

Article

Staying Relevant for Industry 4.0: Examining the Effects of Adaptability, Digital Fluency, Global Perspective, Learning Agility, and Self-Management on Job Performance in Oman's Public Sector

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Abstract: The rapid adoption of Industry 4.0 technologies is transforming workforce skill requirements, yet empirical evidence on Staying Relevant competencies and their direct effects on job performance remains limited, particularly in public-sector and developing-economy contexts. This study investigates how five Industry 4.0 Staying Relevant competencies, adaptability, digital fluency, global perspective, learning agility, and self-management influence job performance among employees in Oman's public sector. Guided by Socio-Technical Systems Theory and Human Capital Development Theory, a quantitative cross-sectional design was employed using survey data collected from employees across Omani ministries and government agencies (n = 130). The measurement and structural models were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with 10,000 bootstrapping resamples. The results reveal a differentiated pattern of findings: Digital Fluency emerged as the strongest and most statistically significant positive predictor of job performance, followed by Self-Management and Learning Agility, both of which also demonstrated significant positive effects. In contrast, Adaptability and Global Perspective did not produce significant direct effects within the multivariate model. These findings suggest that in a digitally transforming public sector, job performance is most directly enhanced by employees' digital capability, self-regulatory ability, and capacity for self-directed learning, while broader readiness-oriented competencies may require stronger socio-technical alignment and enabling organizational conditions to translate into measurable performance outcomes. This study contributes to the emerging Industry 4.0 workforce literature by providing context-specific empirical evidence from a non-Western public-sector setting and demonstrating that competency–performance relationships are not uniform across all dimensions of workforce readiness. The findings offer practical implications for public sector training design, capability development strategies, and workforce policies aligned with Oman's Vision 2040 modernization agenda.

Keywords: Industry 4.0; public sector; job performance; adaptability; digital fluency; global perspective; learning agility; self-management; PLS-SEM; socio-technical systems; human capital development, Oman Vision 2040

1. Introduction

The global workforce is undergoing a major transformation driven by the rapid spread of Industry 4.0 (IR 4.0) technologies, including automation, artificial intelligence, cyber–physical systems, and data-driven digital platforms. These technologies do more than improve operational efficiency; they are transforming how work is organized, coordinated, and assessed, thereby changing the skills required

for ongoing employability and performance in modern organizations (Cascio, W. F., & Montealegre, R., 2016). As routine tasks become increasingly automated and decision-making cycles shorten, employees must adapt to uncertainty, integrate digital tools into their daily routines, and continually update their skills to remain effective (Al-Haimi et al., 2024; Ozkan-Ozen & Kazancoglu, 2022). Therefore, competitiveness in the IR 4.0 era depends not only on access to technology but also on employees' ability to develop adaptive, digital, and self-regulatory skills that enable them to translate technological advancements into tangible performance outcomes (Khalid & Ahmad, 2021).

This rapid shift in skills is reflected in global labor market forecasts. The World Economic Forum has highlighted that a significant portion of core skills will be challenged within the next few years, making reskilling and upskilling essential for maintaining employability and organizational productivity (Schwab & Zahidi, 2023). However, access to training and the pace of developing new capabilities remain uneven, leading to a growing skills gap that hampers performance at both individual and organizational levels. In response, scholars increasingly contend that “staying relevant” in the IR 4.0 environment requires more than technical skills; it demands dynamic competencies such as adaptability, learning-oriented behaviors, and the ability to self-manage performance in rapidly changing settings (Pontes et al., 2021; Auer & Centea, 2021). These skills are especially vital in environments where work involves complex stakeholder demands, compliance requirements, and high expectations for service quality, conditions that often characterize public-sector organizations.

For the public sector, the shift to IR 4.0 presents a dual challenge. On one hand, digital transformation creates opportunities to improve service delivery, transparency, responsiveness, and data-driven decision-making. On the other hand, the public sector often encounters structural barriers such as rigid procedures, outdated systems, and limited flexibility, which can hinder the effective translation of new capabilities into improved performance when workforce skills are not strategically developed and aligned with institutional reforms (David et al., 2023). In Oman, this challenge is especially significant. Under Oman Vision 2040, public institutions aim to modernize, boost governmental efficiency, and develop national human capital capable of driving productivity and innovation in a digitally advanced economy. However, concerns persist about the availability and quality of high-level skills in the labor market, making capability development within government agencies a strategic priority (Haziati, 2023). In this context, identifying the IR 4.0 skills that most strongly influence job performance is crucial for developing targeted workforce development policies and guiding public-sector talent management strategies.

Although prior research has explored digital skills and employability broadly, there remains fragmented empirical evidence on how specific “staying relevant” competencies collectively influence job performance, particularly in developing-country public sectors, where institutional conditions and performance systems differ from those in private or high-income sectors (Jimenez, 2021). Additionally, much of the existing literature treats Industry 4.0 capability as a single, unified construct. This approach can hide important differences among specific skills, as individual abilities may affect job performance in unequal or even opposite ways depending on organizational structures, work design, and institutional constraints. This limitation matters for policy and practice because public sector training investments need clarity on which competencies have the most direct impact on performance, and which

may require enabling conditions (e.g., leadership support, autonomy, or redesigned processes) before their value translates into performance gains (David et al., 2023). Therefore, a more detailed analysis is necessary to understand how specific Industry 4.0 “staying relevant” skills relate to job performance within Oman’s public sector.

Against this backdrop, the present study examines the effects of five core staying-relevant competencies (adaptability, digital fluency, global perspective, learning agility, and self-management) on job performance among public sector employees in Oman (Freebody, 2023). By focusing on these competencies as distinct predictors, this research advances a more nuanced understanding of workforce readiness for IR 4.0 and provides evidence that can support human capital policy, training design, and competency-based talent management aligned with Oman Vision 2040. In doing so, the study responds to the call for context-sensitive research on the future of work in public administration and contributes to the growing literature examining how IR 4.0 capability profiles influence employee outcomes in non-Western, developing economies (Jimenez, 2021; Aichouni, 2024). To guide the investigation, the study addresses the following research question:

Research Question: What are the effects of Industry 4.0 staying-relevant competencies (adaptability, digital fluency, global perspective, learning agility, and self-management) on job performance among employees in Oman’s public sector?

2. Literature Review and Hypotheses Development

This review synthesizes the existing literature on the critical competencies identified as essential for success in the Industry 4.0 era, specifically examining their relevance and impact in public-sector contexts. The following sections examine adaptability, digital fluency, global perspective, learning agility, and self-management, analyzing their theoretical underpinnings and empirical evidence for their role in enhancing job performance (see **Figure 2.1**).

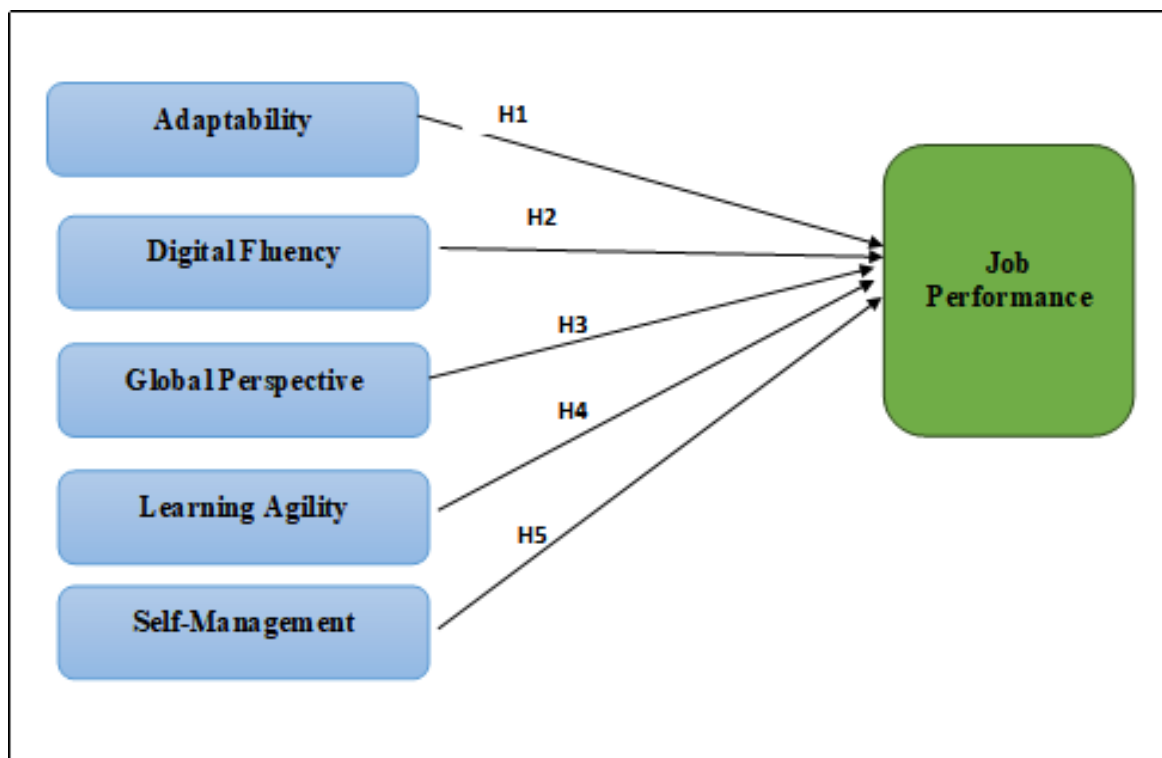


Figure 2.1: Study Framework

2.1 Adaptability and Job Performance in the Industry 4.0 Context

Industry 4.0 environments are marked by continuous technological upgrades, task reorganization, and increasing expectations for responsiveness and service quality. In this setting, adaptability has become a key skill for maintaining effectiveness at work. Adaptability refers to an individual's ability to change their thinking and behavior in response to shifting situational demands, uncertainty, and new performance requirements. It is increasingly seen as essential for "staying relevant" in Industry 4.0 because it allows employees to respond effectively to digital disruptions, changing work processes, and evolving stakeholder needs (Ybarra, 2023; Aranda-Jiménez et al., 2024). In public administration, the significance of adaptability is even greater because employees often must respond to policy changes, organization-wide digital initiatives, and shifting citizen expectations, all while operating within regulated and structured environments (David et al., 2023).

The importance of adaptability for performance is also emphasized by the career adaptability perspective, which views adaptability as a developmental resource that includes concern, control, curiosity, and confidence. These qualities help employees handle transitions, navigate uncertainty, and stay employable through different career stages, a concern that is growing in public-sector workforces as they modernize and undergo digital transformation (Kumi et al., 2024). As advanced technologies become integrated into everyday public services, employees are expected not only to learn new tools but also to adjust workflows, work across digital systems, and turn new knowledge into productivity improvements and service innovation. These conditions make adaptability and agility in learning and applying knowledge especially vital for performance outcomes (Hatunoglu, 2024).

