W.N.; supervision, A.G. and D.S..; project administration, W.N.; funding acquisition, A.G. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement

The data presented in this study are available upon request from the corresponding author.

Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Table A1. Coding Structure Result.

Significant Example Quotes	Coding	Themes
"Individuals growth mindset are very needed in our company to face the rapid advancement of digital technology. The growth mindset leads people who are enthusiastic and willing to work more with dynamic job demands and constantly changing knowledge"	Growth Mindset leads individuals to have high self-initiative and enthusiasm regarding their job demand or market (dedication)	The Mechanism between Growth-Mindset and Work Engagement
"Individuals with a growth mindset tend to have more open to knowledge and change based on the dynamic market/tech	Growth Mindset leads individuals to be resilient to change and stay engaged with	

Significant Example Quotes	Coding	Themes
advancement. This encourages them to work more and seek solutions for new job demands or new opportunities in the market"	their job even though the job demand is high (vigor)	
"This growth mindset is very necessary because our product requires individuals to continue to learn new knowledge or skills, so from that, they will immediately explore in-depth even outside their working hours to be able to complete the new job demand"	Growth Mindset leads individuals to explore new knowledge or skills even though it takes more energy and time out from their working time (absorption)	
"When they have high confidence in their own capabilities, they will want to work more even with new jobs or challenges at work"	Self-Efficacy enhances individuals' work effort (dedication)	
"This sense of belief in one's own capabilities will give confidence that can boost new innovative ideas. This makes employees enjoy it more and more deeply to explore their work"	Self-Efficacy allows individuals to easily initiate new ideas through their confidence (absorption)	The Mechanism between Self-Efficacy and Work Engagement
"Self-Efficacy is very influential in doing exploration in their production process. This individual belief gives more strength to their mentality to face changes or new challenges in the workplace"	Self-Efficacy provides more mental energy to deal with split work (vigor)	
"When he (employee) is engaged with his work, he will willingly learn and commit new knowledge related to product features or product development process. But if they are not, they will just know the information but no new knowledge"	Work engagement's vigor behavior drives individuals to learn more and absorb new knowledge effectively through active learning	
"Employees who are engaged with their work tend to be responsible and explore and reflect deeply on new knowledge so that they can find new innovative ideas for products"	Absorption allows individuals to explore and learn independently, reflect on their new knowledge and build new ideas	The Mechanism between Work Engagement and Active Learning
"Employees who are engaged with their work will be enthusiastic and willing to work longer at the desk. It directs them to share knowledge with colleagues from other divisions and combine different perspectives and knowledge into one new product innovation idea"	Dedication toward their work allows individuals to have effective knowledge sharing in building new innovative ideas in products resulting from the knowledge combination process	
"Individuals who want to take the initiative to learn the latest new things will have new knowledge that comes from new digital technology advancements, various	Self-Initiative in learning and mastery of new knowledge leads individuals to solve problems more creatively	The Mechanism between Active Learning and

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Significant Example Quotes	Coding	Themes
perspectives from their colleagues or customers. This makes him more creative in building ideas in solving new challenges or problems in the workplace"		Adaptive Performance
"In our place, people who are actively learning tend to have no problem with changes from clients or superiors, and when there are changes, they will have more creative problem solving than their learning process"	Individuals who have active learning tend to be open to change and capable of solving emergencies effectively	
"Our employees who are actively learning are used to managing their time and energy well, so they can also easily manage the existing work stress"	Individuals who like to develop themselves and actively learn tend to be able to manage work stress well	
"Basically, the production process in our company consists of combining several ideas or knowledge from different divisions, so employees who are actively learning will usually be active in exploring knowledge from their colleagues. So, usually, he does have a good enough training effort and interpersonal skills"	Individuals who have active learning will actively seek new knowledge from their colleagues so that they will have good interpersonal skills and high training effort	
"My employees who are engaged with their work are usually easy to adapt to new knowledge or changing client requests. Even so, they can still be enthusiastic, like and explore deeply so that they can perform well"	Individuals who are engaged had a better adaptive mechanism	The Mechanism between Work Engagement and Adaptive Performance

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