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SMES' Resilience through Velocity of ICT: The Role of Workforce Agility and Performance

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ABSTRACT

Research Aims: This study aims to investigate the empirical gap in understanding how workforce readiness in ICT influences the success of digital adoption and its subsequent impact on SME sustainability within the context of digital transformation.

Design/methodology/approach: The research employs a quantitative explanatory approach. Data were collected from 400 SME entrepreneurs in Tangerang, Indonesia, using an online questionnaire with a five-point Likert scale. The study utilized a purposive sampling technique and analysed the data using Structural Equation Modelling (SEM) with the LISREL application. The analysis included validity and reliability tests, confirmatory factor analysis (CFA), and path analysis to test the hypothesized relationships.

Research Findings: The findings indicate that ICT Adoption has a significant positive effect on both Workforce Agility and SME Performance. Furthermore, ICT Literacy has a significant positive effect on Workforce Agility, but its direct effect on SME Performance is not significant. In addition, Contrary to expectations, Workforce Agility does not have a significant direct effect on SME Performance. This suggests that while ICT skills (literacy) and the actual use of technology (adoption) make the workforce more agile, and adoption directly boosts performance, workforce agility itself may not be a direct driver of performance in the SME context. Other factors, such as entrepreneurial leadership and innovation capability, may be more critical.

Theoretical Contribution/Originality: This research provides originality by empirically testing the mediating role of Workforce Agility in the relationship between ICT capabilities (both literacy and adoption) and SME performance, area with limited prior empirical study. It contributes to theory by revealing the nuanced relationships between these variables, specifically that ICT Literacy's impact on performance is fully mediated by other factors, and that the presumed direct link between Workforce Agility and performance in SMEs may not hold, suggesting a need to reconceptualize agility's role in this specific business context. The study offers a validated model and insights crucial for developing strategies to enhance the competitiveness and sustainability of SMEs in a digital economy.

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Introduction

A salient characteristic of contemporary and future business organisations is the profound transformation instigated by technological disruption (Dehghani et al., 2020). Concurrently, the business environment is evolving at an unprecedented pace, necessitating varying degrees of adaptation to novel circumstances (Munteanu et al., 2020).Typically, such pervasive changes are catalysed by the onset of regional crises. A crisis, by definition, represents an unexpected alteration that paradoxically intensifies business competitiveness while simultaneously eroding organisational resilience. To ensure sustainability within such a dynamic environment, organisations must adopt smart technological approaches to enhance their agility (Almahamid, 2018). Consequently, it is imperative for micro, small, and medium-sized enterprises (SMES) to intensify their risk mitigation efforts in line with the accelerating pace of technological advancements.

MSMEs constituted one of the most severely impacted business sectors during the COVID-19 pandemic in Indonesia. During this period, data indicated that 82.9% of MSMEs experienced negative consequences, while only 5.9% reported positive impacts (Katadata, 2020). This unavoidable situation for business actors was largely attributed to a lack of fundamental competitive advantages, particularly in information and communication technology (ICT). Recognizing this condition, small and medium-sized enterprises must adopt anticipatory and adaptive measures concerning technology. Consequently, this amplifies the significance of digital literacy skills, which are crucial for MSMEs to effectively identify and re-engage customers (Cueto et al., 2022). Furthermore, Information, Communication, and Technology (ICT) support is vital in providing a competitive advantage for enterprises across micro, small, and medium scales (Phuthong, 2022).

Micro, Small, and Medium-sized Enterprises (MSMEs) play a critically vital role in the national economy. Amidst the COVID-19 crisis, MSMEs contributed a substantial 61% to the national GDP (Lokadata.com, 2022). Furthermore, the number of MSME actors in Indonesia reached 65.5 million by 2019 (databoks.katadata.co.id, 2022), increasing to 66 million in the current year compared to the previous year (kompas.id, 2024). Despite this significant presence, the affiliation of MSMEs with Information and Communication Technology (ICT) remains minimal, constituting only 13% of the total (Kemenkominfo, 2020). Given this remarkably low participation, efforts to empower technological knowledge are imperative to enhance MSME resilience against crises and drive operational transformation. Therefore, ICT support in realizing a digital spectrum is crucial, facilitating business processes to more easily reach consumers and foster growth within a shared ecosystem. Consequently, the accelerated utilization of ICT during the pandemic crisis emerged as an innovative solution for ensuring business continuity (Lee & Song, 2022).

