

Digital Competence Enhancement Strategy for Medical and Health Workforce: Individual Resource Approach

Irfan An Naufal

Faculty of Economy, Sultan Agung Islamic University, Semarang, Indonesia, E-Mail: IrfanAnNaufal.std@unissula.ac.id

Abstract. Various international health organizations have stated that preventing further pandemics is a top priority.(Boland, 2023). This approach focuses on strengthening the health system to better educate, prevent, detect early, and respond quickly to potential health crises. The report has been made byMcKinsey (2021)noted that investment in a more preventive health system has been shown to reduce the global burden of disease by 40% by 2040, with projections that the cost is below \$100 per year per individual saved through preventive actions through health education, healthy lifestyles, and vaccination. The direct relationship between personal resources and learning agility is positive and significant, which explains that personal resources play a role in forming learning agility as a foundation for individual readiness to learn and face a dynamic work environment that increasingly requires digital competencies. increasing professional health and medical digital competencies. This study aims to identify the relationship between individual resources (personal resources) and Professional Health Digital Competencies, as well as the role of learning agility as a mediator in this relationship. All hypotheses proposed in this study have been tested and show positive and significant results. The results of this study provide relevant theoretical and practical contributions, while opening up opportunities for further research that can expand the scope of analysis related to increasing the digital competencies of medical and health workers.

Keywords: Environment; Mediator; Medical; Prevention.

1. Introduction

The Covid-19 pandemic that occurred several years ago was an event that showed the vulnerability of the global health system. Various international health organizations stated that preventing the next pandemics is a top priority.(Boland, 2023). This approach focuses on strengthening the health system to better educate, prevent, detect early, and respond quickly to potential health crises. The report has been made by McKinsey (2021)noted that investment in more preventive health systems has been shown to reduce the global burden of disease by 40% by 2040, with projections of costs below \$100 per year per individual saved through preventive actions through health education, healthy lifestyles, and vaccination.

Digital transformation in the health system offers opportunities for how to improve educational and preventive approaches to be more effective. This is because the reactive

health system pattern has proven to be not strong enough to deal with the various problems that have emerged as before.(Sagner et al., 2017). Technology, automation, and artificial intelligence must be utilized for digital-based health education and the use of other digital devices that can help reduce the burden of disease by providing accurate and precise information as a basis for making appropriate policies for the community.

The health sector is one of the sectors that needs to accelerate digital transformation. Several technology companies, especially those that focus on empowering Artificial Intelligence, have created various digital-based health service tools and software, such as electronic medical record management, to the application of diagnostic technology to help optimize health services. This phenomenon is not just a temporary trend, but has become an urgent need to ensure the sustainability and improvement of the quality of health services.(Stoumpos et al., 2023). Digital health services through the use of information and communication technology (ICT) to support and improve health services, including various applications such as telemedicine, electronic health information systems (EHR), mobile health applications, and big data-based health data analysis. This transformation has improved access to health services, increased efficiency, and reduced operational costs.(Kraus et al., 2021a).

Technologies like telemedicine allow healthcare providers to interact with patients remotely via video calls, phone calls, or chat apps. This is especially important in remote areas such as during a pandemic, where direct interaction between patients and doctors may be limited.(Keesara et al., 2020). In addition, electronic health information system technology can help store and manage patient information digitally, which can be accessed by various health care providers. This not only reduces medical errors but also increases efficiency in clinical decision making.(Buntin et al., 2011). Big Data and AI-based Health Data Analysis in healthcare services also enables prediction of health trends, early detection of diseases, and development of more targeted public health strategies.(Raghupathi & Raghupathi, 2014). The implementation of a technology-based health system has been proven to reduce operational costs and increase administrative efficiency in various health facilities. Research shows that digital health services can reduce medical errors, improve care coordination, and accelerate the clinical decision-making process.(Buntin et al., 2011). Thus, digital transformation not only improves the quality of service, but also provides significant economic benefits to the health system.

One strategy to ensure that the full benefits of this technology can be accessed and implemented effectively is through enhancing the digital competency of the health workforce.(Reixach et al., 2022). Digital competence is a set of knowledge and skills in using digital technology effectively and efficiently. Without sufficient digital competence, health workers will face difficulties in adopting and implementing new technologies, which in turn can hinder the digital transformation process.(Tack et al., 2022).

Continuing education and training programs in digital technologies are essential for the healthcare workforce. These trainings should cover the use of medical software, digital data management, and ethics and security in managing digital health information. Several studies have shown that appropriate training can increase the confidence and skills of healthcare

workers in using digital technologies, ultimately improving the quality of healthcare they provide.(Nazeha et al., 2020a).