Empirical evidence generally links adaptability to various aspects of job performance. For example, Lee (2021) shows that cross-cultural adjustment, an important form of adaptability, significantly affects work adaptation and, in turn, job performance among expatriates, supporting the broader idea that adaptability enhances effectiveness in dynamic work environments. Likewise, adaptability has been associated with motivational and psychological resources that are relevant to performance. Shahzad (2021) demonstrates that psychological capital (self-efficacy, optimism, hope, and resilience) mediates the relationship between job autonomy and job performance, suggesting that coping, persistence, and adjustment to job demands can enhance engagement and performance, particularly when task conditions fluctuate. In fast-changing Industry 4.0 contexts, these personal resources can serve as mechanisms through which adaptable employees sustain performance despite uncertainty and increasing complexity.

A closely related focus highlights psychological flexibility as a key factor in employees' sustained performance under stress and change. Yıldırım et al. (2024) report that psychological flexibility mediates the relationship between occupational stress and job satisfaction, supporting the idea that adaptive psychological functioning helps employees stay effective under pressure and in the face of new challenges. In public sector environments, where transformation efforts often introduce new systems and expectations without necessarily reducing administrative burdens, psychological flexibility and behavioral adaptability become essential for maintaining consistent performance. Additionally, leadership and human capital development appear to influence how adaptability impacts performance outcomes. Dewi and Soeling (2024) find that transformational leadership, supported by psychological capital, is associated with adaptive performance among civil servants, indicating that supportive leadership

environments can foster adaptability and increase the likelihood that adaptive behaviors lead to better performance.

Nevertheless, the relationship between adaptability and performance is not solely individual; it is also shaped by contextual factors, including work design, stressors, and organizational support mechanisms. Lin (2025) demonstrates that multitasking flexibility influences how employees handle stress and impacts job performance, suggesting that when roles become more flexible, as is common during digital transformation, organizations should provide sufficient support, clarity, and training to help enhance performance. Similarly, evidence from transitions to remote work shows that employees' adjustment processes strongly affect performance outcomes, indicating that changing work arrangements can either enable or limit the benefits of adaptability, depending on how well organizations are prepared and supported (Türkistanlı & Kök, 2024). From an organizational development perspective, interventions that enhance emotional intelligence and artificial intelligence capabilities have been shown to improve adaptive performance and job outcomes, whereas sustainable HRM practices focused on continuous learning can embed adaptability as a standard workforce trait (Sharma & Saxena, 2024; Chin et al., 2023).

Synthesizing this literature, adaptability is expected to support job performance in Industry 4.0 contexts by enabling employees to adjust to technological and procedural change, manage uncertainty, and sustain effective functioning in dynamic environments, including public administration. Therefore, the study proposes the following hypothesis:

H1: Adaptability has a positive and significant effect on job performance among employees in Oman's public sector.

2.2 Digital Fluency and Job Performance in the Industry 4.0 Context

As Industry 4.0 accelerates the integration of cyber–physical systems, big data analytics, and Internet-of-Things infrastructures into organizational operations, digital fluency has emerged as a core capability for sustaining organizational effectiveness. Digital fluency extends beyond basic digital literacy to reflect a deeper level of confidence and competence in applying digital technologies to accomplish tasks, interpret and evaluate digital information, collaborate in technology-mediated environments, and solve complex problems using digital tools (Przytuła et al., 2022). In the public sector, this competency is increasingly indispensable as digital transformation reshapes service delivery, administrative procedures, and citizen-facing interactions, requiring employees to engage with digital systems not only as users but also as informed decision agents who can adapt processes and make judgments in data-rich environments (David et al., 2023; Hughes, 2012).

In public administration, digital fluency is particularly consequential because governments are expected to deliver efficient, accessible, and responsive services through digital channels, while simultaneously strengthening transparency, data governance, and the quality of public decision-making. As digital technologies become embedded into routine operations, digitally fluent employees are better positioned to sustain operational efficiency and enhance service responsiveness through accurate data handling, effective system utilization, and improved communication with citizens and stakeholders (Correia, 2025). Importantly, digital transformation in the public sector is not limited to adopting new tools; it often requires deeper organizational disruption in structures, cultures, and leadership practices. This reality elevates the strategic value of developing digital competencies

aligned with public sector objectives, because digitally fluent employees can more effectively translate digital initiatives into improved performance outcomes rather than treating technology as an administrative burden (Ndou & Miccoli, 2025)

The broader literature also clarifies that digital fluency functions as a multidimensional skill, enabling employees to incorporate technology into their daily work routines. It encompasses the ability to select and use appropriate digital tools, anticipate their operational effects, and integrate them into workflows to enhance productivity and quality. Empirical evidence indicates that enhancing digital skills facilitates the intelligent transformation of industries by empowering workers to use digital tools more effectively to improve operational efficiency and decision-making (Lin et al., 2023). Likewise, evidence on digital technology adoption shows that stronger digital capabilities can reinforce organizational culture and improve employee performance by increasing efficiency, coordination, and the quality of task execution.

Consistent with these arguments, prior studies commonly report positive links between digital capabilities and performance outcomes. For example, Setyaningrum et al. (2023) show that digital human resource management positively contributes to performance outcomes, illustrating how effective integration of digital technologies can strengthen operational performance. At a higher organizational level, Ouyang (2025) further demonstrates that the technical background of top management shapes digital innovation and organizational performance, implying that digital fluency operates as a performance-enabling capability across multiple levels of the organization. Extending this logic to the individual level in public administration, employees who are digitally fluent are expected to execute tasks more efficiently, make better use of digital systems, and contribute to improved service quality and timeliness, key dimensions of job performance in increasingly digitalized public sector contexts.

Drawing on the above theoretical and empirical evidence, digital fluency is expected to enhance job performance by enabling public-sector employees to use digital systems effectively, process and evaluate information accurately, and collaborate efficiently within digital work environments. Accordingly, the study proposes the following hypothesis:

H2: Digital fluency has a positive and significant effect on job performance among employees in Oman's public sector.

2.3 Global Perspectives and Job Performance in the Industry 4.0 Context

The Industry 4.0 era has intensified cross-border interdependence through digital infrastructures, transnational data flows, and globally shared technological standards. In this environment, a global perspective, defined as an individual's awareness of international interconnectedness and capacity to interpret diverse cultural, political, and regulatory contexts, has become increasingly valuable for public sector professionals. This competency enables civil servants to understand how global developments shape local governance, to engage with international policy frameworks, and to respond to complex challenges that often transcend national boundaries, such as cybersecurity risks, digital ethics, and the governance of emerging technologies. As public administrations worldwide digitalize their services and reform institutional processes, the ability to benchmark against global practices and interpret international trends becomes an important capability for effective and future-oriented public service delivery (Beloeva et al., 2025).

A global perspective is also central to modernization efforts in public sector

education and capacity building. Recent scholarship argues that strengthening public administration in the digital age requires learning from global best practices in public sector digitalization, drawing from leading experiences such as Estonia, Canada, and the Netherlands, so that governments can adopt innovative solutions proactively while avoiding structural and operational pitfalls experienced elsewhere (Beloeva et al., 2025). For public-sector employees, this implies not only familiarity with international developments but also the ability to translate them into locally relevant strategies and policy responses. In operational terms, the global perspective in this study reflects employees' confidence in identifying global issues or trends, conducting research on international developments, collaborating with overseas stakeholders, building relationships beyond national boundaries, and informing others on how to respond strategically to global changes. Such behaviors are increasingly essential in an era in which public-sector effectiveness is shaped by the ability to align national reforms with global standards, emerging regulatory requirements, and evolving digital governance norms.

Beyond operational relevance, a global perspective contributes to strategic foresight and more informed decision-making. It encourages a broader appreciation of multilateralism and international partnerships, which are particularly important for advancing scientific research, industrial development, and service innovations aligned with the Sustainable Development Goals (Mekky, 2024). Moreover, maintaining global relevance requires continuous learning to keep pace with international regulatory changes, emerging technologies, and shifting geopolitical dynamics that increasingly influence national policy priorities and public sector performance expectations (Kalashnyk et al., 2024). From a competency standpoint, employees with a stronger global perspective may be better positioned to synthesize diverse information sources, interpret external signals, and anticipate change, capabilities that are especially important under Industry 4.0 conditions characterized by uncertainty, rapid knowledge renewal, and escalating stakeholder demands.

Empirically, the performance relevance of global-oriented competence is reinforced by evidence that effective information synthesis, timely feedback, and continuous learning processes enhance professional performance in dynamic environments. For example, Maaß et al. (2025) highlight how training and real-time feedback mechanisms can enhance performance by enabling professionals to adjust rapidly and respond to evolving conditions. Extending this logic to public-sector roles in Industry 4.0, a global perspective can serve as an enabling competency that supports higher-quality decisions, more adaptive service strategies, and more effective collaboration with external partners. Accordingly, employees who maintain awareness of global developments and engage internationally are expected to perform better, particularly in public institutions pursuing digital transformation and modernization agendas.

Based on this theoretical rationale and emerging empirical insights, the following hypothesis is proposed:

H3: Global perspective has a positive and significant effect on job performance among employees in Oman's public sector.

2.4 Learning Agility and Job Performance in the Industry 4.0 Context

Industry 4.0 is reshaping public-sector work through continuous technological change, frequent process redesign, and rising expectations for data-driven service delivery. In such environments, learning agility has emerged as a critical competency that supports employee effectiveness amid novelty and uncertainty. Learning agility

refers to an individual's capacity to learn rapidly from experience, adapt to new situations, and apply acquired learning to perform effectively under unfamiliar or first-time conditions. This capability is especially relevant for public sector employees who must respond to evolving digital systems, policy priorities, and service delivery models, often within tightly regulated institutional settings. In the current study, learning agility is reflected in employees' confidence in planning their work-related learning, identifying development needs, documenting learning from work experiences, monitoring their learning progress, and making informed decisions about training and development activities. These behaviours constitute self-directed learning processes essential for maintaining competence and performance within the accelerated knowledge cycles typical of Industry 4.0 workplaces.

The relationship between learning agility and job performance has been widely discussed in the talent and performance literature. Learning agility is widely recognized as a strategic talent attribute, particularly in talent management and leadership development, as it enables employees to continuously build capabilities and respond effectively to change. Milani et al. (2021), for instance, highlight the growing importance of learning agility in identifying high-potential employees and supporting leadership development, reflecting its perceived value for sustaining performance under complex and changing conditions. Similarly, evidence suggests that learning agility is positively associated with performance, as agile learners are better able to acquire new competencies, adjust working methods, and implement improved practices when confronted with unfamiliar tasks.

A synthesis of evidence supports the view that learning agility equips employees to manage unexpected situations and perform effectively in dynamic contexts. Lee and Song (2020), in a systematic review, argue that learning agility enhances employees' ability to handle novel challenges, thereby strengthening overall work performance. This is consistent with recent findings that link learning-agile behaviours to proactive work redesign and job crafting. Cárdenas-Cárdenas-Muñoz et al. (2024) show that behaviors aligned with learning agility support effective job crafting, which in turn contributes to improved performance outcomes by enabling employees to shape their work practices to better fit evolving demands.

At the same time, some research indicates that the learning agility–performance relationship may be contingent on individual and contextual factors. Öztürk and Czukor (2023) report that although learning agility is significantly associated with job performance, its direct predictive power may diminish when personality traits such as emotional stability and extraversion are taken into account.