Information and Communication Technology (ICT) is ubiquitous, manifesting in various transformative forms across all facets of life to radically alter business procedures and activities, primarily aiming to enhance customer proximity. Evidence demonstrates that digitalization assists companies in fulfilling customer needs (Tabuena et al., 2022), expediting communication and adaptation (Haruna, 2022), and plays a pivotal role in facilitating the transformation of the MSME sector, specifically in areas such as service delivery, productivity, innovation, and customer relationships (Dana et al., 2022).This impetus for drastic change was largely driven by the physical restrictions imposed by the global COVID-19 pandemic over the past two years. Furthermore, these social restrictions led to a decline in income and employee well-being, exacerbating the overall situation (Wardani et al., 2022). Consequently, the unpreparedness of the MSME sector to adopt and adapt to digital technology resulted in consumers opting to transact with retailers who had already established digital business infrastructure.

Customer engagement is conceptualized as a reciprocal, interactive process (Naumann et al., 2020). Furthermore, it is defined as a state arising from experiential interactions (Hollebeek et al., 2021). Concurrently, the proportion of time customers spend interacting with a retailer becomes a crucial indicator of their engagement with products and services. Beyond this, customer engagement has been recognized as key to analyzing customer responses (Badenes-Rocha et al., 2019) and can even strengthen a company's long-term reputation (Ballester et al., 2021).

Customer involvement in virtual environments necessitates the ability to comprehend non-verbal cues (Collina, 2021). Data indicates that Indonesia's mobile phone connectivity has reached 345.3 million devices, while the population stands at 174.9 million. This suggests that, on average, each Indonesian possesses two or more Smartphone (datareportal.com, 2022). Consequently, it can be inferred that the populace demonstrates proficient skills in online reading, communication, and transactions. Therefore, by profoundly understanding evolving consumer behaviour, MSMEs must adapt and integrate with Information and Communication Technology (ICT) to effectively compete at both national and global levels. Technological advancements signify that local e-commerce has attained a global perspective (Almtiri et al., 2023). As a result, this digital transformation is capable of driving economic growth and high employment absorption (Sahut et al., 2021).

The impetus for digitalisation led to a surge in sales during the pandemic. In 2020, e-commerce recorded transactions totalling IDR 266.3 trillion (Arita Nugraheni, 2022), a remarkably substantial value. This phenomenon is attributable to the nearly ubiquitous expansion of digital infrastructure across all regions. Recognizing this signal, MSME actors sought opportunities during the crisis. For businesses, digitalisation serves as a crucial medium for enhancing and fostering sustainable business growth. Furthermore, with the support of the "UMKM Go Online" program initiated in 2017, government empowerment assistance in fostering MSME development is undeniably significant (Erlanitasari et al., 2020).

Furthermore, the successful implementation of ICT applications can enhance economic efficiency (Li et al., 2023). Through the widespread adoption of ICT, MSMEs gain speed and reliability in conducting transactions, facilitate real-time communication, and are able to reduce costs. Consequently, the benefits derived from consumer involvement are realised across all sustainable business transactions and can be managed effectively over time. In alignment with the acceleration of ICT within society, business actors must maintain resistance in sustained transactional relationships to foster the growth of MSME performance.

Stakeholder indifference to the importance of ICT skills can significantly limit - competitive superiority (Okundaye et al., 2019). Within the context of business and other transactions, ICT tools play a highly strategic role in fostering advantage, enhancing value, and expanding market reach (Okeudo et al., 2022). Previous research on ICT acceleration in MSMEs has demonstrated a significant impact on national economic growth (Syarif et al., 2022). One notable example is the implementation of open-source Enterprise Resource Planning (ERP) applications in MSMEs, which greatly assists business processes (Afiana et al., 2022). Furthermore, a study by (Lamido et al., 2022) indicates that ICT adoption supports management in increasing profitability. Therefore, neglecting the use of ICT in the current era will inevitably lead to a decline in competitiveness.

ICT encompasses hardware, software, and various application services that provide insights into diverse business operations and can enhance performance and customer engagement during the transition to digitalization. ICT is characterized by its various forms, including collecting and editing information, as well as structuring and delivering or communicating information to customers through technology (Mugobi & Mlozi, 2021). Therefore, the expected outcome when organizations adopt ICT is an increase in workforce agility. Crucially, a key determinant of workforce agility is the workforce's knowledge of ICT (Almahamid, 2018). Consequently, companies shifting from conventional to digitalized business processes can realize benefits, provided that their workforce is proficiently digitally literate in performing tasks concurrently with technological integration, whether indirect or direct.