Policies and support from health organizations are critical in driving digital competency. Policies that support the adoption of digital technologies, investment in digital infrastructure, and provision of ongoing training will help ensure that the health workforce has the resources and support they need to succeed in the digital transformation.(Long et al., 2018).

Despite the many benefits offered by digital technologies, there are several challenges that must be overcome. The main barriers identified are the initial costs in implementing and adopting digital solutions, privacy and security issues, and the lack of confidence and trained healthcare professionals to maintain the systems.(Mohammed et al., 2016). Technical barriers, such as lack of technological infrastructure, and human barriers, such as resistance to change and limited digital skills, must be addressed with effective strategies. Research shows that an inclusive and collaborative approach, involving all stakeholders, can help overcome these challenges and accelerate the digital transformation process.(Reixach et al., 2022).

One of the reasons professionals do not develop their competencies is due to the lack of time and support for developing digital skills and competencies.(Attenborough et al., 2019). Limited institutional support and low levels of training received by professionals further compound this gap between what the community demands and what health service workers offer.(Konttila et al., 2019a).

In health organizations, it is important to know whether health professionals apply what they have learned in their work after receiving specific training on the use of the technology. This point is important because, as stated Posadzki et al., (2019) shows, one of the main objectives of any training is to enable and facilitate the transfer of learning to professional practice, thus avoiding the gap between the world of work and the academic world. Therefore, an in-depth study is needed to evaluate what factors influence the improvement of digital competence of health professionals, identify the barriers they face, and formulate strategies to improve these competences.

Previous studies have examined many strategies that can be implemented to improve the digital competence of health workers. Literature reviews show various approaches used to improve the digital competence of health workers, such as training, continuing education, organizational support, and the availability of technology in daily work practices. One of the most common approaches in previous studies is through training and continuing education. Nazeha et al. (2020a) emphasizes the importance of training specifically designed to meet the needs of health and medical personnel in using digital technologies. They found that comprehensive training programs, including simulations and hands-on practice, can significantly improve the digital competence of health and medical personnel. The study emphasizes that training should not only be technical, but should also develop the analytical and problem-solving skills needed to operate digital systems effectively. Other studies highlight the importance of organizational support and infrastructure in improving the digital competence of health and medical personnel. Kashada et al. (2018) showed that the success

of digital technology adoption is highly dependent on management support and the availability of adequate infrastructure. Their research shows that organizations that provide adequate technological devices, fast internet access, and ongoing technical support are more successful in improving the digital competence of their workforce. In addition, they emphasize that a work environment that supports innovation and the use of new technologies is essential for improving digital competence.

Organizations play an important role in supporting the work ecosystem so that it can improve digital competence.(Öztirak & Bayram, 2023).The Last Supper (2019) stated that strong organizational support can improve individual perceptions of technological transformation and facilitate the learning process. Often organizations only focus on the availability of learning and curriculum, as well as building good technological infrastructure and organizational policies that support the use of technology. However, previous research has also analyzed that these efforts are often ineffective due to structural and cultural constraints.(Hargitai & Bencsik, 2023). Training that is expected to improve individual digital competence, often does not match the needs, thus inhibiting the transfer of knowledge from the organizational level to the individual level. In addition, resistance to technology among individuals themselves causes efforts to integrate technology with work systems to be temporary.(Navarro Martínez et al., 2022).

This study will also add the mediating role of learning agility to the relationship between individual resources and digital competence of health workers, as well as the moderating role of digital leadership skills on digital competence of health workers. Learning agility is expected to explain how individual skills and motivations are translated into higher digital competence. This study will fill the gap in the literature by using the JD-R Model to analyze how personal resources improve the digital competence of health and medical workers.

Therefore, in this study, two instruments were developed to identify the digital competence of health and medical workers by including several dimensions of individual resource factors using the theoretical basis of model development, namely the Job-Demand Resource Model.

2. Research Methods

This research is an explanatory research. Murphy (2017) says that explanatory or explanatory research is research that highlights the influence between determining variables and tests the proposed hypothesis, where the description contains a description but focuses on the relationship between variables.

Population is a collection of individuals with predetermined qualities and characteristics. The population in this study is clinical health workers, namely doctors, nurses, pharmacists, laboratory assistants who work in hospitals in Central Java. A sample is part of the number and characteristics that exist in a population. Purposive sampling is a sampling method in research where researchers deliberately select participants or sample units based on certain criteria that are relevant to the purpose of the study.