This suggests that learning agility may not operate in isolation; rather, its performance impact may depend on complementary personal resources and enabling organizational conditions, such as role autonomy, supportive leadership, and opportunities to apply new learning. This contingency argument is particularly relevant in public-sector environments, where strict procedures, limited discretion, and rigid performance systems may constrain the extent to which learning-driven experimentation yields immediate performance gains.

Despite these nuances, the theoretical logic of Industry 4.0 workforce capability strongly supports the view that learning agility is a performance-relevant competency. In digitally transforming public administrations, employees who can diagnose their learning needs, plan development activities, and continuously translate learning into improved work practices are expected to sustain higher levels of effectiveness, particularly as job requirements evolve rapidly. Accordingly, the study proposes the

following hypothesis:

H4: Learning agility has a positive and significant effect on job performance among employees in Oman's public sector.

2.5 Self-Management and Job Performance in the Industry 4.0 Context

Industry 4.0 is intensifying the complexity of work by accelerating information flows, increasing technology-mediated coordination, and expanding expectations for continuous upskilling and performance accountability. In this environment, self-management has become a particularly salient capability for employees, particularly in public-sector settings undergoing digital transformation. Self-management refers to an individual's capacity to regulate behavior, emotions, and cognition in pursuit of work goals, including the ability to plan, prioritize, persist, and sustain effort in the face of changing demands. For public-sector employees, self-management is increasingly essential because digital transformation often increases the need for self-directed learning and proactive adaptation to new systems, while simultaneously intensifying pressure to maintain service quality, compliance, and responsiveness. In contexts where formal training opportunities may be uneven or where job demands evolve faster than institutional routines, self-management becomes a core mechanism through which employees sustain their relevance and performance.

The literature emphasizes that self-management is critical in environments requiring continuous reskilling and personal initiative in development planning. Vermeeren and Heijden (2022) argue that as career paths and skill requirements become less predictable, individuals must increasingly identify and pursue learning opportunities independently to remain employable and effective. This is closely aligned with the industry 4.0 skills logic, in which responsibility for maintaining competence shifts partially from the organization to the individual, thereby requiring stronger self-regulation in learning, time management, and goal setting. In public administration, this is particularly important because employees often operate within structured systems that constrain flexibility; thus, maintaining high performance in a dynamic environment requires them to manage their workloads strategically, prioritize tasks, and remain resilient under pressure.

Self-management also supports the effective adoption and use of digital tools and work methods. As public organizations adopt automation, analytics, and digital platforms, employees are expected to incorporate these technologies into their daily routines and adjust how they coordinate tasks and deliver services. Johnson and Simon (2018) and Soliani et al. (2024) highlight that self-management improves the ability to proactively adapt to new tools and approaches and fosters a culture of continuous improvement, both of which are considered essential for maintaining performance amid technological change. Beyond managing immediate tasks, self-management helps employees develop personal growth plans and guide their careers in line with evolving organizational needs and professional goals. This becomes even more important in public-sector modernization efforts, where workforce quality and performance are critical to achieving strategic national priorities and overall institutional effectiveness.

Furthermore, current public-sector transformation increasingly recognizes the link between self-management and broader future-of-work skills. As digital capabilities and intrapreneurial motivation become increasingly important in government agencies, employees' ability to control their learning, remain motivated, and maintain productive routines is a crucial factor in achieving high performance

in technology-driven environments (David et al., 2023). Self-directed learning, often regarded as a vital component of self-management, has also been associated with more adaptable performance outcomes. Viterouli et al. (2025) suggest that self-directed learning enhances adaptive performance, including creativity and interpersonal flexibility, both of which are increasingly important as public servants tackle problem-solving, cross-team collaboration, and citizen-facing service improvements in changing settings.

Taken together, the literature positions self-management as a performance-relevant competency in Industry 4.0 settings because it enables employees to regulate effort, manage competing demands, maintain learning momentum, and translate capability development into consistent work outputs. Accordingly, the present study proposes the following hypothesis:

H5: Self-management has a positive and significant effect on job performance among employees in Oman's public sector.

3. Methodology

3.1. Research Design

This study used a quantitative, cross-sectional research design to examine the effects of Industry 4.0 staying-relevant competencies (adaptability, digital fluency, global perspective, learning agility, and self-management) on job performance among employees in Oman's public sector. A survey-based approach was employed because it allows for the systematic collection of standardized data from a large number of respondents and supports rigorous statistical testing of the proposed relationships.

3.2 Sampling and Data Collection

Data were collected from employees working in Oman's public sector, including personnel from ministries and government agencies. A purposive sampling strategy was used to ensure that respondents were directly relevant to the study context and had sufficient exposure to the work environment in which Industry 4.0-related skills are becoming increasingly important. The questionnaire was distributed electronically to reach a broad audience across government entities, via professional WhatsApp groups and official email invitations.

A total of 130 usable responses were retained for analysis. This sample size was sufficient for variance-based structural equation modeling. Consistent with general sample-size guidance, Roscoe (1975) suggests that samples between 30 and 500 are suitable for most behavioral research applications, whereas Hair et al. (2006) recommend a minimum of five observations per estimated parameter. Additionally, an a priori power analysis using G*Power indicated that, assuming a statistical power of 0.80 with five predictors, the minimum required sample size was 90. Therefore, the final sample of 130 exceeded these thresholds, supporting the robustness of subsequent model estimation and hypothesis testing.

3.3 Instrument Development

The survey instrument was developed by adapting established, previously validated measurement scales to ensure content validity and comparability with prior research. All study constructs were operationalized as reflective measures and gathered through structured questionnaire items (Appendix A). The five Industry 4.0 relevant competencies (adaptability, digital fluency, global perspective, learning agility, and self-management) were measured using items adapted from Freebody

(2023). These competency items were anchored on a five-point confidence-based Likert scale ranging from 1 (“Not at all confident”) to 5 (“Very confident”), aligning with competency assessment methods that evaluate perceived ability to perform specific work and learning behaviors. Job performance was assessed using a validated scale adapted from Pedro and Juan (2019). The job performance items were rated on a five-point Likert scale from 1 (“Not at all”) to 5 (“Very high”), reflecting respondents’ self-reported performance in relation to their work outcomes. Before full deployment, the instrument was reviewed for clarity, relevance to Oman’s public sector, and consistency between the wording of the measurements and the study constructs.

3.4 Data Analysis and Results

Data were first cleaned and prepared for statistical analysis. Descriptive statistics were conducted to profile the respondents. To assess the measurement model, reliability and validity were assessed using Cronbach’s alpha, Composite Reliability (CR), and Average Variance Extracted (AVE), and discriminant validity was assessed using the Fornell–Larcker criterion. For hypothesis testing, correlation and regression analyses were employed to examine direct effects.

4. Results

4.1 Demographic Profile of Respondents

The respondents’ profile shows that the sample ($n = 130$) was mainly mid-career and experienced. Most respondents were aged 36–45 years (53.8%), followed by those aged 46–55 years (32.3%). Smaller groups included those aged 25–35 years (10.0%) and 56+ (3.8%). The sample was predominantly male (90.8%), with females comprising 9.2%. Regarding work experience, 87.7% reported more than 10 years of experience in the public sector, indicating a highly experienced cohort. Participants were mainly local nationals (96.2%), with a small international fraction (3.8%). In terms of organizational roles, most were in supervisory (29.2%) and administrative (26.2%) positions, followed by technical roles (16.9%), with the remainder distributed across managerial and other categories. Representation included multiple government entities, with the largest share coming from the Ministry of Labour (30.8%), along with contributions from other ministries and agencies, such as the Ministry of Public Service and the Ministry of Education.

4.2 Measurement Model Assessment

The measurement model was assessed to confirm construct adequacy before examining the structural model. Following established PLS-SEM procedures, the evaluation covered indicator reliability (outer loadings), internal consistency reliability (composite reliability), convergent validity (AVE), and discriminant validity (HTMT / inter-construct associations) as reported in **Tables 4.1 and 4.2**.

4.3 Indicator Reliability and Internal Consistency

The factor loadings for most indicators exceeded the recommended threshold of 0.50, indicating adequate item reliability (Hair et al., 2021). The measurement model demonstrated excellent internal consistency reliability across all constructs, as shown by the composite reliability (CR) coefficients reported in **Table 4.1**. Specifically, Adaptability achieved a CR of 0.945, indicating a highly consistent set of indicators capturing respondents’ adaptive capabilities. Digital Fluency recorded a CR of 0.951, indicating strong coherence among items measuring digital competence and ease

of use of digital tools. Global Perspective also exhibited robust reliability ($CR = 0.941$), confirming that its indicators consistently represent the intended global-oriented mindset. Likewise, Learning Agility showed strong internal consistency ($CR = 0.940$), supporting the stability of items assessing respondents' capacity to learn, adjust, and perform in evolving contexts. Self-Management attained a CR of 0.939, indicating that the retained indicators reliably capture self-regulatory and self-organizing behaviors. Finally, Job Performance produced the highest reliability estimate ($CR = 0.962$), indicating that the remaining performance indicators, after removing low-loading items, collectively provide a highly consistent measure of the job performance construct. Overall, all CR values substantially exceeded the recommended threshold of 0.70, confirming that the measurement model meets rigorous reliability standards for PLS-SEM studies intended for high-quality journal publication.

4.4 Convergent Validity

Convergent validity was evaluated using the Average Variance Extracted (AVE), which measures the proportion of variance in the observed indicators accounted for by the latent construct. As shown in **Table 4.1**, all constructs achieved AVE values well above the recommended threshold of 0.50, confirming that each construct accounts for more than half of the variance in its measurement items and demonstrating adequate convergence. Specifically, the AVE for Adaptability was 0.774, indicating strong shared variance among its indicators. Digital Fluency had the highest AVE (0.795), reflecting particularly strong convergence and close alignment among its measurement items. Global Perspective also showed robust convergent validity, with an AVE of 0.761, while Learning Agility and Self-Management had similarly high AVEs (0.757 and 0.755, respectively), supporting the adequacy of item convergence within these constructs. Job Performance recorded an AVE of 0.660, which remains well above the acceptable threshold and indicates that, despite being measured with a broader set of retained indicators, the construct accounts for a significant portion of the indicator variance. Overall, these results provide clear evidence of strong convergent validity across the measurement model.

4.5 Discriminant Validity

Discriminant validity was evaluated using the heterotrait–monotrait (HTMT) ratio, as shown in **Table 4.2**, to confirm that each latent construct represented a conceptually separate domain. Overall, the HTMT estimates indicate adequate construct separation, with values ranging from 0.511 to 0.898. Some construct pairs showed moderate correlations, such as Global Perspective with Job Performance (0.511) and Global Perspective with Digital Fluency (0.540), indicating clear empirical distinctiveness. Meanwhile, stronger relationships appeared among theoretically related competencies, including Adaptability and Learning Agility (0.853), Learning Agility and Job Performance (0.852), and Self-Management and Job Performance (0.885). The highest HTMT value was between Self-Management and Learning Agility (0.898), indicating a strong yet acceptable association, consistent with their conceptual proximity as self-regulatory capabilities. Importantly, all HTMT values stayed below the threshold of 0.90 for establishing discriminant validity in variance-based SEM, reinforcing that the constructs are empirically separable and that significant construct overlap is unlikely (Hair et al., 2021).