The concept of workforce agility has been re-popularized to effectively address the accelerating pace of change and uncertainty. Its importance for MSMEs lies in maintaining an accurate work-life balance, fostering competitiveness, facilitating easy adaptation, and enabling rapid responses to unexpected changes. This allows business leaders to cultivate more agile and responsive teams. Therefore, this research meticulously focuses on the direct and indirect effects of ICT literacy and ICT adoption on enhancing MSME performance growth, specifically by examining the mediating role of workforce agility. The findings of this study are expected to benefit MSME actors by promoting competitive sustainability.

Consequently, this research aims to explore existing gaps to generate effective solutions. First, there is a paucity of empirical studies examining the mediating role of workforce agility between ICT literacy and ICT adoption on MSME performance

growth. Second, there is a limited understanding of how workforce readiness in ICT literacy influences the success of ICT adoption and its subsequent impact on MSME sustainability. Finally, there is a lack of comprehensive research integrating the concept of workforce agility within the context of MSME development in the era of digitalization. Thus, this study endeavours to address these shortcomings by empirically investigating the influence of ICT literacy and adoption on MSME performance, through the mediating role of workforce agility as a key variable in enhancing the competitiveness and sustainability of MSMEs in Indonesia.

Literature Review

ICT Literacy

Information and Communication Technology (ICT) emphasizes integrated and unified functions, combining technology, information, and communication to collect, store, process, produce, publish, and retrieve information in unprecedented ways (Al-Mamary, 2022). Information Communication Technology (ICT) represents a digital technological structure specifically designed for business needs (Chandrashekar & Ahmadon, 2021). In business management, ICT knowledge is essential for recording, storing, and processing data into actionable information (Ouédraogo et al., 2022). Possessing ICT skills can contribute significantly to achieving performance in local SMEs (Budiningsih et al., 2022). Furthermore, the digitalization of MSMEs is consistently shown to enhance performance (Daud et al., 2022). Additionally, workers with ICT proficiency can help increase MSME productivity (Lee & Song, 2022). Moreover, ICT literacy can positively improve competency. Therefore, in the current industrial era, mastering ICT is crucial, as many jobs require a minimum level of technological knowledge (Akhir & Murwaningsari, 2020). Consequently, the evolving digital landscape demands economic growth at the MSME, national, and global levels. Thus, a workforce proficient in ICT literacy, media literacy, and internet/online literacy is expected to enhance agility in supporting company performance (Nikou et al., 2022), forming a foundational skill for the future (Hoang, 2019).

H1a : ICT Literacy Affects SMEs' Performance

H1b : ICT Literacy Affects Workforce Agility

ICT Adoption

ICT adoption represents a crucial competitive strategy in business. The utilization of ICT offers substantial benefits to both consumers and business actors, exemplified by advancements such as e-shopping, e-commerce, and e-payment. Moreover, it serves as an effective channel for increasing product sales (Ibrahim et al., 2016). Furthermore, the adoption of ICT enables businesses to rapidly expand, as failure to do so risks disruption (Istifadah & Tjaraka, 2021). ICT adoption plays a vital role in enhancing production process efficiency, improving business performance, and streamlining management. Consequently, ICT tools in business

can strengthen engagement relationships with customers (Martinez-Gomez et al., 2022). Additionally, ICT is capable of fostering innovation, delivering excellent client service, and being more economical (Karakara & Osabuohien, 2020). There are three primary components within ICT: computer technology, communication technology, and media technology (Wahab et al., 2020). The combination of these three components triggers its expansion in the economic sphere. Research conducted by (Wahab et al., 2020) indicates that ICT adoption in SMEs can enhance MSME performance. More specifically, (Ziemba, 2019) states that the quality of ICT directly impacts business continuity. Therefore, the Industry 4.0 revolution facilitates MSMEs in elevating their business management to a more professional level through the extensive utilization of ICT, ultimately driving results-oriented outcomes (Stek, 2022). Thus, ICT adoption is capable of increasing workforce agility and contributing to improved company performance.