3. Results and Discussion

Descriptive Statistics

This study successfully collected 204 respondents consisting of medical and health professionals, namely doctors, nurses, pharmacists, midwives, health laboratory personnel, and researchers in the health sector. The following is a profile of the respondents who were successfully collected in this study.

Respondent Profile Table

Criteria	Frequency	Percent (%)
Profession		
Doctor	59	28.92%
Nurse	38	18.63%
Pharmacist	53	25.98%
Midwife	15	7.35%
Health Laboratory Personnel	21	10.29%
Health Researcher	18	8.82%
Length of work		
1-5 years	137	67.16%
>5 years	67	32.84%
Gender		
Woman	112	54.9%
Man	92	45.1%
Education		
High School/Vocational School	1	0.49%
Diploma	3	1.47%
S1	127	62.25%
S2	37	18.13%
S3	8	3.92%
Profession	25	12.25%
Specialist	3	1.47%

The data presented in the table is the distribution of respondents based on profession, length of service, gender, and last education. Based on the profession criteria, 28.92% are doctors, 18.63% are nurses, 25.98% are pharmacists, 7.35% are midwives, 10.29% are health laboratory personnel, and 8.82% are health researchers. Based on length of service, it is known that this study managed to collect 67.16% who have worked in the range of 1-5 years, and 32.84% of respondents have worked >5 years. When viewed based on gender, it is known that 54.9% are women and 45.1% are men. Meanwhile, for the last education, 0.49% of respondents were high school/vocational school graduates, 1.47% were diploma graduates, 62.25% were bachelor's degree graduates, 18.13% were master's degree graduates, 3.92% were doctoral graduates, 12.25% were professional graduates, and 1.47% had completed specialist education.

Data analysis

Validity Reliability Test

At the data processing stage, the first step taken is to analyze the validity and reliability of the measurement model. Table 4 below shows the results of the data processing output of each indicator for the research variables.

Based on testing with the AMOS test tool to measure the validity of each indicator of the variables used in this study. Based on the image, each indicator shows a loading factor figure >0.5. So all indicators used in this study are considered valid (Fornell C & Larcker DF, 1981).

Reliability Test

After conducting a validity test, a reliability test is carried out where the test results are considered good if the construct reliability (CR) has a value >0.7 and the Variance Extracted (VE) has a value >0.5. (Fornell C & Larcker DF, 1981). The following is a picture of the results of the reliability test calculations presented in Figure 3.

Direct Effect Test

After the model accuracy test or Goodness of Fit Index is conducted, the hypothesis testing for direct influence is conducted. The testing for the direct influence hypothesis conducted in this study uses a significance level of 0.05 which uses the t value. In the AMOS program, the critical ratio (CR) value for the regression weight is the t value. Information about the hypothesis analysis can be found in the standardized regression weights values, which reflect the coefficient of influence between variables. These values are presented in the following table 6:

Direct Effect Hypothesis Testing Results Table

Hypothesis	Variables			β	SE	CR	P	Label
H1a	Learning Agility	<---	Motivation for Skill Development	,406	,108	3,763	***	par_1
H1b	Learning Agility	<---	Technology Literacy	,350	,107	3,281	,001	par_2
H1c	Learning Agility	<---	Adaptability for Change	,298	,084	3,549	***	par_4
H2	Professional Health Digital Competencies	<---	Learning Agility	,915	,101	9,029	***	par_3

The table presents the results of hypothesis testing, so if the CR is positive and the value is ≥ 1.96 , it indicates that the hypothesis has a positive effect. Then, if you look at the p value available in the table, the results show <0.05, so it can be said that there is an effect (Jitesh J. Thakkar, 2020). Based on the data presented in table 6, it shows a positive and significant relationship with the following details.

Indirect Hypothesis Testing

To test the indirect relationship or test the mediating role of variables in this study, the researcher used the Sobel test to obtain the results presented in the following table:

Indirect Effect Test Results Table

Hypothesis	Connection	Sobel Test	Conclusion
------------	------------	------------	------------

		t-Stat	P-Value	
H3a	Motivation for Digital Skill Development → Learning Agility → Professional Health Digital Competencies	3.47	0.0005	Significant
H3b	Technology Literacy → Learning Agility → Professional Health Digital Competencies	3.07	0.002	Significant
H3c	Adaptability for Change → Learning Agility → Professional Health Digital Competencies	3.3	0.0009	Significant

Hypothesis Discussion

Hypothesis: Motivation for Digital Skill Development has a positive and significant effect on Learning Agility

Hypothesis 1a in this study is to test whether there is a positive and significant relationship between motivation for digital skills and learning agility. The data presented in the previous sub-chapter has shown that the hypothesis is positive and significant. These results provide evidence that the higher a person's motivation to improve digital skills, the greater the way a person can learn agilely. Motivation is one aspect of fundamental resources for the development of individual skills including those related to digital.

