

## The Smart Organization Movement: A Review and Research Agenda for Digital Competencies

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**Abstract:** In the rapidly evolving landscape of the digital era, organizations are grappling with the imperative to cultivate and harness digital competencies among their workforce to remain competitive. The 12th Malaysia Plan Mid-Term Review (12MP MTR), under one of the 17 Big Bold Measures calls for strengthening sectors and industries with high growth and high value (HGHV). The call to focus on Global Business Services (GBS), identified as one of the strategic industries on the digital competencies of its future work talent is deemed imperative in producing a future agile workforce. The advent of emerging technologies and the increasing interdependence of various industries on digital platforms necessitate a future workforce that embodies agility in adapting to change. This problem statement delves into the pressing issues surrounding digital competencies and the imperative for a future workforce model characterized by agility. Hence, the main objective of this study is to explore a Digital Competency Model for the Malaysian future agile workforce. Academics and practitioners could also refer to this study to enhance their knowledge of digital competencies and workforce agility using a smart organization perspective.

**Keywords:** *Smart Organization, Workforce Agility, Digital Competency.*

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### 1. Introduction and Background

Digitalization has become a buzzword in the business world and is recognized as something organizations must embrace to stay relevant (Halid, Mui, & Abdul Rahim, 2019). Rapid technological advancement has increased proliferation, resulting in the digitalization of society, and continues to impact and change how organizations work. (Al-Harazneh & Sila, 2021). As a result, in this era of digital disruption, organizations are confronted with the critical challenge of equipping their workforce with the necessary digital competencies to navigate the complexities of the evolving digital ecosystem.

Employees are a critical resource to the organization and act as the stakeholders in the organization's operation. The adoption of Industry 4.0 through smart organization thus has an impact on the employees. As Malaysia is moving towards a digital society in the future, digital competencies are inevitable for both employees and smart organizations. Digital competency, a key factor in workforce agility, is defined as the ability to effectively use digital tools and technologies in the workplace (Oberländer, Beinicke, & Bipp, 2020). Smart organization concepts, on the other hand, are better able than others to cope with technological breakthroughs, social, and cultural problems as well as to compete effectively and develop in an environmentally sustainable way (Adamik & Sikora-Fernandez, 2021).

The significance of digital competency and workforce agility in the context of smart organizations lies in their ability to navigate the rapidly evolving digital landscape and respond effectively to dynamic market conditions. A report by Economist Impact (*Bridging the skills gap: Fuelling careers and the economy in Malaysia, 2023*) revealed that digital skills (65%) are the top focus for employees in Malaysia, with most still prioritizing basic digital skills (83.1%). Advanced digital skills such as artificial intelligence (AI) and machine learning (ML), cloud computing and cybersecurity are also gaining importance. In line with the driving growth in the digital economy, agencies in Malaysia have put tremendous efforts into addressing digital skill gaps among the Malaysian workforce.

The Ministry of Economy's 12th Malaysia Plan Mid-Term Review (12MP MTR) for example highlighted that one of the 17 Big Bold Measures includes strengthening sectors and industries with high growth and high value (HGHV) in line with the Digital Native Agenda 2023 (DNA23) (Kementerian Ekonomi Malaysia, 2023). The emphasis is given to developing the exposure and providing competencies in line with digital transformation

in the global business services industry through smart organization which has been identified as a strategic industry in the 12th Malaysia Plan. The Ministry of Human Resources on the other hand is currently expanding access to high-quality career opportunities in Malaysia through various collaborations with various employers. In other words, enhancing future-ready talent through improving digital competencies to produce a workforce that is resilient and competitive is part of the government's focus for the long term.

However, the traditional models of workforce development are proving inadequate in the face of these dynamic changes (Saputra, 2022). Currently, there are very limited systematic approaches to exploring and mapping digital competencies in the context of an agile workforce, specifically in the context of smart organizations in Malaysia. As a result, organizations often face a dearth of standardized and comprehensive frameworks that define and measure digital competencies. Hence, the absence of universally accepted standards for measuring and developing digital skills hampers the systematic cultivation of a workforce well-versed in the intricacies of the digital realm. It should be noted that by ignoring the establishment of the digital competencies model, the gap between the skills possessed by individuals and those demanded by the digital landscape and agility is widening. This disjuncture not only hinders individual career growth but also impedes organizational progress, as companies find themselves grappling with skill shortages in key areas.