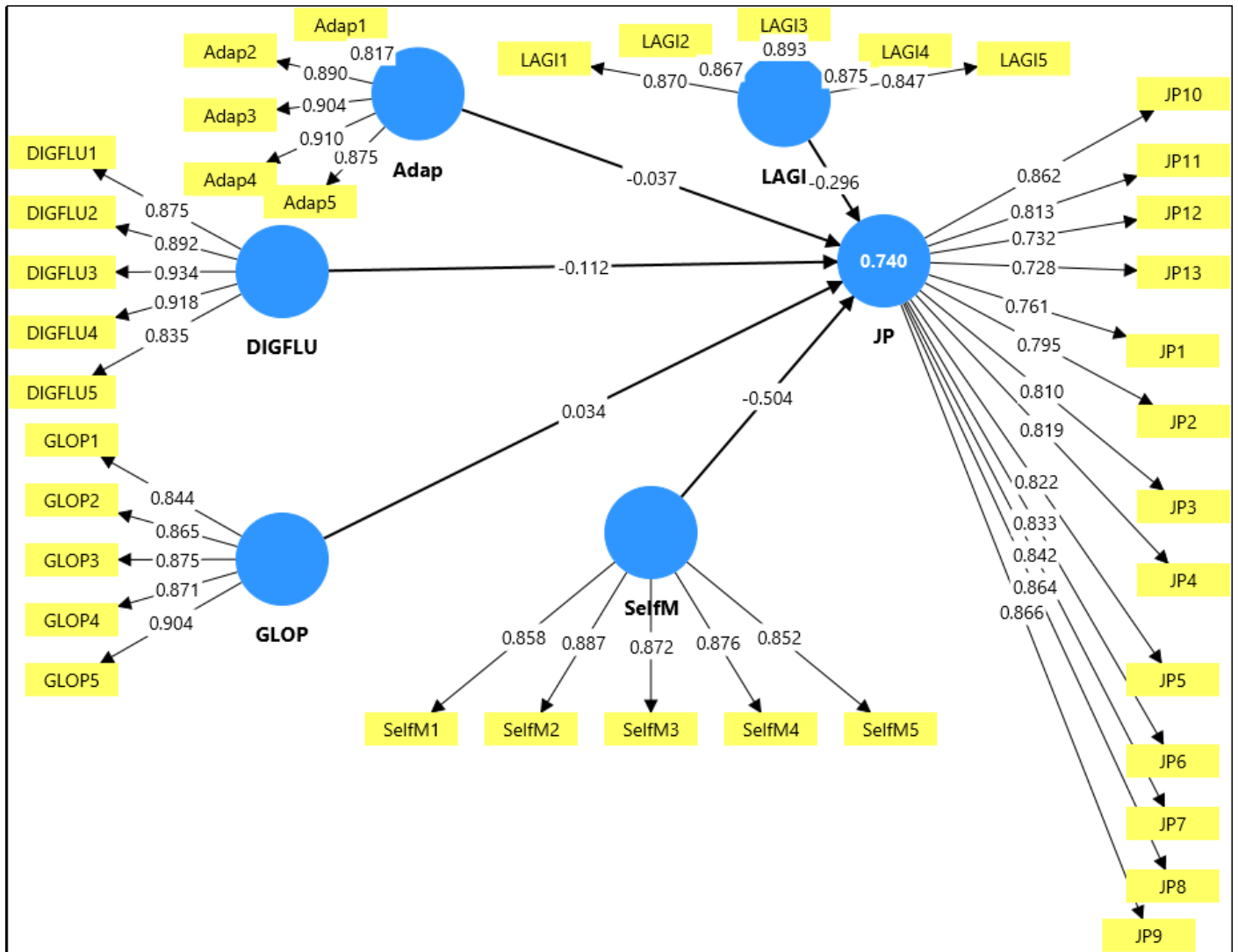


Figure 4.1: Measurement Model

Table 4.1: Measurements Model Results

Construct	Items Code	Loading	CR	AVE
Adaptability	Adap1	0.817	0.945	0.774
	Adap2	0.890		
	Adap3	0.904		
	Adap4	0.910		
	Adap5	0.875		
Digital Fluency	DIGFLU1	0.875	0.951	0.795
	DIGFLU2	0.892		
	DIGFLU3	0.934		
	DIGFLU4	0.918		
	DIGFLU5	0.835		
Global Perspective	GLOP1	0.844	0.941	0.761

Continuation Table:

Construct	Items Code	Loading	CR	AVE
	GLOP2	0.865		
	GLOP3	0.875		
	GLOP4	0.871		
	GLOP5	0.904		
Learning Agility	LAGI1	0.870	0.940	0.757
	LAGI2	0.867		
	LAGI3	0.893		
	LAGI4	0.875		
	LAGI5	0.847		
Self-management	SelfM1	0.858	0.939	0.755
	SelfM2	0.887		
	SelfM3	0.872		
	SelfM4	0.876		
	SelfM5	0.852		
Job Performance	JP1	0.761	0.962	0.66
	JP10	0.862		
	JP11	0.813		
	JP12	0.732		
	JP13	0.728		
	JP2	0.795		
	JP3	0.810		
	JP4	0.819		
	JP5	0.822		
	JP6	0.833		
	JP7	0.842		
	JP8	0.864		
	JP9	0.866		

Notice: JP14, JP15, JP6, JP17 were dropped due low factor loading

Table 4.2: Discriminant validity

	ADAP	DIGFLU	GLOP	JP	LAGI	SELFMI
ADAP						
DIGFLU	0.786					
GLOP	0.713	0.54				

Continuation Table:

	ADAP	DIGFLU	GLOP	JP	LAGI	SELFM
JP	0.751	0.691	0.511			
LAGI	0.853	0.767	0.666	0.852		
SELFM	0.818	0.687	0.541	0.885	0.898	

4.6 Structure Model Assessment

The structural model was evaluated to test the hypothesised effects of the five dimensions comprising the Staying Relevant construct (Freebody, 2023), Adaptability (ADAP), Digital Fluency (DIGFLU), Global Perspective (GLOP), Learning Agility (LAGI), and Self-Management (SELFM), on Job Performance (JP). The results from the bootstrapping procedure, including standardised path coefficients (β), standard deviations, t-values, and p-values, are reported in **Table 4.3**. Three of the five hypothesised relationships were supported, with Digital Fluency, Learning Agility, and Self-Management each demonstrating statistically significant positive effects on Job Performance.

Regarding H1, Adaptability did not demonstrate a statistically significant effect on Job Performance ($\beta = -0.003$, $t = 0.041$, $p = 0.484$). The near-zero coefficient and high p-value indicate that Adaptability, when evaluated alongside the other Staying Relevant dimensions in the model, does not independently predict Job Performance in this public sector context. This finding suggests that while adaptability is theoretically important as an Industry 4.0 competency, its direct performance impact may be constrained by the structured and procedurally oriented nature of Omani public sector work, where formal role requirements and institutional compliance norms may limit the observable contribution of individual adaptive behaviour to measurable performance outcomes. Accordingly, H1 was not supported.

Regarding H2, Digital Fluency demonstrated the strongest and most statistically significant positive effect on Job Performance among all five dimensions ($\beta = 0.259$, $t = 3.023$, $p = 0.001$). The confidence interval did not include zero, confirming the robustness and directional consistency of this relationship. Employees who reported higher confidence in their Digital Fluency abilities, including the strategic and seamless use of digital tools and platforms, tended to perform significantly better in their roles. This finding is consistent with the growing body of evidence linking digital competence to job effectiveness in technology-driven work environments and reflects the increasing digitalisation of public service delivery in Oman under Vision 2040. Digital Fluency therefore emerges as the most immediately performance-relevant dimension of the Staying Relevant construct in the current context. Accordingly, H2 was supported.

Regarding H3, Global Perspective did not significantly predict Job Performance ($\beta = -0.056$, $t = 0.633$, $p = 0.263$). The small and non-significant coefficient suggests that, in the context of the Omani public sector, a broader global outlook does not directly translate into measurable individual performance gains when evaluated alongside more operationally immediate competencies. This is theoretically plausible given that the sample consists predominantly of domestically focused public administrators whose daily performance is largely shaped by local institutional demands, procedural requirements, and role-specific responsibilities rather than

cross-cultural engagement or international collaboration. Accordingly, H3 was not supported.

Regarding H4, Learning Agility demonstrated a positive and statistically significant effect on Job Performance ($\beta = 0.148$, $t = 1.658$, $p = 0.049$). Employees who reported higher confidence in managing their own learning, including planning work-related development activities, identifying growth needs, monitoring progress, and selecting appropriate learning strategies, tended to perform better in their roles. This finding aligns with evidence that learning agility enables employees to acquire and apply new knowledge effectively, respond to unfamiliar tasks, and adapt their work practices in line with technological and organisational change. In the context of Oman's ongoing public sector modernisation and digital transformation, employees who actively manage their own development are better positioned to sustain and enhance their performance as job requirements evolve. Accordingly, H4 was supported.

Regarding H5, Self-Management demonstrated a significant positive effect on Job Performance ($\beta = 0.179$, $t = 1.755$, $p = 0.040$), emerging as the second strongest predictor among the five Staying Relevant dimensions. Employees who reported higher confidence in regulating their time, effort, motivation, and goal-directed behaviour tended to demonstrate stronger Job Performance outcomes. This finding is consistent with research linking self-management and self-regulation to improved task performance, productivity, and autonomous motivation in professional work settings. In public sector environments characterised by procedural demands, competing priorities, and technology-driven change, the ability to self-regulate and maintain sustained focus on performance objectives is a particularly valuable competency for individual effectiveness. Accordingly, H5 was supported.

Overall, the structural results indicate that three of the five Staying Relevant dimensions, Digital Fluency, Learning Agility, and Self-Management, positively and significantly predict Job Performance in the Omani public sector, with Digital Fluency emerging as the dominant predictor. Adaptability and Global Perspective did not reach statistical significance, suggesting that their performance effects may be more indirect, contextually contingent, or dependent on enabling organisational conditions, such as greater job autonomy, digital infrastructure, or innovation-oriented performance systems, that are not yet fully developed across the Omani public sector. Collectively, these findings affirm the practical relevance of the Staying Relevant competency domain for public sector performance while also highlighting that not all dimensions contribute equally to immediate and measurable performance outcomes.