Motivation for digital skill development plays an important role in improving learning agility. Learning agility is defined as an individual's ability to learn from experience and apply that learning in new or changing situations. (Dai & De Meuse, 2021). In the context of rapid digital transformation, especially in the healthcare sector, the relationship between motivation for digital skills development and learning agility becomes increasingly relevant.

Research by Griffin & Neal (2000) shows that individuals with high motivation to develop digital skills have better adaptability in dealing with technological changes. This is in line with the concept learning agility, where individuals who are motivated to learn tend to be more flexible and quick in assimilating new information.

In the healthcare sector, the need to adopt digital technologies is increasing, especially with the digitalization of medical records, telemedicine, and technology-based diagnostic tools. Healthcare workers who are motivated to develop their digital skills are more likely to adapt to these changes, demonstrating high learning agility.

Research by Waldeck et al. (2021) shows that adaptability to change is a key factor in professional performance, including in the health sector. In addition, Rakovic et al. (2024) emphasized that digital transformation in healthcare requires professionals who are not only technically skilled but also motivated to continue learning and adapting to new technologies.

Based on previous research, there is a positive and significant relationship between motivation to develop digital skills and learning agility. Individuals who are motivated to learn new technologies tend to have better adaptability, allowing them to function more effectively

in a dynamic environment. This finding is particularly relevant in the context of the healthcare workforce, where the adoption of digital technologies is becoming increasingly important. Thus, increasing the motivation to develop digital skills among healthcare workers may contribute to improving their learning agility, ultimately improving the quality of healthcare services.

Hypothesis: Technology Literacy has a positive and significant effect on Learning Agility

The results of this research hypothesis test that tested technology literacy can have a positive and significant effect on learning agility carried out on medical and health professional objects, the results were accepted. These results explain that medical and health professionals who have high technology literacy will also have an effect on high learning agility abilities. This technology literacy is a capital not only in the ability of technical skills in using digital devices, but also understanding the benefits of technology and how this technology can be optimized to increase productivity and learning.(Falloon, 2020).Technology literacy or technological literacy is an individual's ability to understand, use, and evaluate technology effectively in a particular context.(Moore, 2011). This ability is not only limited to technical mastery but also includes cognitive and social skills that enable a person to adapt to technological changes. In the context of learning agility, technological literacy serves as an important foundation for encouraging an individual's ability to adapt to new situations involving technology ((Reddy et al., 2022).

Other research byHasse (2017) emphasizes that technological literacy is one of the essential skills of the 21st century that has a direct relationship with adaptive learning ability. In the study, individuals with higher levels of technological literacy showed better ability to deal with technological changes and apply that knowledge in their work.

Technological literacy is not only technical skills but also reflects an individual's ability to understand and utilize technology in various contexts, including learning. According toKraus et al. (2021b), digital transformation in various sectors requires individuals to have not only technological knowledge but also adaptive learning skills to stay relevant. In the context of learning agility, technological literacy accelerates the learning process by facilitating access to digital resources and learning tools.

In the health sector, the need to improve technological literacy is increasingly pressing with the adoption of technologies such as electronic medical records, telemedicine, and technology-based diagnostic tools.(Konttila et al., 2019b). Healthcare workers with good technological literacy tend to be more adaptable to these changes, demonstrate high learning agility, and are able to integrate technology into their daily practice.

Study byMeskó et al. (2017)support this view by showing that healthcare workers' technological literacy significantly influences their ability to use digital health systems effectively. In this study, healthcare workers with high levels of technological literacy were better able to learn and adapt to new systems quickly, improving the efficiency and quality of their care.

Based on previous research, there is a positive and significant relationship between technological literacy and learning agility. Technological literacy enables individuals to understand, use, and adapt to technology, ultimately enhancing their ability to learn in changing situations. In the context of the health and medical workforce, this relationship becomes particularly relevant given the need to adopt digital technologies in healthcare. Thus, improving technological literacy among healthcare workers can directly contribute to improving their learning agility, ultimately strengthening the overall quality of healthcare services.