Digital competency is not confined to technical prowess alone. The evolving nature of work requires a synthesis of technical and soft skills. While technical competencies are indispensable, soft skills such as adaptability, collaboration, and problem-solving are equally crucial. Integrating these skill sets harmoniously through the exploration of multidisciplinary digital competencies poses a significant challenge for organizations, as they strive to create a workforce that is not only technically adept but also possesses the interpersonal skills necessary for effective collaboration and problem resolution (Saputra, 2022), in the agile context of smart organizations.

Given the aforementioned research problem regarding the study of digital competencies for the future Malaysian agile workforce, this research explores the digital competency framework through the smart organizations' perspective. The objective of this article is to propose the following propositions:

**Proposition 1:** The Digital Competency framework is characterized by seven dimensions which comprise (1) solving digital problems (PS); (2) information literacy (IL); (3) self-reflecting on the digital environment (RL); (4) attitude towards digitization (AD); (5) handling digital devices (HD); (6) applying digital security (DS); and (7) collaborating due to digital communication.

**Proposition 2:** Workforce agility is characterized by ten dimensions namely (1) decision-making; (2) accepting changes; (3) learning; (4) self-organization; (5) testing; (6) iteration; (7) user centricity; (8) reflection; (9) collaboration; and (10) create transparency.

This theoretical paper seeks to answer the following research questions:

- Why are the components of digital competency important as a model of agility for the future workforce?
- How is the digital Competency for agile workforce being explored by smart organizations with the Global Business Sector (GBS)?

## 2. Literature Review

Digital competency and workforce agility are crucial for the success of smart organizations. Saputra (2022) emphasizes the role of empowering leadership and digital competence in enhancing workforce agility, with the latter serving as a mediator. This is further supported by Toze, Roy, Sharaput and Wilson (2022), who highlight the need for expanded training opportunities to address the challenges posed by smart technologies. The importance of teamwork and digital competence in accelerating workforce agility is underscored by Saputra (2022). Breu (2002) adds to this by identifying the key capabilities of an agile workforce, including competencies and information systems, with a focus on the role of information and communications technology applications in enhancing workforce agility.

The significance of digital competency and workforce agility in the context of smart organizations is paramount in today's rapidly evolving digital landscape. Digital competency refers to the essential knowledge, skills,

abilities, and characteristics required to utilize digital media and technologies effectively and efficiently in the workplace (Murawski & Bick, 2017). This includes the ability to navigate digital tools, communicate effectively through digital channels, collaborate using digital platforms, and adhere to digital security and ethical standards (Oberländer et al., 2020).

On the other hand, workforce agility encompasses the ability of the employees to quickly adapt and respond to changes in the work environment, which is crucial for smart organizations aiming to thrive in a dynamic and competitive market (Adamik & Sikora-Fernandez, 2021; Petermann & Zacher, 2022). Smart organizations leverage digital competency and promote workforce agility as they aspire to remain innovative, competitive, and adaptable in a digitalized environment (Filos & Banahan, 2001). The capability to harness digital technologies effectively allows smart organizations to streamline processes, improve productivity, and enhance their overall performance. Furthermore, having an agile workforce empowers organizations to swiftly respond to market changes, customer demands, and technological advancements, thereby ensuring their sustainability and growth (Quintero, 2022). By fostering digital competency and workforce agility, smart organizations can also create a culture of continuous learning and adaptation, enabling them to stay ahead in the digital age. Ultimately, the synergy between digital competency and workforce agility equips smart organizations to navigate the complexities of the digital landscape, capitalize on emerging opportunities, and drive innovation and growth (Oberländer et al., 2020).