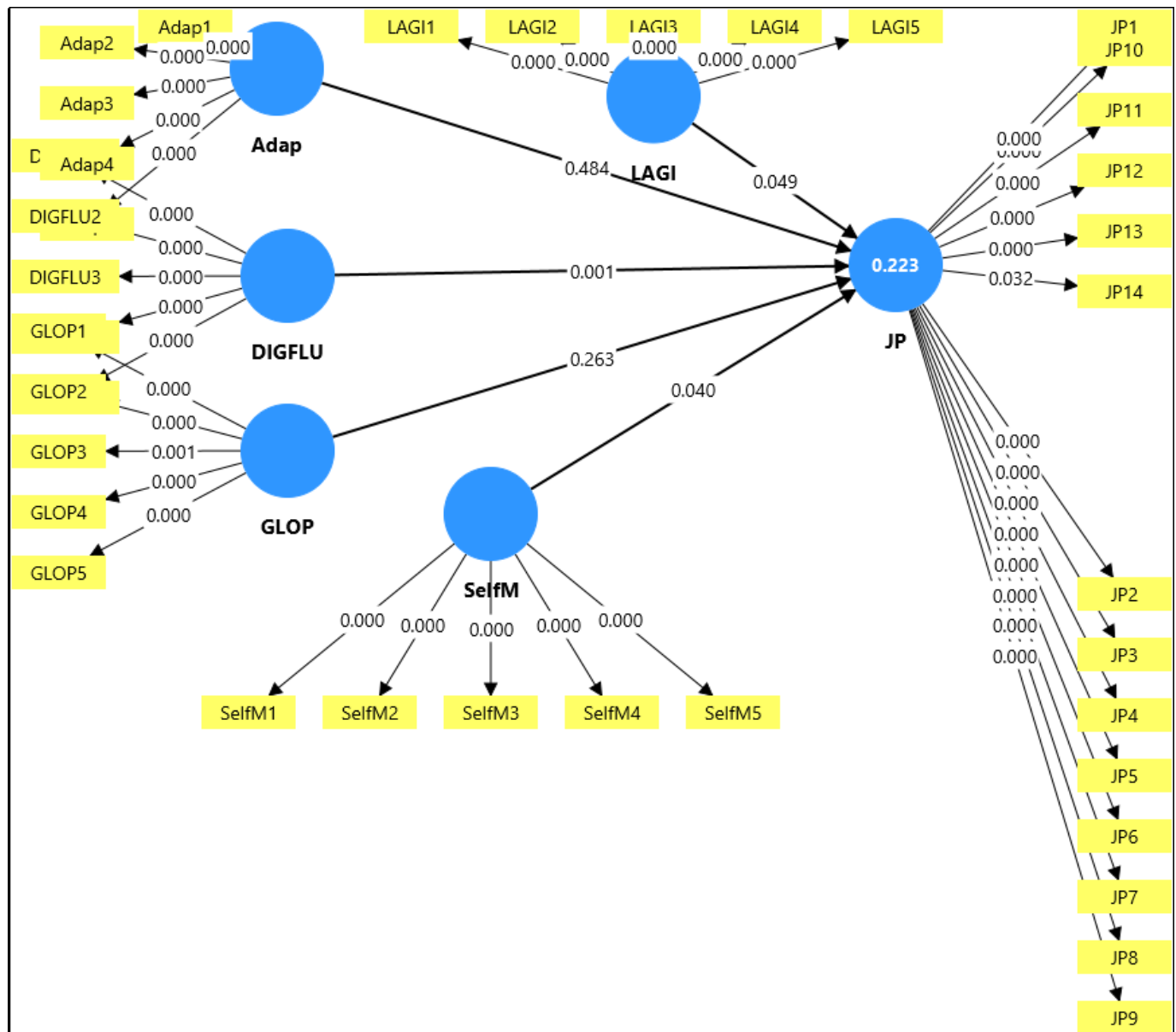


Figure 4.3: Structure Model Assessment

Table 4.3: Hypotheses Testing

Hypothesis	Relationship	Std. Beta	St. Dev	T value	P values	DECISION
H1	ADAP -> JP	-0.003	0.084	0.041	0.484	Not Supported
H2	DIGFLU -> JP	0.259	0.086	3.023	0.001	Supported
H3	GLOP -> JP	-0.056	0.089	0.633	0.263	Not Supported
H4	LAGI -> JP	0.148	0.089	1.658	0.049	Supported
H5	SELF M -> JP	0.179	0.102	1.755	0.040	Supported

5. Discussion

This section discusses the hypothesis-testing results in relation to the study's overarching research question: What are the effects of Industry 4.0 staying-relevant competencies (adaptability, digital fluency, global perspective, learning agility, and

self-management) on job performance among employees in Oman's public sector? The discussion is structured around the proposed hypotheses and interprets the findings in light of prior literature and the Omani public sector context.

H1: Adaptability has a positive and significant effect on job performance among employees in Oman's public sector. ($\beta = -0.003$, $t = 0.041$, $p = 0.484$): Not Supported

H1 proposed a positive and significant relationship between adaptability and job performance; however, the results indicate that adaptability does not have a statistically significant direct effect on job performance. The near-zero coefficient indicates that adaptability provides negligible additional explanatory power when other Staying Relevant competencies are included in the model. Accordingly, H1 was not supported.

This finding contrasts with previous evidence that generally links adaptability-related constructs, such as career adaptability and adaptive performance, with stronger performance outcomes across various professional contexts (Ohme & Zacher, 2015; Diamantidis & Chatzoglou, 2019; Jundt et al., 2015). A context-specific interpretation suggests that adaptability may be valuable in the Omani public sector but functions less as an independent direct predictor of performance and more as a background capability whose effects are absorbed by more proximal self-regulatory competencies such as learning agility and self-management, or constrained by bureaucratic performance systems that reward compliance and routine task execution rather than behavioural flexibility (Lin, 2025; Türkistanlı & Kök, 2024). Additionally, the literature indicates that adaptability often influences performance indirectly through enabling mechanisms such as organisational support, psychological resources, and technology readiness, which were not included in the current direct-effects model (Cullen et al., 2014; Shahzad, 2021; Sony & Mekoth, 2016).

From a practical perspective, the non-significant direct effect suggests that employees may need more applied adaptability skills, specifically, the ability to translate awareness of change into concrete implementation and governance routines. The adaptability items used in this study focus on scanning for industry and workplace changes, understanding their implications for one's role, developing response strategies, implementing new ways of working, and updating procedures or guidelines. These behaviours highlight training needs that go beyond generic adaptability messaging, emphasising structured capability building in change detection, scenario-based response planning, workflow redesign, and procedure development for digitally evolving work environments. Developing these applied change-execution skills may help transform adaptability from a passive coping capacity into a performance-enhancing capability within Oman's ongoing public sector modernization efforts.

H2: Digital fluency has a positive and significant effect on job performance among employees in Oman's public sector: ($\beta = 0.259$, $t = 3.023$, $p = 0.001$): Supported

H2 proposed that digital fluency would have a positive and significant effect on job performance, and the results provide strong empirical support for this relationship. Digital Fluency emerged as the strongest and most statistically significant positive predictor of Job Performance among all five Staying Relevant dimensions, confirming that employees who report higher confidence in their digital fluency abilities demonstrate meaningfully stronger job performance outcomes. Accordingly, H2 was supported.

This finding is consistent with a substantial body of research reporting strong

positive associations between digital competence and job performance across diverse sectors and occupational contexts (Yanto, 2025; Tatli et al., 2023; Belleza-Torrejón et al., 2024; Salju et al., 2023; Sartika et al., 2023; Muttar et al., 2024; Stipic et al., 2025). Previous studies demonstrate that digital competencies enhance task performance and broader performance outcomes (Tatli et al., 2023), with their effects further amplified by psychological empowerment, motivation, and enabling work conditions (Supriyadi et al., 2025; Pacheco & Coello-Montecel, 2022; Rahwana et al., 2025). Evidence also indicates that digital fluency enhances performance through improved coordination, communication, and knowledge sharing via digital tools (Duan et al., 2023), and that leaders' own digital fluency can amplify the translation of employees' digital capabilities into digital work performance (Zimmermann, 2020).

In the Omani public sector context, the significant positive effect of Digital Fluency is particularly meaningful given the accelerating pace of digital transformation under Vision 2040. As government entities increasingly adopt digital platforms, data-driven decision-making, and technology-enabled service delivery, employees with stronger digital fluency are better positioned to leverage these tools effectively, contribute to digital workflows, and deliver higher-quality performance outcomes. This finding underscores the strategic importance of investing in practical, work-based digital fluency development, including training connected to actual public sector systems and processes, supported by managerial practices that provide meaningful opportunities to apply digital skills, to ensure that digital confidence translates into consistently measurable performance improvements.

H3: Global Perspective has a positive and significant effect on Job Performance among employees in Oman's public sector: ($\beta = -0.056$, $t = 0.633$, $p = 0.263$): Not Supported

H3 proposed that a Global Perspective would positively predict Job Performance; however, the relationship was negative and statistically non-significant. This suggests that a Global Perspective does not provide meaningful unique explanatory power for Job Performance when other Industry 4.0 competencies are simultaneously considered in the model. Accordingly, H3 was not supported.

This finding is broadly consistent with evidence suggesting that the direct effect of global mindset and cultural intelligence on performance can be weak or non-significant when enabling mechanisms are absent (Sugiati et al., 2024). While prior research often reports positive effects of Global Perspective on performance through mediating mechanisms such as organisational commitment, innovative work behaviour, job satisfaction, and cross-cultural competence (Barakat et al., 2015; Pabittei & Bhinekawati, 2020; Ningrati & Sumartik, 2022; Pusparini & Aryasa, 2021), the direct pathway does not appear to operate in the current context. In Oman's public sector, the majority of roles are primarily domestically oriented and evaluated through compliance and routine execution criteria, which limits opportunities for employees to apply global awareness meaningfully in their daily work and diminishes its observable impact on individual performance outcomes. A Global Perspective may therefore function as a strategic capability whose performance benefits are conditional on activation through specific job design features and contextual resources, including cross-cultural collaboration opportunities, language support, and mechanisms to translate global insights into practice, rather than exerting a consistent and automatic direct influence on performance (Kraimer et al., 2022).

H4: Learning agility has a positive and significant effect on Job Performance among employees in Oman's public sector : ($\beta = 0.148$, $t = 1.658$, $p = 0.049$): Supported

H4 proposed that learning agility would have a positive and significant effect on Job Performance. The results confirm this relationship at the 5% significance level, indicating that employees who report higher confidence in managing their own learning tend to demonstrate stronger Job Performance outcomes. These learning agility behaviours, including planning work-related learning, identifying development needs, documenting learning progress, monitoring development, and selecting appropriate learning strategies—reflect self-directed development capability that is increasingly critical for workforce effectiveness under Industry 4.0. Accordingly, H4 was supported.

This finding aligns with a substantial body of evidence demonstrating that learning agility consistently predicts higher Job Performance across various sectors, including public administration. Previous research indicates strong positive links between learning agility and performance among teachers, public sector employees, and other professional groups (Khan & Akram, 2025; Salsabila & Megawaty, 2023; Serena et al., 2025). Theoretically, learning agility improves performance by enabling employees to quickly acquire and apply new knowledge, respond effectively to unfamiliar tasks, and adjust work practices as technologies and procedures evolve. Empirical studies further show that learning agility often enhances performance through indirect pathways, including innovative work behaviour, job crafting, and more effective use of digital tools during organisational transformation initiatives (Wolor et al., 2025; Cárdenas-Muñoz et al., 2024; Choi & Jeon, 2024; Serena et al., 2025).

In the Omani public sector, where modernisation and digital transformation are actively underway under Vision 2040, learning agility carries particular practical significance. Employees who actively manage their own development and apply their learning to improve performance are better positioned to navigate evolving job requirements and contribute meaningfully to institutional transformation goals. This finding underscores the importance of strengthening institutional learning systems, including structured individual development plans, targeted training pathways, reflective learning logs, and supervisor-supported learning goals, to ensure that learning agility translates into sustained, measurable performance improvements as the demands of public-sector roles continue to evolve.