H2a : ICT Adoption Affects SMEs' Performance

H2b : ICT Adoption Affects Workforce Agility

Workforce Agility

Workforce agility is characterized as a specific capability, attitude, and behaviour inherent in individuals (Muduli & Pandya, 2018) (Salmen & Festing, 2021). Agility, in essence, is the ability to respond to opportunities and threats (Elmaya Sari Pulungan et al., 2022). However, two primary aspects define it: (a) the capacity to clearly comprehend change, and (b) the ability to leverage change as an opportunity (Petermann & Zacher, 2021). Agility is a crucial attribute for employees to effectively navigate business dynamics. As valuable organizational assets, employees must adapt appropriately to contribute benefits to the organization's continuity. The term workforce agility represents a multidimensional approach (Junior & Saltorato, 2021). In this context, workforce agility must enable individuals to adjust to unexpected changes (Saeed et al., 2022). Previous research has compiled several attributes of workforce agility, including: Adaptability, Motivation, Training, Participation, Empowerment, Speed, Flexibility, Innovation, Proactivity, Incentive Teamwork, Multi-tasking, Skills, and Competence (Almahmeed & Salih, 2021). Nevertheless, an agile workforce can assist organizations in confronting change, with the expectation of enhancing company performance, fostering innovative and creative solutions, and achieving competitive advantage (Das et al., 2023).

H3: Workforce Agility affects SMEs' Performance

MSMEs

MSMEs are one of the main pillars of a country's economy, as they are rich in innovation, creativity, and serve as providers of employment (El-Sady et al., 2022) as well as acting as a catalyst for poverty alleviation (Onyeiwu & Abayomi, 2020). MSMEs are defined as productive businesses owned by individuals or business entities, as regulated under Law Number 20 of 2008 (Luthfi et al., 2022). Furthermore,

MSMEs are characterized by an employment threshold ranging between 100 and 500 workers (Klewitz & Hansen, 2014). Due to their significant impact on the national economy, MSMEs are legally mandated to be defined based on their business scale characteristics. Unlike large enterprises, which generally exhibit greater stability in capital capacity and other production factors, MSMEs often rely heavily on their human resources to remain competitive in the market. This is because human resources are the primary organizational factor capable of driving change, creating value, and building innovation infrastructure (Wang et al., 2010). Several instruments are used to measure organizational performance, including productivity, expansion, competitiveness, profitability, and sales growth. The combination of these factors yields optimal results when supported by variables such as workforce agility, adoption, and sustainable ICT skills.

Business Size	Characteristics	Criteria	
		Assets	Turnover
Micro Enterprise	• The commodities traded frequently change and are not fixed. • Does not yet have a permanent business location. • No proper financial recording. • Business finances and personal finances are generally not separated (no separation of business entity). • Lack of entrepreneurial spirit. • Most do not yet have access to banking or formal financial institutions. • Does not have a Tax Identification Number (NPWP). • Examples: Street vendors and traders in traditional markets.	Max. IDR 50 million	Max. IDR 300 million

Small Enterprise	• The type of commodities sold is generally fixed. • Business location is stable and rarely moves. • Already capable of creating cash flow reports, albeit still simple. • Has begun to separate the company's financial allocation. • Already has business legality, including a Tax Identification Number (NPWP). • Already has experience in entrepreneurship. • Already has access to funding sources (banking). • Does not yet have a comprehensive business plan. • Examples: Wholesale market agents and middleman collectors.	>IDR 50 million – IDR 500 million	>IDR 300 million – IDR 2.5 billion
Medium Enterprise	• Already has good corporate organizational management in finance, production, and marketing. • Financial management is well-organized and facilitates auditing by external parties. • Has complete company legality. • Already has access to various funding sources. • Has an educated and trained workforce. • Examples: Businesses in the mining sector.	>IDR 500 million – IDR 10 billion	>IDR 2.5 billion – IDR 50 billion

Source: Bank of Indonesia (2015)

Method

The design of this research uses a quantitative explanatory approach. Through explanatory studies it is expected to be able to find out how the influence between constructs and patterns, directions, and strengths on each of these influences (Leedy & Ormrod, 2005). The data collection method in this study employs a non-probability sampling approach. Non-probability sampling is considered more reliable compared to other approaches and is capable of providing crucial guidance for obtaining potential information related to the population (Sekaran & Bougie, 2016). This study utilizes purposive sampling as the approach for collecting field data. This study analyzes the implications of ICT Literacy and ICT Adoption on SMEs' Performance through Workforce Agility. The research subjects consisted of 400 SME entrepreneurs in Tangerang who have used more than one ICT application. Data were collected through an online questionnaire facilitated by Google Forms. This selection method was employed to facilitate the data collection process for the researchers. Data were

gathered using a five-point Likert scale: 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), and 5 (Strongly Agree). The research method utilized Structural Equation Modeling (SEM) analysis with the assistance of the LISREL application. Furthermore, sample collection employed a purposive sampling approach. The study conducted preliminary descriptive data validation using SPSS version 19, followed by model testing using LISREL. The analytical tools applied included outer loading, Validity and Reliability Tests, Confirmatory Factor Analysis (CFA), and Path Analysis. The independent variables employed are ICT Literacy and ICT Adoption, mediated by Workforce Agility. Meanwhile, the dependent variable is SMEs' Performance. Figure 1 shows the model, while Table 1 describes the operational definitions of the variables, dimensions and indicators in this study.