First, digital competency and workforce agility play significant roles in adapting to and thriving in dynamic environments. Digital competency, as a blend of attitudes, knowledge, skills, and talents related to the use of digital technology, is crucial for individuals, groups, and organizations to effectively solve problems, accomplish tasks, and manage information. This is particularly essential in smart organizations where digital technology is integrated into various aspects of operations and decision-making processes (Petermann & Zacher, 2022). Workforce agility, on the other hand, refers to the capability of employees to regulate a dynamic, flexible, and ambiguous working nature through proactive, adaptable, and resilient behaviors. In the context of smart organizations, workforce agility enables employees to respond quickly and effectively to changing circumstances, technological advancements, and market demands. This is especially important in smart organizations as they operate in fast-paced and rapidly evolving environments where the ability to adapt and innovate is crucial for sustainable success (Sameer, 2024). The combination of digital competency and workforce agility empowers smart organizations to leverage digital technologies effectively and enables employees to demonstrate adaptable behaviors that provide options for handling unexpected changes and driving innovation (Mohamad, 2024). This ultimately leads to improved performance, responsiveness to market demands, and sustained competitiveness in the rapidly changing business landscape.

Second, the significance of digital competency and workforce agility in the context of smart organizations lies in their ability to navigate the rapidly evolving digital landscape and respond effectively to dynamic market conditions. Digital competency equips employees with the skills and knowledge to leverage digital technologies, tools, and platforms to enhance productivity, innovate, and adapt to changing business requirements (Fonseca & Picoto, 2020). On the other hand, workforce agility enables employees to be flexible, proactive, and resilient in the face of uncertainty, rapid change, and new opportunities in the digital era. Specifically, in smart organizations, digital competency empowers employees to harness the potential of technologies such as data analytics, artificial intelligence, automation, and cloud computing to drive operational efficiencies, deliver personalized customer experiences, and uncover new business insights (Murawski & Bick, 2017). Meanwhile, workforce agility ensures that employees can quickly adapt to digital transformations, embrace new ways of working, and contribute to organizational innovation and growth in a rapidly changing digital environment. In summary, the synergy between digital competency and workforce agility is essential for smart organizations to thrive in the digital age, enabling them to stay ahead of the curve, seize digital opportunities, and effectively address the challenges posed by digital disruption (Salmen & Festing, 2022).

The purpose of this review is to investigate the influence of digital competence on workforce agility, particularly in the context of smart organization. The key themes and questions addressed include; 1) Understanding workforce agility: The literature review aims to provide a comprehensive understanding of workforce agility as an organizational behavior influenced by both internal and external factors; 2) Antecedents of workforce agility: The review delves into the factors that drive the agility of individuals, groups,

and organizations, exploring both internal factors such as digital competence and external factors like team work; 3) Digital competence: The literature review elaborates on the concept of digital competence and its significance in the contemporary business environment, focusing on its impact on workforce agility; and 4) Research model and methodology: The review also encompasses the description and analysis of the research model and methodology used in the study, including the data collection approach and the statistical analysis techniques employed. These themes and questions collectively aim to provide insights into the interplay between digital competence, teamwork, and workforce agility, ultimately contributing to the understanding of strategies for accelerating workforce agility in the face of dynamic and disruptive changes in the business environment.

### 3. Theoretical Framework

To establish a deeper understanding of the current research, this study explores the nuances of digital competency. Previous research established that digital competency has emerged as a crucial skill set necessary for success in both personal and professional domains. While there is broad consensus on the fundamental aspects of digital competency—encapsulating skills such as online communication, information literacy, and technical proficiency—recent research begins to unveil subtle differences and new perspectives on what digital competency truly encompasses. By examining these nuances, we can enrich our understanding of digital competency and its role in our increasingly digital world.

#### **The General Consensus on Digital Competency and Workforce Agility**

Broadly speaking, digital competency refers to the ability to use digital technology, communication tools, and networks to identify, evaluate, create, and communicate information (Oberländer et al., 2020). Digital competence is defined as a blend of attitudes, knowledge, skills, and talents related to the utilization of digital technology for problem-solving, task accomplishment, communication, information management, knowledge generation, and effective participation in society. It encompasses dimensions such as information processing, communication, content creation, safety, and problem-solving. This competency is influenced by empowering leadership and teamwork, which in turn enhance workforce agility (Saputra, 2022). Digital competence has a positive and significant impact on workforce agility. It enhances the effectiveness of individuals, groups, and organizations in utilizing digital technology for various tasks and activities.