H5: Self-management has a positive and significant effect on Job Performance among employees in Oman's public sector: ($\beta = 0.179$, $t = 1.755$, $p = 0.040$): Supported

H5 proposed that self-management would have a positive and significant effect on Job Performance. The results confirm this relationship, with Self-Management emerging as the second strongest positive predictor of Job Performance among all five Staying Relevant dimensions. Employees who reported higher confidence in regulating their time, effort, motivation, and goal-directed behaviour tended to demonstrate stronger Job Performance outcomes, reinforcing self-regulation as a key Staying Relevant competency for performance in Oman's public sector. Accordingly, H5 was supported.

This finding aligns with a well-established body of evidence linking self-management and related constructs, including self-leadership, self-control, and self-regulation, to better task performance, productivity, and positive work attitudes, as employees regulate their effort, monitor their behaviour, and maintain goal-oriented actions (Carter et al., 2018; Gbarale, 2022; Harari et al., 2021). Research further demonstrates that self-control enhances performance by reducing distractions and counterproductive behaviours while increasing focus and autonomous motivation,

particularly in digitally mediated and flexible work environments (Troll et al., 2021; Wirapraja & Hariyanti, 2025). The closely related construct of self-efficacy also consistently shows strong positive associations with job performance across diverse work settings by boosting motivation, persistence, and engagement (Annisa & Ginarti, 2023; Carter et al., 2018; Rashid & Haq, 2025; Syahreza et al., 2025).

In the context of public sector digital transformation in Oman, self-management is likely to be especially important for sustained performance, as employees must manage competing demands, allocate time effectively, and prioritise tasks while maintaining both learning and task execution amid procedural requirements and technology-driven change. However, the literature also cautions that self-management is most effective when task expectations are clear and organisational support is present; without these enabling conditions, high self-regulation demands can lead to role overload and undermine the sustainability of performance gains (Demerouti et al., 2024; Morikawa et al., 2024; Qi et al., 2023). Public sector agencies should therefore complement individual self-management capability development with clear goal-setting practices, manageable workloads, and supportive supervisory arrangements to ensure that self-regulation translates into sustained high performance rather than employee burnout.

6. Theoretical and Practical Implications

This study advances theory by extending Industry 4.0 workforce scholarship to a less-explored context: public sector employees in a developing economy undergoing national digital transformation. Most Industry 4.0 competence–performance evidence comes from private sector or mixed-sector settings, while public administration research often focuses on technology adoption rather than the full range of competencies required for workforce relevance. By defining adaptability, Digital Fluency, Global Perspective, learning agility, and self-management as distinct competencies and examining their combined effects on Job Performance, the study offers a more granular, competency-specific explanation of performance variance that is theoretically grounded in Socio-Technical Systems Theory and Human Capital Development Theory.

The results demonstrate that Job Performance in Oman's public sector is most strongly and directly associated with Digital Fluency, followed by Self-Management and Learning Agility, suggesting that both technical digital capability and self-regulatory competencies constitute the most performance-relevant human capital assets in the context of digital transformation. This finding refines Human Capital Development Theory by demonstrating that not all competency investments yield equivalent performance returns—the type, operational immediacy, and alignment of the competency with prevailing work demands and performance evaluation systems significantly shapes the magnitude of its contribution. The significant positive effect of Digital Fluency in particular extends STS Theory by providing empirical evidence that when employees possess the digital capability to effectively engage with the technical systems increasingly embedded in public sector work, meaningful performance gains follow—suggesting that this competency represents a critical point of socio-technical alignment in digitally transforming public organisations.

The non-significant direct effects of Adaptability and Global Perspective further reinforce the STS perspective that competencies do not automatically enhance performance unless activated through supportive work systems, enabling job design, and appropriate institutional conditions. These findings suggest that broader

readiness-oriented competencies may operate more indirectly, through mediating mechanisms such as innovative work behaviour, technology use effectiveness, or organisational commitment, rather than exerting consistent direct effects on individual performance in the current institutional context.

In practice, the results provide evidence-based guidance for Oman's public sector capability-building agenda under Vision 2040. First, workforce development should prioritise Digital Fluency as the most immediately performance-relevant competency, investing in practical, work-embedded digital skills development tied directly to government systems, platforms, and workflows, including digital collaboration, data handling, and problem-solving using official digital infrastructure, rather than generic digital awareness training. Second, Learning Agility and Self-Management should be developed through structured learning pathways, individualised development planning, reflective learning practices, and supervisor-supported learning goals, as these self-regulatory competencies demonstrate meaningful positive effects on performance and are likely to become increasingly important as job demands continue to evolve under digital transformation. Third, the non-significant effects of Adaptability and Global Perspective suggest a need to shift from generic training to applied, contextually embedded interventions. For Adaptability, training should focus on change sensing, scenario-based response planning, implementing new work practices, and updating procedures in response to technological and organisational change. For Global Perspective, strategic development should target roles with international interfaces, such as benchmarking, cross-border coordination, and policy learning, supported by mechanisms that translate global insights into operational performance improvements. Overall, the study positions competency development not as an isolated human resource activity but as a system-aligned intervention in which skills, technology, and work processes must be jointly designed and mutually reinforcing to yield sustained performance improvements.

7. Limitations and Future Research

Several limitations should be acknowledged. First, the study employed a cross-sectional design, which restricts causal inference. Future research should adopt longitudinal or time-lagged approaches to better understand how competency development influences performance over time as digital transformation deepens across Omani public sector institutions. Second, the data relied on self-reported measures for both the competency and performance constructs, which may introduce common method bias and social desirability effects. Subsequent studies should consider incorporating supervisor evaluations, objective performance metrics, or multi-source assessment approaches to strengthen the validity and objectivity of the findings. Third, the sample was recruited through online distribution across selected ministries, which may limit the generalisability of the findings to all public-sector entities in Oman. Replication with larger, stratified samples covering a broader range of ministries, job roles, seniority levels, and organisational mandates is recommended to enhance the external validity of the results.

Future research should also explore the mechanisms and boundary conditions through which the non-significant competencies, Adaptability and Global Perspective, may exert their performance effects. The influence of these competencies on job performance may become more pronounced when mediated by factors such as technology use effectiveness, innovative work behaviour, or organisational commitment, and when moderated by enabling conditions including leadership

support, digital infrastructure quality, job autonomy, and access to development resources. Testing these indirect and conditional pathways within an expanded model would provide a more complete understanding of how the full range of Staying Relevant competencies collectively shape performance outcomes in digitally transforming public sector environments. Finally, comparative studies across public and private sectors, or across Gulf Cooperation Council countries at different stages of digital transformation, would help clarify whether the observed competency–performance relationships are specific to the Omani institutional context or reflect broader patterns applicable to similar administrative systems undergoing Industry 4.0 transitions.

8. Conclusion

This study examined how Industry 4.0 Staying Relevant competencies influence job performance among employees in Oman's public sector—an area that remains relatively underexplored in the Industry 4.0 literature and, to the best of the authors' knowledge, has not been empirically tested in Oman using this competency configuration. The results reveal a differentiated pattern of findings across the five competency dimensions. Digital Fluency emerged as the strongest and most statistically significant positive predictor of job performance, followed by Self-Management and Learning Agility, both of which also demonstrated meaningful positive effects. These findings underscore the critical importance of digital capability, self-directed learning, and self-regulatory ability in sustaining and enhancing performance during public sector digital transformation. In contrast, Adaptability and Global Perspective did not demonstrate significant direct effects within the multivariate model, indicating that these competencies may require stronger socio-technical alignment, enabling job design, and contextual activation mechanisms, such as greater autonomy, digital infrastructure, and innovation-oriented performance systems, to translate into measurable individual performance outcomes in the current Omani public sector context.

Overall, the findings support targeted human capital development strategies that prioritise Digital Fluency as a frontline performance-enhancing investment, alongside structured learning systems and self-management capability building, while also calling for broader institutional reforms that create the enabling conditions necessary for the full range of Staying Relevant competencies to generate their performance potential. The study contributes to the growing body of Industry 4.0 workforce literature by providing empirical evidence from a non-Western public sector context and by demonstrating that competency–performance relationships are not uniform across all dimensions of workforce readiness, but are shaped by the degree of socio-technical alignment, institutional conditions, and the operational relevance of specific competencies within the work environment. These insights offer actionable guidance for policymakers, human resource practitioners, and public sector leaders committed to building a high-performing, digitally capable, and future-ready workforce in support of Oman's Vision 2040 national development agenda.

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References

1. Al-Haimi, B., Ali, F., & Hujainah, F. (2024). Digital Transformation in Healthcare: Impact on Organizations' Strategies, Future Landscape, and Required Skills. In *Navigating the Intersection of Business, Sustainability and Technology* (pp. 61-74). Singapore: Springer Nature Singapore.
2. Annisa, N., & Ginarti, S. (2023). Employee performance: Self-efficacy and locus of control. *International Journal on Social Science, Economics and Art*. <https://doi.org/10.35335/ijosea.v12i4.181>
3. Aranda-Jiménez, J.-R., De-Pablos-Heredero, C., Campos-García, I., Martin, J. S., & Martínez, C. C. (2024). Digitalization and industry 4.0: What skills improve professional behaviours? *Journal of Industrial Engineering and Management*, 17(1), 235. <https://doi.org/10.3926/jiem.7091>
4. Auer, M. E., & Centea, D. (2021). Visions and concepts for Education 4.0. In *Proceedings of the 9th International Conference on Interactive Collaborative and Blended Learning (ICBL2020) (Advances in Intelligent Systems and Computing)*.
5. Barakat, L., Lorenz, M., Ramsey, J., & Cretoiu, S. (2015). Global managers: An analysis of the impact of cultural intelligence on job satisfaction and performance. *International Journal of Emerging Markets*, 10, 781–800. <https://doi.org/10.1108/ijoem-01-2014-0011>
6. Belleza-Torrejón, S., La Cruz, N., Guarniz-Vásquez, E., Mendoza-Aguilar, C., & Quispe-López, J. (2024). Digital literacy and its impact on the work performance of the collaborator of a state entity. *International Journal of Religion*. <https://doi.org/10.61707/wnn2m039>
7. Beloeva, S., Venelinova, N., & Petrova, M. (2025). Building competencies for managing virtual teams in local public administrations: Challenges in the age of global digitalization. *Baltic Journal of Economic Studies*, 11(4), 252. <https://doi.org/10.30525/2256-0742/2025-11-4-252-259>
8. Cárdenas-Muñoz, M., Andrada, L., & Pérez, M. (2024). Exploratory analysis on learning behaviours that favour job crafting. *Management Decision*, 62(7), 2265–2291. <https://doi.org/10.1108/md-06-2023-0982>
9. Cárdenas-Muñoz, M., Rubio-Andrada, L., & Segovia-Pérez, M. (2024). Exploratory analysis on learning behaviours that favour job crafting. *Management Decision*. <https://doi.org/10.1108/md-06-2023-0982>
10. Carter, W., Nesbit, P., Badham, R., Parker, S., & Sung, L. (2018). The effects of employee engagement and self-efficacy on job performance: A longitudinal field study. *The International Journal of Human Resource Management*, 29, 2483–2502. <https://doi.org/10.1080/09585192.2016.1244096>
11. Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 3(1), 349–375.
12. Chin, Y., Mohamad, A., & Lo, M. (2023). Sustainable human resource management practices in achieving employees' sustainable performance: Evidence in the hospitality sector. *Enlightening Tourism: A Pathmaking Journal*, 13(2), 106–137. <https://doi.org/10.33776/et.v13i2.7691>
13. Choi, S., & Jeon, K. (2024). Relationship between job challenge and job performance in the Korean Army: The mediating effect of learning agility and the moderating effect of job autonomy. *Military Psychology*, 37, 385–397. <https://doi.org/10.1080/08995605.2024.2376963>
14. Correia, J. D. G. (2025). Telework and teleemployee in the public sector: A perspective on the post-pandemic period. *Journal of Public Administration Finance and Law*, 33, 219. <https://doi.org/10.47743/jopafll-2024-33-16>
15. Cullen, K., Edwards, B., Casper, W., & Gue, K. (2014). Employees' adaptability and perceptions of change-related uncertainty: Implications for perceived organizational support, job satisfaction, and performance. *Journal of Business and*