Table 1. Indicators Measurement Procedure

Construct Variables	Indicators	References
Literacy of ICT	• Understanding the general overview of ICT, specifically for applications currently in use (LIT 1). • Understanding how to use ICT currently in use (LIT 2). • Understanding critical attitudes towards the use of ICT (LIT 3).	(Masrifah et al., 2022)
Adoption of ICT	• Ability to use applications efficiently via mobile phones or PCs (ADP 1). • Ability to improve business operations (ADP 2). • Ability to support business performance and innovation (ADP 3).	(Kyakulumbye & Pather, 2022) Park, S. (2022)
Workforce Agility	• Ability to enhance work innovation (WAG 1). • Ability to respond to and resolve issues promptly (WAG 2). • Ability to be more proactive, self-aware, and enthusiastic (WAG 3). • Ability to adapt and be entrepreneurial (WAG 4).	(Azmy, 2021) (Abou-AL-Ross & Shatali, 2022)
SMSES Performance	• Ability to provide value to customers (SMP 1). • Ability to achieve MSME objectives (SMP 2). • Ability to achieve cost efficiency and increased productivity and market durability (SMP 3).	(Nicu, 2012)

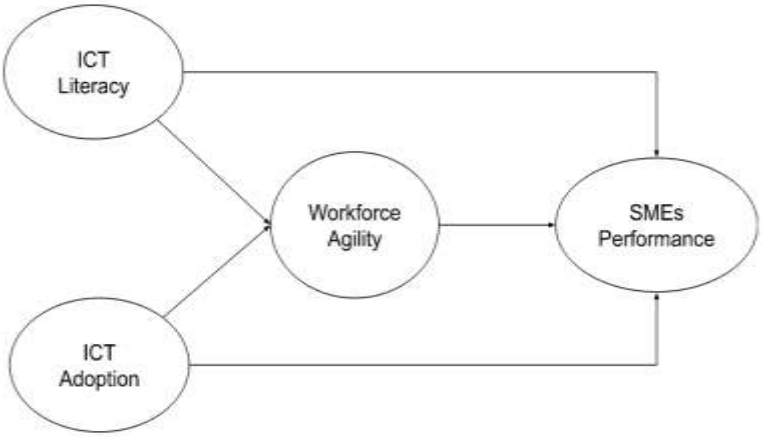

Figure 1. Conceptual Framework

Results And Discussion

Figure 2 depicts the factor loading values for each indicator. Overall, all values obtained were above 0.5, indicating that all indicators are declared valid. Furthermore, based on this data, calculations of CR and AVE were performed to measure reliability, as shown in matrix table 2.