While, workforce agility refers to the ability of individuals, teams, and organizations to adapt, respond, and thrive in a rapidly changing work environment (Sherehiy & Karwowski, 2014). Teamwork also has a positive and significant impact on workforce agility. It is influenced by factors such as digital competence and teamwork. Collaborative efforts and effective teamwork contribute to the adaptability and responsiveness of individuals and organizations in the face of changing work dynamics. (Saputra, 2022). Competency models in the digital era are outdated. There is a need for updated and adaptable competency tools. Workforce agility, crucial for organizational responsiveness, is characterized by intelligence, competencies, collaboration, culture, and information (Breu et al., 2002). The interplay of these factors underscores the importance of digital competency in driving workforce agility consists of 10 dimensions which include decision-making, creating transparency systems, collaboration, reflection, user-centricity, Iteration, testing, self-organization, learning and accepting changes (Petermann & Zacher, 2022).

Theoretical frameworks and models related to digital competency include the concept of digital competence, which encompasses attitudes, knowledge, skills, and talents related to the effective use of digital technology for problem-solving, communication, and information management (Bibi, Al-Ibbini, & Alzoubi, 2023). Workforce agility is influenced by factors such as digital competency and teamwork. Digital competency enhances individuals' and organizations' effectiveness in utilizing digital technology, while teamwork contributes to adaptability and responsiveness (Bibi et al., 2023). Competency models are often used to identify and define the specific competencies needed in different industries and job roles. These models can be developed through methodologies such as deep analysis of literature, expert panel discussions, and mixed methods approaches (Bibi et al., 2023). The development and validation of competency models often involve methods such as surveys, interviews, and data analysis to ensure their reliability and validity. The integration of competencies with human resource co-practices can drive performance improvements in organizations (Samardzic, Ciric Lalic, & Marjanovic, 2022). The concept of workforce agility emphasizes the importance of adaptability,

responsiveness, and the ability to thrive in a rapidly changing work environment (Polo & Kantola, 2020).

Existing debates and variations in definitions of digital competency and workforce agility can be observed in the literature. However, there are no existing debates or variations in definitions related to digital competency, as the concept is generally understood as encompassing attitudes, knowledge, skills, and talents related to the effective use of digital technology for problem-solving, communication, and information management. Digital competency is often defined as the technology-related skills needed to perform in today's business environment. (Polo & Kantola, 2020).

However, there is no unitary definition, and some researchers argue that digital competencies also include abilities, strategies, values, and awareness. (Utomo & Latukismo, 2022). Workforce agility is a concept that emphasizes adaptability, responsiveness, and the ability to thrive in a rapidly changing work environment. There are no specific debates or variations in its definition. This broader definition emphasizes the ability to handle complex situations and utilize psychosocial resources effectively. (Samardzic et al., 2022). On the other hand, workforce agility is a concept that is still not systematically understood. (Jyothirmai, Satish Kumar, & Sowdamini, 2022). While it is recognized as essential for achieving competitiveness, there is no clear consensus on its definition (Sherehiy & Karwowski, 2014). This lack of clarity hinders the development of competency tools that can address the contemporary requirements of digitization. Therefore, there is a need for further research and improvement in defining and understanding both digital competency and workforce agility. Competency models are used to identify and define the specific competencies needed in different industries and job roles. While there may be variations in the specific competencies identified for different roles and industries, there are no significant debates or variations in the overall definition and purpose of competency models. The integration of competencies with human resource practices is generally seen as a way to drive performance improvements in organizations.

### **Digital Competency**

A range of studies have highlighted the critical role of digital competency in enhancing organizational performance. Junior and Macada (2020) identifies four key digital capabilities - sensing, responsiveness, process scanning, and ecosystem connectivity - that drive operational excellence, revenue growth, and customer/stakeholder relationships. Polo and Kantola (2020) underscores the need for updated competency tools to address the digital skills gap, while Oberländer et al. (2020) Offers a comprehensive framework for digital competencies in the workplace. Yu and Moon (2021) further emphasizes the positive impact of digital strategic orientation on organizational performance, mediated by digital competence. These studies collectively underscore the importance of digital competency in driving organizational success in the digital age.