- Psychology, 29, 269–280. <https://doi.org/10.1007/s10869-013-9312-y>
16. David, S., Zinica, D., Bărbuță-Mișu, N., Șavga, L., & Virlanuta, F. (2023). Public administration managers' and employees' perceptions of adaptability to change under “the future of work” paradigm. *Technological Forecasting and Social Change*, 199, 123088. <https://doi.org/10.1016/j.techfore.2023.123088>
 17. Demerouti, E., Roth, C., Ebner, K., Soucek, R., & Moser, K. (2024). Toward a better understanding of self-regulation promoting interventions: When performance management and job crafting meet. *Human Resource Management*. <https://doi.org/10.1002/hrm.22236>
 18. Dewi, K., & Soeling, P. (2024). Does psychological capital mediate the relationship between transformational leadership and adaptive performance of civil servant? *Technium Social Sciences Journal*, 53, 12–30. <https://doi.org/10.47577/tssj.v53i1.10322>
 19. Diamantidis, A., & Chatzoglou, P. (2019). Factors affecting employee performance: An empirical approach. *International Journal of Productivity and Performance Management*. <https://doi.org/10.1108/ijppm-01-2018-0012>
 20. Duan, S., Deng, H., & Wibowo, S. (2023). Exploring the impact of digital work on work-life balance and job performance: A technology affordance perspective. *Information Technology & People*, 36, 2009–2029. <https://doi.org/10.1108/itp-01-2021-0013>
 21. Duan, S., Deng, H., & Wibowo, S. (2023). Technology affordances for enhancing job performance in digital work. *Journal of Computer Information Systems*, 64, 232–244. <https://doi.org/10.1080/08874417.2023.2188497>
 22. Freebody, S. (2023). Critical core skills profiling and development in the Singaporean workforce (May), 1–66.
 23. Gbarale, K. (2022). Self-management competencies and employee effectiveness: A conceptual review. *Journal of Human Resource & Leadership*. <https://doi.org/10.53819/81018102t4056>
 24. Hair, J. F., Astrachan, C. B., Moisesescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (2021). Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy*, 12(3), 100392.
 25. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (Vol. 6). Pearson Prentice Hall.
 26. Harari, M., Williams, E., Castro, S., & Brant, K. (2021). Self-leadership: A meta-analysis of over two decades of research. *Journal of Occupational and Organizational Psychology*. <https://doi.org/10.1111/joop.12365>
 27. Hatunoglu, S. B. (2024). Workforce agility: A systematic literature review and comparison with domestic studies. *Pressacademia*. <https://doi.org/10.17261/pressacademia.2024.1936>
 28. Haziazi, M. A. (2023). The impact of digital skills, human centric culture, employee wellbeing, and HR analytics on talent management in the Sultanate of Oman: A quantitative study. *International Journal of Advanced and Applied Sciences*, 10(7), 224. <https://doi.org/10.21833/ijaas.2023.07.025>
 29. Hughes, O. E. (2012). *Public management and administration*. <https://doi.org/10.1007/978-1-137-00305-8>
 30. Jimenez, M. P. (2021). Design, development and validation of an interactionist model of professional competencies for industry 4.0 (Doctoral thesis). HAL (Le Centre Pour La Communication Scientifique Directe). <https://hal.science/tel-04194087>
 31. Johnson, G., & Simon, J. F. (2018). Future-proofing institutional research skills in an evolving digital institution. *New Directions for Institutional Research*, 118(178), 11. <https://doi.org/10.1002/ir.20264>
 32. Jundt, D., Shoss, M., & Huang, J. (2015). Individual adaptive performance in organizations: A review. *Journal of Organizational Behavior*, 36. <https://doi.org/10.1002/job.1955>
 33. Kalashnyk, N., Plakhotnyk, O., Khudoba, O., Zayats, D., & Mo, G. (2024). Challenges in the professional development of public servants amid new realities in adult education: Conceptualization of competence and system approaches. *Society Integration Education: Proceedings of the International Scientific Conference*, 2, 167. <https://doi.org/10.17770/sie2024vol2.7815>
 34. Khalid, K., & Ahmad, A. M. (2021). The relationship between employability skills and career adaptability: A case of undergraduate students of the United Arab Emirates. *Higher Education, Skills and Work-Based Learning*, 11(5), 1035–1054. <https://doi.org/10.1108/HESWBL-08-2020-0175>
 35. Khan, M., & Akram, M. (2025). Linking college teachers' learning agility with their job performance. *Contemporary Journal of Social Science Review*. <https://doi.org/10.63878/cjssr.v3i2.813>

36. Kraimer, M., Shaffer, M., Bolino, M., Charlier, S., & Wurtz, O. (2022). A transactional stress theory of global work demands: A challenge, hindrance, or both? *Journal of Applied Psychology*. <https://doi.org/10.1037/apl0001009>
37. Kumi, E., Osei, H. V., Asumah, S., & Yeboah, A. (2024). The impact of technology readiness and adapting behaviours in the workplace: A mediating effect of career adaptability. *Future Business Journal*, 10(1). <https://doi.org/10.1186/s43093-024-00355-z>
38. Lee, J., & Song, J. (2020). Developing a conceptual integrated model for the employee's learning agility. *Performance Improvement Quarterly*, 34(4), 367–394. <https://doi.org/10.1002/piq.21352>
39. Lee, Y. (2021). Model of expatriates' job performance based on cross-cultural adjustment to work stress and work adaptation. *Theoretical Economics Letters*, 11(03), 540–557. <https://doi.org/10.4236/tel.2021.113036>
40. Lin, T. (2025). From multitasking to mastering: How polychronicity–monochronicity flexibility and work conditions shape the effects of COVID-19 stress on ego depletion and job performance. *Stress and Health*, 41(3). <https://doi.org/10.1002/smi.70058>
41. Maaß, U., Eisert, K., Ghalib, J., Kühne, F., & Weck, F. (2025). Live versus delayed supervision: A randomized controlled trial with psychology students. *Psychotherapy*, 62(2), 253–261. <https://doi.org/10.1037/pst0000572>
42. Mekky, S. (2024). Perspective chapter: Institutional structural reform and sustainable resilience. In *IntechOpen eBooks*. IntechOpen. <https://doi.org/10.5772/intechopen.1003058>
43. Milani, R., Setti, I., & Argentero, P. (2021). Learning agility and talent management: A systematic review and future prospects. *Consulting Psychology Journal: Practice and Research*, 73(4), 349–371. <https://doi.org/10.1037/cpb0000209>
44. Muttar, A., Saadoon, A., Abdeldayem, M., & Aldulaimi, S. (2024). Unleashing the power of digital skills in human resources: Exploring the relationship between digital transformation and job performance in the Government of Bahrain. In *2024 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSIS)* (pp. 73–77). <https://doi.org/10.1109/icetsis61505.2024.10459615>
45. Ndou, V., & Miccoli, G. (2025). Competencies and skills for public administration: A digital journey. In *Applied innovation and technology management* (p. 41). Springer International Publishing. (DOI incomplete in your text: “<https://doi.org/10.1>.”)
46. Ningrati, N., & S. (2022). The influence of global mindset, individual characteristics and job characteristics on employee work performance with organizational commitment as an intervening variable at company. *Indonesian Journal of Law and Economics Review*. <https://doi.org/10.21070/ijler.v19i0.883>
47. Ohme, M., & Zacher, H. (2015). Job performance ratings: The relative importance of mental ability, conscientiousness, and career adaptability. *Journal of Vocational Behavior*, 87, 161–170. <https://doi.org/10.1016/j.jvb.2015.01.003>
48. Ouyang, Y. (2025). Technical background of the top management team, digital innovation and firm performance: The evidence from construction firms. *Engineering, Construction & Architectural Management*, 1–24. <https://doi.org/10.1108/ecam-06-2025-0988>
49. Öztürk, M., & Czukor, G. (2023). Öğrenme çevikliği: İş performansı ve memnuniyeti üzerindeki etkiler. *The Journal of Academic Social Sciences*, 141(141), 108–123. <https://doi.org/10.29228/asos.69217>
50. Ozkan-Ozen, Y. D., & Kazancoglu, Y. (2022). Analysing workforce development challenges in the Industry 4.0. *International Journal of Manpower*, 43(2), 310–333. <https://doi.org/10.1108/IJM-03-2021-0167>
51. Pabittei, A., & Bhinekawati, R. (2020). The impact of cross cultural competence on employee performance mediated by global mindset in overseas construction projects (lessons from a large construction company in Indonesia). In *Proceedings of the 6th Annual International Conference on Management Research (AICMaR 2019)*. <https://doi.org/10.2991/aebmr.k.200331.023>
52. Pacheco, P., & Coello-Montecel, D. (2022). Does psychological empowerment mediate the relationship between digital competencies and job performance? *Computers in Human Behavior*, 140, 107575. <https://doi.org/10.1016/j.chb.2022.107575>
53. Pedro, J., & Juan, R. (2019). Assessing job performance using brief self-report scales: The case of the Individual Work Performance Questionnaire. *Journal of Work and Organizational Psychology*.
54. Pontes, J., Gerald, C. A. S., Fernandes, F. P., Sakurada, L., Rasmussen, A. L., Christiansen, L., Hafner-Zimmermann, S., Delaney, K., & Leitao, P. (2021). Relationship between trends, job profiles, skills and training programs in the factory of the future. In *Proceedings of the IEEE International Conference on Industrial Technology (ICIT) (2021-March)*, pp. 1240–1245. <https://doi.org/10.1109/ICIT46573.2021.9453584>
55. Pusparini, E. S., & Aryasa, K. B. (2021). Entering the global market: The role of work autonomy and individual global