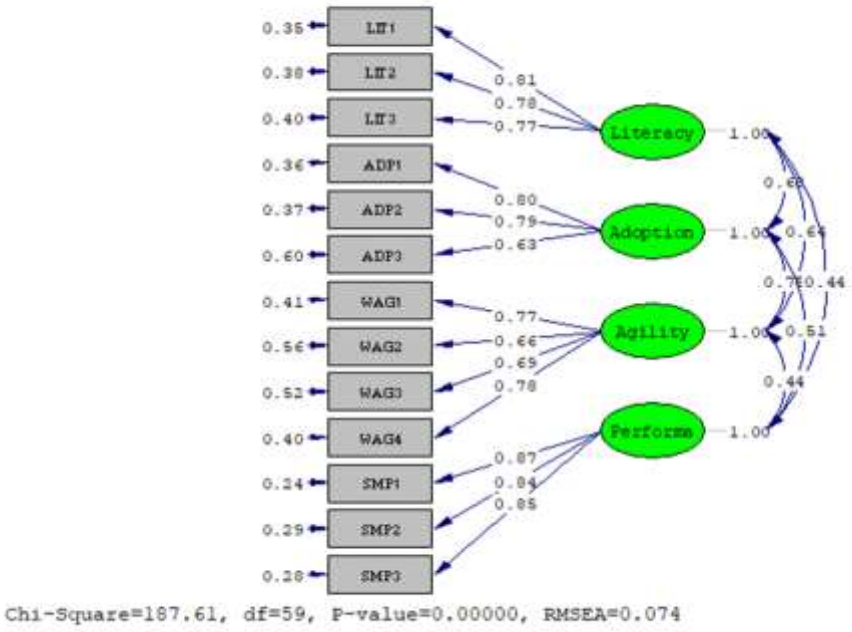

Figure 2. The Factor Loading Values for Each Indicator from the Standardized Solution

Table 2. Confirmatory Factor Analysis, CR and AVE

Variables	Code	Paragraph	Standardized Solution	**CR**	**AVE**
ICT Literacy	LIT1	Understanding the general overview of ICT, specifically regarding currently used applications.	0,81	0,8325	0,6237
	LIT2	Understanding how to utilize currently employed Information and Communication Technology (ICT)	0,79		
	LIT3	Understanding the critical stance toward the use of Information and Communication Technology (ICT).	0,77		
ICT Adoption	ADP1	The proficiency in efficiently leveraging applications across mobile devices and personal computers.	0,80	0,7862	0,5535
	ADP2	Capable of enhancing business operations	0,79		
	ADP3	Capable of enhancing business performance and innovating	0,63		
Workforce Agility	WAG1	The capacity to foster workplace innovation	0,77	0,8165	0,5279
	WAG2	The ability to respond to and address problems promptly	0,66		
	WAG3	The development of increased proactivity, independent awareness, and enhanced vitality	0,69		
	WAG4	Adaptable and Entrepreneurial-Oriented	0,78		
SMSES Performance	SMP1	The ability to provide value to customers	0,87	0,8888	0,7271
	SMP2	The Capability of SMEs to Attain Their Objectives	0,84		

SMP3	The capacity for cost efficiency, productivity improvement, and market durability	0,85

Source: Research Primary Data (2025)

Based on Table 2, the results indicate that the indicators for each variable are declared valid, meaning all indicators are capable of effectively measuring the construct variables (Hair et al., 2010). Furthermore, mathematical calculations demonstrate that the Composite Reliability (CR) and Average Variance Extracted (AVE) values for all variables are significantly reliable. An instrument for measuring a variable is considered reliable if it has a Cronbach's Alpha value >0.70 and an AVE value of at least 0.50, calculated using the following equation:

$$r_{ac} = \left(\frac{k}{k-1}\right)\left[1 - \frac{\Sigma {\sigma_b}^2}{{\sigma_t}^2}\right]$$

Explanation:

r_{ac} = *Cronbach's alpha reliability coefficient*
k = *number of question items*
$\Sigma {\sigma_b}^2$ = *total variance of all items*
${\sigma_t}^2$ = *total variance*

The AVE formula is as follows:

$$AVE = \frac{\Sigma\, Standardized\ Loading^2}{\Sigma\, Standardized\ Loading^2 + \Sigma \varepsilon j}$$

Furthermore, Table 3 demonstrates that the overall Goodness-of-Fit (GoF) parameters are acceptable, as the statistical test values meet the established thresholds. Consequently, it can be concluded that the proposed conceptual model framework in this study is statistically sound and well-fitting.

Table. 3 Goodness of Fit Statistics

Measure	Estimate	Threshold	Interpretation
CMIN	187.61	-	-
DF	59	-	-
CMIN/DF	3.17	1 to 3	Good
Normed Fit Index (NFI)	0.96	0.90	Good
Non-Normed Fit Index (NNFI)	0.97	0.95	Good
Parsimony Normed Fit Index (PNFI)	0.73	0.50	Good
Comparative Fit Index (CFI)	0.97	0.90	Good
Incremental Fit Index (IFI)	0.97	0.91	Good
Relative Fit Index (RFI)	0.95	0-1	Model Fit
Root Mean Square Error of Approximation (RMSEA)	0.074	0.05 to 0.08	Good

Source: Research Primary Data (2025)

Table 4. Results of SEM Model

Relations	T-Values	Threshold	Interpretation
ICT Literacy → Workforce Agility	3.16	>1,96	Significantly
ICT Literacy → SMEs Performance	1.73	>1,96	Unsignificantly
ICT Adoption → Workforce Agility	7.29	>1,96	Significantly
ICT Adoption → SMEs Performance	3.17	>1,96	Significantly
Workforce Agility → SMEs Performance	0.97	>1,96	Unsignificantly