Digital competency plays a crucial role in smart organizations, enabling them to adapt to the challenges of the digital transformation (Bolo-Romero, Gutiérrez-Velasco, Córdova-Berona, & Alvarado-Suyo, 2023). These organizations leverage advanced digital technologies and integrate technical systems with social systems to achieve better performance and competitiveness (Pescatore, 2022). The development of digital competencies is essential for employees in virtual organizations, where work is no longer constrained by traditional concepts of time and space (Cahyarini & Samsara, 2021). Additionally, digital competency is seen as mandatory for civil servants in the public sector, and its implementation faces challenges such as the lack of competency and the need for technology infrastructure improvement (Fonseca & Picoto, 2020). Studies have identified key digital competencies, including data analysis, use, and collaboration through digital technologies, as crucial for companies in the current workplace environment (Saputra & Patrick, 2022). Overall, the literature emphasizes the importance of digital competency in driving organizational success and addressing the demands of the digital era.

Digital competency is a key factor in workforce performance. The key components of digital competency identified in the abstracts include communication and cooperation in the digital environment, solving technical problems in the digital environment, ensuring digital security, and the ability to use digital and innovative technologies, software, and BI platforms. These competencies are necessary for employees to effectively use digital technologies and internet resources, make decisions in a context of uncertainty, and organize effective work. The development of digital competencies is important for employees to adapt to digital transformation

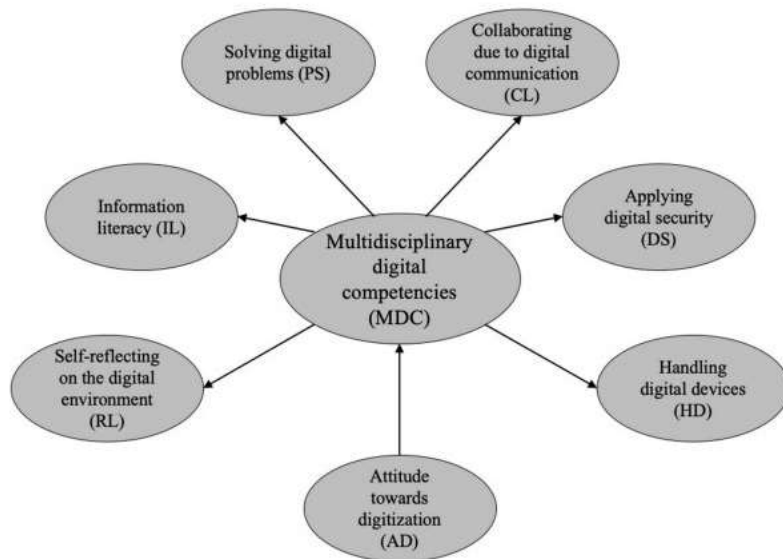


and compete in the labor market (Madzimure & Baloyi, 2022; Saputra & Patrick, 2022; Vartiainen, 2020).

Digital competency relevant to workforce performance includes several key components. These components include knowledge and skills in digital technologies, such as computational technology, modeling, data analytics, and data sciences (Ilmudeen, 2022). Communication and cooperation in the digital environment are also an important competency, as they enable effective collaboration and teamwork in a digital context (Saputra, 2022). Additionally, the IT capability to solve technical problems in the digital environment is crucial for enhancing firm performance and supporting business processes and knowledge management (Wang, Wang, & Archer, 2018). Ensuring digital security is another important competency, particularly for workers.

Other components of digital competency may include the ability to select and develop information from various digital options, as well as the ability to make decisions in a context of uncertainty and organize effective work. Overall, these competencies are essential for employees to navigate the digital transformation of organizations and contribute to improved organizational performance.

**Figure 1: Dimensions of multidisciplinary digital competencies (Roll & Ifenthaler, 2021)**



To summarize the different dimensions of digital competencies, Roll and Ifenthaler (2021) highlight seven key areas that add to the understanding of digital skills. Figure 1 shows the dimensions of multidisciplinary digital competencies (MDC). The first dimension is *solving digital problems (PS)* which focuses on the ability to identify, analyze, and resolve issues. Second, *collaborating due to digital communication (CL)* emphasizes teamwork in a smart organization. The third dimension, *applying digital security (DS)* covers the understanding and implementation of practices that protect information and systems from cyber threats. Next, *handling digital devices (HD)* refers to proficiency in using various digital tools and devices, such as computers and smartphones. Then, *attitude toward digitization (AD)* stresses the need for smart organizations to create a positive atmosphere that encourages a positive attitude toward learning and working with digital devices. Subsequently, *information literacy (IL)* implies that the ability to find, evaluate, and use information is essential to navigate digital information landscapes which is the context of smart organizations. Finally, *self-reflecting on the digital environment (RL)* encourages individuals to assess their digital practices and the impact of digital technologies on the organization. These dimensions will represent the direction of this paper and the approach to developing the theoretical framework for digital competencies in smart organizations.