- mindset as antecedents of innovative work behavior in defining employee task performance. *The South East Asian Journal of Management*, 15(1), 6.
56. Qi, L., Xu, Y., & Liu, B. (2023). Work out of office: How and when does employees' self-control influence their remote work effectiveness? *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1265593>
57. Rahwana, K., Irawan, I., Patimah, T., Sacadiraksa, W., & Fauziah, S. (2025). Enhancing employee performance through quality of work life: The moderating role of digital literacy among embroidery MSMEs in Tasikmalaya. *Journal of Business Management Education (JBME)*. <https://doi.org/10.17509/jbme.v10i1.75653>
58. Rashid, M., & Haq, S. (2025). Impact of knowledge management on employee performance: Mediating role of self-efficacy. *Advance Social Science Archive Journal*. <https://doi.org/10.55966/assaj.2025.3.2.035>
59. Roscoe, J. T. (1975). *Fundamental research statistics for the behavioural sciences* (2nd ed.). Holt, Rinehart & Winston.
60. Salju, S., Junaidi, J., & Goso, G. (2023). The effect of digitalization, work-family conflict, and organizational factors on employee performance during the COVID-19 pandemic. *Problems and Perspectives in Management*. [https://doi.org/10.21511/ppm.21\(1\).2023.10](https://doi.org/10.21511/ppm.21(1).2023.10)
61. Sarita, A., & Saldajeno, D. (2025). Influence of stress management on employee job performance: A comprehensive review. *Journal of Economics, Management and Trade*. <https://doi.org/10.9734/jemt/2025/v3i1i61301>
62. Sartika, M., Astuti, S., Chasanah, A., & Riyanto, F. (2023). Digital skills to improve work performance. *International Journal of Accounting, Management, and Economics Research*. <https://doi.org/10.56696/ijamer.v1i2.14>
63. Schwab, K., & Zahidi, S. (2023). *Future of Jobs Report* (Issue October). World Economic Forum. http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf
64. Serena, R., Siahaan, E., & Sembiring, B. (2025). The influence of learning agility, ambidexterity, and organizational climate on employee performance through digital transformation at the financial and development supervisory agency (BPKP) of North Sumatra Province. *Journal of Business Management*. <https://doi.org/10.47134/jobm.v3i1.157>
65. Setyaningrum, R., Muafi, M., Purnamasari, P., Nuraeni, N., & Hermiati, N. (2023). Driving supply chain performance through digital HRM: The mediating role of green orientation and the moderating role of green innovation. *Journal of Industrial Engineering and Management*, 16(3), 569. <https://doi.org/10.3926/jiem.6253>
66. Shahzad, M. (2021). Role of psychological capital in the curvilinear association between job autonomy and job performance. *Performance Improvement Quarterly*, 34(4), 603–625. <https://doi.org/10.1002/piq.21368>
67. Soliani, R. D., Oliveira, D. A. de, Silva, M. E. da, Pontes, J. da C. N., Gonçalves, S., Teixeira, M. F. S., Lopes, D. M., & Drumond, T. D. R. (2024). Development of competencies for Industry 4.0: A professional training framework. *Observatório de la Economía Latinoamericana*, 22(12). <https://doi.org/10.55905/oelv22n12-091>
68. Sony, M., & Mekoth, N. (2016). The relationship between emotional intelligence, frontline employee adaptability, job satisfaction and job performance. *Journal of Retailing and Consumer Services*, 30, 20–32. <https://doi.org/10.1016/j.jretconser.2015.12.003>
69. Stipic, V., Vicic, M., & Martinović, A. (2025). The impact of digitalization on the workforce, productivity and efficiency of companies. In *2025 MIPRO 48th ICT and Electronics Convention* (pp. 1147–1152). <https://doi.org/10.1109/mipro65660.2025.11131804>
70. Sugianti, G., Sudarmini, K., & Rustini, N. (2024). The influence of global and growth mindsets on organizational commitment and educational staff performance at Universitas Warmadewa: Advancing towards a high-quality and globally competitive university. *Journal of Finance and Business Digital*. <https://doi.org/10.55927/jfbd.v3i3.11660>
71. Supriyadi, S., Puspitawati, N., Parwita, G., & Gama, A. (2025). The impact of digital literacy and communication on employee performance via work motivation. *Journal of The Community Development in Asia*. <https://doi.org/10.32535/jcda.v8i3.4100>
72. Tatli, H., Yavuz, M., & Ongel, G. (2023). The mediator role of task performance in the effect of digital literacy on firm performance. *Marketing and Management of Innovations*. <https://doi.org/10.21272/mmi.2023.2-08>
73. Troll, E., Venz, L., Weitzenegger, F., & Loschelder, D. (2021). Working from home during the COVID-19 crisis: How self-control strategies elucidate employees' job performance. *Applied Psychology: An International Review*, 71, 853–880. <https://doi.org/10.1111/apps.12352>
74. Türkistanlı, T., & Kök, G. (2024). The relationship and the impact of remote work arrangements on freight forwarders' job performance, satisfaction, and motivation. *Dokuz Eylül Üniversitesi Denizcilik Fakültesi Dergisi*, 16(1), 71–100. <https://doi.org/10.21825/deu.dergisi.1234567>

- org/10.18613/deudfd.1459049
75. Vermeeren, B., & Heijden, B. van der. (2022). Employability in the public sector: The impact of individual and organizational determinants. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1041618>
 76. Viterouli, M., Belias, D., Κουστέλιος, Α., & Tsigilis, N. (2025). Building public servant adaptability: How self-directedness moderates transformative learning experiences. *International Journal of Public Administration*, 1. <https://doi.org/10.1080/01900692.2025.2511022>
 77. Wirapraja, A., & Hariyanti, N. (2025). The effect of self-control on employee performance with cyberloafing as a moderating variable. *Jurnal Manajemen dan Kewirausahaan*. <https://doi.org/10.26905/jmdk.v13i1.15400>
 78. Wolor, C., Suhud, U., Nurkhin, A., Hoo, W., & Rababah, M. (2025). Unleashing the potential of learning agility: A catalyst for innovative work behavior and employee performance. *Public Health of Indonesia*. <https://doi.org/10.36685/phi.v11i2.992>
 79. Yanto, M. (2025). The influence of digital literacy on employee performance with work ethic as a moderating variable. *Jurnal Teknologi dan Manajemen Industri Terapan*. <https://doi.org/10.55826/jtmit.v4ii.1123>
 80. Ybarra, O. (2023). The skills that help employees adapt: Empirical validation of a four-category framework. *PLOS ONE*, 18(2). <https://doi.org/10.1371/journal.pone.0282074>
 81. Yıldırım, M., Dilekçi, Ü., & Manap, A. (2024). Mediating roles of meaning in life and psychological flexibility in the relationships between occupational stress and job satisfaction, job performance, and psychological distress in teachers. *Frontiers in Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1349726>
 82. Zimmermann, S. (2020). Digital fluency – A facilitator of digital work performance? *Academy of Management Proceedings*, 2020, 13755. <https://doi.org/10.5465/ambpp.2020.13755abstract>.

APPENDIX A: Questionnaire items and Sources**Job Performance** (Pedro & Juan, 2019)**Rate your Job Performance based on the following items.**

		Not at all	Slightly high	Fairly high	High	Very High
JP1	I managed to plan my work so that I finished it on time	1	2	3	4	5
JP2	I kept in mind the work result I needed to achieve	1	2	3	4	5
JP3	I was able to set priorities	1	2	3	4	5
JP4	I was able to carry out my work efficiently	1	2	3	4	5
JP5	I managed my time well	1	2	3	4	5
JP6	On my own initiative, I started new task when my old tasks were completed	1	2	3	4	5
JP7	I took on challenging tasks when they were available	1	2	3	4	5
JP8	I worked on keeping my job-related knowledge up-to-date	1	2	3	4	5
JP9	I worked on keeping my work skills up-to-date	1	2	3	4	5
JP10	I came up with creative solutions for new problems	1	2	3	4	5
JP11	I took on extra responsibilities	1	2	3	4	5
JP12	I continually sought new challenges in my work	1	2	3	4	5
JP13	I actively participated in meetings and/or consultations	1	2	3	4	5
JP14	I complained about minor work-related issues at work	1	2	3	4	5
JP15	I made problems at work bigger than they were	1	2	3	4	5
JP16	I focused on the negative aspects of situation at work instead of the positive aspects.	1	2	3	4	5
JP17	I talked to colleagues about the negative aspects of my work					
JP18	I talked to people outside the organization about the negative aspects of my work	1	2	3	4	5

Note: Independent Variables adopted from (Freebody, 2023)**ADAPTABILITY****How confident are you of your ability to...?**

		Not at all confident	Slightly confident	Fairly confident	Confident	Very confident
Eff_AD1	find out about the changes in your industry or occupation?	1	2	3	4	5
Eff_AD2	consider how trends or changes in your industry will affect your work?	1	2	3	4	5
Eff_AD3	develop strategies to respond to changes in your industry?	1	2	3	4	5

Continuation Table:

How confident are you of your ability to...?		Not at all confident	Slightly confident	Fairly confident	Confident	Very confident
Eff_AD4	implement new ways of working to suit changes in your industry or work environment?	1	2	3	4	5
Eff_AD5	manage the development of new procedures or guidelines in response to changes in your industry or work environment?	1	2	3	4	5

DIGITAL FLUENCY

How confident are you of your ability to...?		Not at all confident	Slightly confident	Fairly confident	Confident	Very confident
Eff_DF1	learn how to use new technologies?	1	2	3	4	5
Eff_DF2	work with new technologies?	1	2	3	4	5
Eff_DF3	consider how new technologies could be used in your work?	1	2	3	4	5
Eff_DF4	decide on whether new technologies should be employed at your workplace?	1	2	3	4	5
Eff_DF5	oversee or manage the implementation of new technologies?	1	2	3	4	5

GLOBAL PERSPECTIVE

How confident are you of your ability to...?		Not at all confident	Slightly confident	Fairly confident	Confident	Very confident
Eff_GP1	find out about global issues or trends?	1	2	3	4	5
Eff_GP2	conduct research regarding global issues or trends?	1	2	3	4	5
Eff_GP3	collaborate with people from overseas?	1	2	3	4	5
Eff_GP4	generate/establish/build up relationships with people overseas?	1	2	3	4	5
Eff_GP5	inform others about how to respond to global issues or changes?	1	2	3	4	5

LEARNING AGILITY

How confident are you of your ability to...?		Not at all confident	Slightly confident	Fairly confident	Confident	Very confident
Eff_LA1	make plans for your own work-related learning?	1	2	3	4	5
Eff_LA2	identify your own development needs?	1	2	3	4	5
Eff_LA3	record what you have learned from your own work?	1	2	3	4	5
Eff_LA4	measure the progress of your own learning or development?	1	2	3	4	5
Eff_LA5	make decisions about your own learning activities or training courses?	1	2	3	4	5

SELF MANAGEMENT

How confident are you of your ability to...?		Not at all confident	Slightly confident	Fairly confident	Confident	Very confident
Eff_SE1	manage your own stress or emotions?	1	2	3	4	5
Eff_SE2	maintain your own physical or mental health?	1	2	3	4	5
Eff_SE3	prioritise tasks and goals effectively?	1	2	3	4	5
Eff_SE4	employ time management techniques?	1	2	3	4	5
Eff_SE5	build a professional image or reputation?	1	2	3	4	5