Source: Research Primary Data (2025)

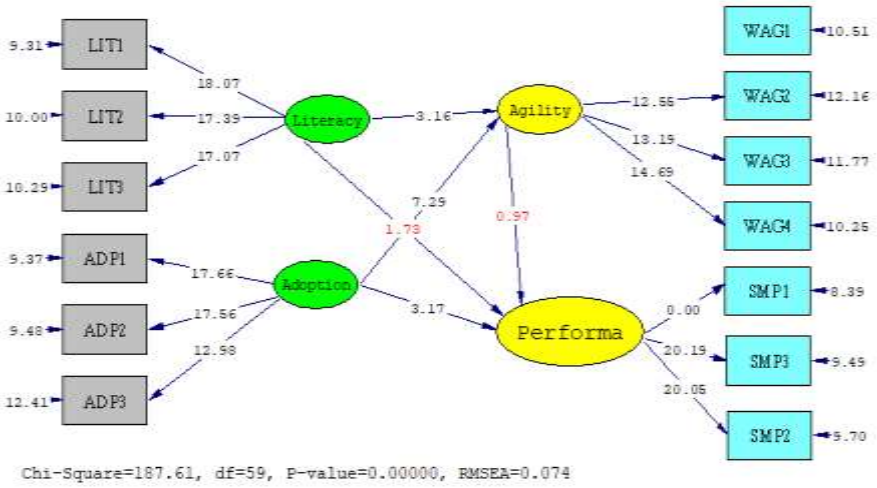

Figure 3. Outer Model and T-Values

Discussion

The Influence of ICT Literacy on Workforce Agility

The T-values from the Structural Equation Modeling (SEM) results demonstrate that the influence of ICT Literacy on Workforce Agility is robust and highly significant, with a substantial value of 3.16. This aspect is particularly crucial for SMEs undergoing the current extensive transition towards digitalization. The ICT Literacy indicators suggest that mastery and/or knowledge in the field of ICT can enhance individual work velocity and foster solid teamwork to achieve superior performance. Furthermore, proficiency in using digital tools is an integral component of comprehensive ICT knowledge, essential for confronting change, sustaining innovation, and boosting productivity.

Subsequently, the study conducted by (Muduli & Choudhury, 2024) reveals the interesting finding that ICT literacy is a determinant factor of workforce agility, supported by appropriate management knowledge. Research by (Maran et al., 2022) indicates that high digital literacy self-efficacy enables individuals to confront future

changes in the business landscape. Moreover, life in the Society 5.0 era and the advancements of Industry 4.0 necessitate ICT skills that require adaptation amidst rapid technological acceleration (Miah et al., 2024).

Furthermore, ICT knowledge promotes innovative work behavior and cultivates workforce agility (Huu, 2023). Therefore, the impact of ICT literacy on workforce agility is highly significant, as it enables employees to adapt swiftly to changing circumstances, leverage technology to support innovation and productivity, and ensures tasks can be directed and executed effectively in the digital era. Companies, especially SMEs, are continuously striving to invest in their human resources to enhance workforce agility skills and facilitate digital transformation.

Consequently, it is imperative for companies and organizations to implement training and development programs to enhance their workers' information technology skills. By improving ICT knowledge, workers can mitigate the risk of errors and injuries that may arise from a lack of understanding of the technologies they utilize. In conclusion, this research affirms that the level of Information and Communication Technology (ICT) knowledge plays a pivotal role in augmenting workforce agility. The adoption of information technology in the workplace can enhance worker efficiency and productivity while reducing the risk of errors and occupational injuries. Thus, companies and organizations must prioritize the enhancement of workers' ICT knowledge through targeted training and informatics skill development initiatives. This will allow them to maximize the utilization of information technology to achieve superior outcomes in the execution of their daily tasks.

The Influence of ICT Literacy on SMEs Performance

The T-values results indicate that the influence of ICT literacy on SME performance is not significant, with a value of 1.73. This finding starkly contrasts with the general expectation that comprehensive ICT knowledge should enhance SME performance. However, other determinants of SME performance success include the ability to provide adequate infrastructure and internet access, which undoubtedly require substantial investment. Furthermore, limited knowledge and the absence of regular training have implications for declining competitiveness.