### Workforce Agility

The literature on workforce agility underscores its importance in the evolving landscape of smart organizations. Muduli (2017) and Junior (2020) both highlight the attributes of an agile workforce, including adaptability, flexibility, and competence, and the management actions that can promote these attributes. Qin (2015) further emphasizes the need for workforce agility in operations management, particularly in uncertain

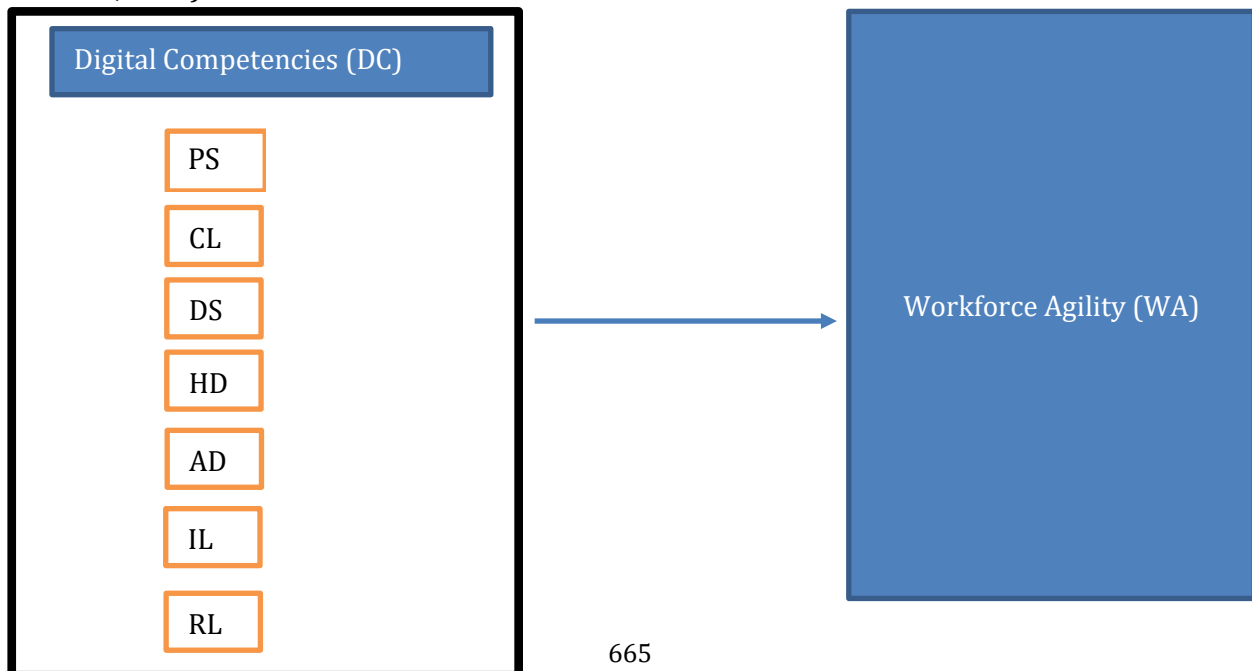
environments, and identifies potential research opportunities in this area. Utomo (2022) provides a comprehensive overview of the trends and patterns in workforce agility literature, offering a roadmap for future research. These studies collectively underscore the relevance of workforce agility in the context of smart organizations, where the ability to respond quickly and effectively to change is crucial.

Workforce agility is a multifaceted concept with various dimensions. Petermann and Zacher (2022) identifies 10 dimensions, including decision-making, transparency, collaboration, reflection, user-centricity, iteration, testing, self-organization, learning, and change acceptance. Junior and Saltorato (2021) further categorizes these dimensions into proactivity, flexibility, adaptability, resilience, and competence, which can be promoted through learning, work organization, human resource management, and organizational culture. Alviani, Hilmiana, Widiyanto, and Muizu (2024) edlves into the psychological traits that underpin these dimensions, such as job-related curiosity, active listening, ambiguity tolerance, learning from past mistakes, anticipation and planning, job self-efficacy, risk-taking, and trust. Muduli (2013) emphasizes the importance of management actions in promoting these dimensions, including training, compensation, empowerment, teamwork, and information systems. These studies collectively highlight the complexity of workforce agility and the need for a holistic approach to its development and implementation.