Other constraints, for instance, the costs associated with adopting ICT hardware and software, necessitate significant investment, particularly if not supported by substantial company profits (Sari & Ahmad, 2022); (Okundaye et al., 2019). Subsequently, government and institutional support is crucial in facilitating optimal solutions. Nevertheless, empowerment efforts continue to be undertaken to achieve maximum performance. Resistance to change is also detrimental to companies, as it can result in various disadvantages, one of which is employee turnover. The contemporary workforce increasingly prefers fast-paced job challenges facilitated by ICT.

Some SMEs have insufficient understanding of the benefits derived from the broad utilization of ICT. Managerial structures must urgently emerge from the shadow of outdated management styles. Hence, awareness of ICT utilization not only supports performance but also provides experience, engagement, customer relationship management, and a medium for public information. Information and Communication Technology (ICT) literacy is essential for Micro, Small, and Medium Enterprises (MSMEs) as it can assist them in enhancing performance and competitiveness. With proficient ICT literacy, MSMEs can leverage technology to expand market reach, improve business processes, and increase operational efficiency. Additionally, ICT literacy enables MSMEs to connect with consumers and business partners more effectively, as well as gain access to various resources and information necessary for business growth.

The Influence of ICT Adoption on Workforce Agility

Based on the T-Values, the influence of ICT adoption on workforce agility indicates a highly significant influence with a value of 7.29. Digital adoption in an era characterized by openness and interconnectedness is an integral part of modern organizational transformation. Several studies have documented the role of digital adoption in driving transformation, strengthening innovation, and enhancing adaptation (Muduli & Choudhury, 2024); (Lai et al., 2021). Furthermore, sustained efforts are required to enhance digital competence through digital training and development for the workforce to confront future technological changes (Motwani & Katatria, 2024). Therefore, ICT adoption not only fosters workforce agility but also cultivates a culture of innovation and increases employee engagement.

The Influence of ICT Adoption on SMEs Performance

ICT has a strong influence on the performance of SMEs, as indicated by a significant T-Value of 3.17. The integration of ICT into business processes significantly enhances organizational performance. It enables responsiveness to changes in technology utilization to achieve maximum productivity. One of its most significant roles lies in improving operational efficiency and reducing costs. Furthermore, robust computational management capabilities facilitate the generation of information for strategic business decision-making. Moreover, ICT adoption enhances competitiveness and expands market reach to potential customers within target segments, while also maintaining relationships and providing accurate information and feedback. Therefore, given the continuously growing market demand, it is imperative for SMEs to be able to identify market trends to effectively meet customer needs.

The Influence of Workforce Agility on SMEs' Performance

Of particular interest is the finding that the influence of workforce agility on SMEs performance demonstrates a coefficient value smaller than its T-value of 0.96.

On the other hand, ICT (Information and Communication Technology) competency poses a challenge for SMEs actors in their efforts to confront competition. Therefore, human resource excellence should be allocated an additional portion of incentives. Based on the survey results, no statistically significant correlation was found between workforce agility and SMEs performance. This finding is consistent across all industries and sectors. Furthermore, the analysis indicates that other factors, such as entrepreneurial leadership and innovation capability, exert a more significant impact on SMEs performance compared to workforce agility (Ahammad et al., 2020).

The lack of correlation between workforce agility and SMEs performance can be attributed to several factors. First, the concept of workforce agility is often overemphasized, and its impact on SMEs performance may be overstated. Second, the relationship between workforce agility and SMEs performance can be influenced by other factors, such as organizational size and structure, the level of technology adoption, and the presence of a competitive work environment (Wahjunianto, 2022). Building resilience through workforce agility is essential for SMEs to navigate uncertainty and disruption. This resilience can be achieved by fostering a culture of continuous learning and adaptability within the organization (Reinhold, 2024).

Conclusions, Suggestions, and Limitations

This study fills a gap in the empirical literature by examining the mediating role of workforce agility in the relationship between ICT capabilities (literacy and adoption) and the performance of SMEs. Additionally, it provides insights for SME stakeholders that the adoption of digital technology can directly improve business performance and help companies survive in times of crisis. Business practitioners undoubtedly place high value on human resources proficient in ICT and its related domains. The findings of this study encourage stakeholders to reformulate corporate strategies based on information and communication technology. However, the two propositions proposed in this study—namely, the influence of ICT Literacy on SME Performance and the influence of Workforce Agility on SME Performance—were found not to exert a significant influence. Nevertheless, these conditions warrant further examination within a more balanced framework and a broader scope of study.

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