The intersection of digital competency and workforce agility presents a rich area for future research. Siddoo (2019) and Oberländer et al. (2020) both highlight the importance of digital competencies in the workplace, with Siddoo identifying key competencies such as lifelong learning and teamwork, and Oberländer proposing a comprehensive framework for these competencies. Breu et al. (2002) and Shern, Abdul Halim, and Thurasamy (2022) further emphasizing the role of digital competencies in enhancing workforce agility, Breu identifies intelligence, competencies, collaboration, culture, and information systems as key capabilities, and Imran discusses the need for diverse competencies in the era of digital transformation. Future research could explore the specific digital competencies that contribute to workforce agility, as well as the most effective ways to develop and enhance these competencies in the workforce.

The increasing prevalence of technology and digital natives in the workplace is reshaping work approaches and competencies (Colbert, Yee, & George, 2016). This shift is driving the need for digital agility, which requires a combination of organizational and IS development agility (Salmela, Baiyere, Tapanainen, & Galliers, 2022). However, the development of digital competencies is facing challenges, including the need for cultural and organizational change, and the demand for expanded training opportunities (Toze et al., 2022). To address these challenges, the integration of digital competence and teamwork is crucial for accelerating workforce agility (Saputra, 2022).

**Figure 2: Digital competencies (DC) (Roll & Ifenthaler, 2021) and Workforce Agility (WA) (Petermann & Zacher, 2022) Framework**



Conclusively, figure 2 shows the relationship between digital competencies (DC) and workforce agility (WA). This framework lists seven DC dimensions which include 1) Problem solving; 2) Collaboration; 3) Data skills; 4) Handling devices; 5) Digital attitude; 6) Information literacy; and 7) Self-reflection. These seven dimensions are essential to enhancing workforce agility.

#### 4. Managerial Implications and Recommendations

At present, there is very limited literature and theoretical framework on the topic. As the research involves original data collection, analysis, and interpretation, it has the potential to contribute new findings. Thus, this research will contribute to the body of knowledge on a new emerging topic in Malaysia - digital competency framework as the future of workforce agility. Specifically, it proposes a novel framework or theory based on the synthesized literature that contributes to new theoretical perspectives.

This review will contribute to establishing a comprehensive framework that specifically addresses the digital competencies required for an agile workforce. The components identified in the framework could encompass a combination of multi-disciplinary skills that are crucial for adapting to a rapidly changing digital landscape. This research shall provide new insight into smart organizations in Malaysia regarding digital competencies and workforce agility.

#### Conclusion

The emphasis on continuous learning in the digital era is imperative in the context of society. This may involve studying the effectiveness of various learning and development programs, both formal and informal, in keeping the workforce and society agile and adaptable. Researchers might conduct in-depth case studies on smart organizations in Malaysia to identify best practices, challenges faced, and lessons learned in implementing digital competencies models for workforce agility. These case studies can offer practical insights for other organizations in the region.

Given the importance of digital transformation for economic development in Malaysia, this research shall provide input and guidelines on government policies and initiatives in promoting digital competencies and agility within the workforce from the context of smart organizations. This may include analyses of programs supporting digital upskilling and smart organizations initiatives.

The model derived from this theoretical framework may provide insight into how HR strategies can be adapted to attract, develop, and retain agile talent with the necessary digital competencies. This could involve exploring innovative recruitment practices, performance management systems, and employee engagement strategies aligned with the digital age.

In addition, the output of future research may delve into how organizational culture influences the development of digital competencies and the adoption of agile practices. Understanding the cultural nuances specific to Malaysia can provide valuable insights into effective strategies for fostering agility. The objective of this paper was to establish the profile futures and compare and explore the characteristics of mobile network customers who took part in the five selected mobile network operators in Ghana to understand and identify the differences or similarities between these groups and their experiences. Several differences exist as said earlier.

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