Hypothesis: Adaptability for Change has a positive and significant effect on Learning Agility

The hypothesis stating that adaptability for change has a positive and significant effect on learning agility, in this study the results were accepted. The results state that medical and health workers who have a high level of adaptability tend to show learning agility that allows them to absorb new knowledge quickly and apply it in various situations. This statement is in line with previous research that the ability to adapt will trigger individuals to remain productive in the midst of an ever-changing environment.(AJ Martin et al., 2013). This adaptation will open one's mind to new ideas, be flexible in thinking, and respond to change through self-development so as to carry out better learning. Learning agility will also encourage someone to be able to develop a lifelong learning mindset.(Drewery et al., 2020).

Adaptability for change or the ability to adapt to change is an individual's ability to effectively adjust to changes in the environment, work situations, or organizational needs.(Kamara et al., 2020). In an era marked by rapid technological developments and changes in the work environment, adaptability is one of the skills that is needed to maintain individual effectiveness. This ability is closely related to learning agility, which is the individual's capacity to continue learning and developing through new experiences.(Ghosh et al., 2021).

The relationship between adaptability for change and learning agility is not only based on technical skills, but also involves psychological factors such as self-confidence, openness to new experiences, and a growth mindset. According to research byEM Martin et al. (2023), individuals with a growth mindset are more likely to embrace change as a learning opportunity rather than a threat. The combination of a growth mindset and adaptability helps individuals overcome emotional or psychological barriers that often arise during the adaptive learning process.

Other research byBrown et al. (2012)emphasizes that adaptability is a core element of employability, which includes an individual's ability to learn and develop new skills. This finding supports the hypothesis that adaptability facilitates learning agility, especially in a dynamic work environment. In the healthcare sector, adaptability for change is a critical skill given the ever-changing challenges, such as the development of medical technology, complex patient needs, and dynamic health policies.(Woods et al., 2023). Health and medical personnel who are able to adapt to these changes are more likely to demonstrate high learning agility, allowing them to continuously improve their professional competence.

Research by Nazeha et al. (2020c) shows that the ability of health workers to adapt to new technology systems, such as electronic medical records, is very important in determining the success of implementing the technology. This finding shows that adaptability for change not only affects learning ability but also the final results in the form of work effectiveness and quality of health services.

Hypothesis: Learning Agility has a positive and significant effect on Professional Health and Medical Digital Competencies

Learning agility has been proven to contribute positively and significantly to the digital competence of medical and health professionals based on the research results presented in the previous sub-chapter. This evidence explains that the higher the learning agility possessed by medical and health professionals, the more it will affect the increase in their digital competence. Previous research has shown that agility in learning has a positive influence on increasing professional competence in various fields. Learning agility, or learning agility, is an individual's ability to continue learning, adapting, and using new knowledge from experience to address changing situations and new challenges. (Kuncel et al., 2004). This concept is increasingly relevant in the era of digital transformation, where the ability to learn quickly and adaptively is essential to achieve professional competence, especially in the health sector. One of the competencies that is now a priority in the health sector is Professional Health Digital Competencies (PHDC), namely the ability of health workers to utilize digital technology in providing effective, efficient, and high-quality health services (Skiba, 2017).

Learning agility is considered a key driver for the development of professional competencies, including digital competencies. According to DeRue et al. (2012), individuals with high levels of learning agility tend to be quicker to identify new learning opportunities and apply the skills they learn to their work context. In the context of digitalization, individuals with high learning agility are better able to understand and use new technologies, whether in the form of software, applications, or hardware.

Research by Arun et al. (2012) showed that learning agility has a positive correlation with an individual's success in adopting new technologies. The study found that individuals with adaptive learning abilities are more likely to understand the complexity of technology and are able to use it to improve their productivity and performance. In healthcare, this is relevant to the ability of healthcare workers to integrate digital technologies, such as electronic medical records (EMR) and AI-based health applications, into their daily practices.

In the healthcare sector, the need to continuously learn and develop has become a priority, especially with the emergence of ever-evolving digital technologies. Research by Jarva et al. (2023) shows that health workers who have adaptive learning abilities are more likely to adopt health technology systems, such as EMR, telemedicine, and health data analytics. This ability not only increases work efficiency but also has a direct impact on the quality of health services provided to patients.

In addition, organizational support, such as technology-based training and access to digital resources, also strengthens the relationship between learning agility and digital competence.

Hobfoll (2002b) mentioned that a work environment that supports adaptive learning enables individuals to more effectively develop their skills. In the context of the health and medical workforce, the relationship between learning agility and PHDC becomes particularly relevant. Digital transformation in the health system requires health workers who have not only clinical knowledge but also digital competencies to use technology in their daily practice. The ability to learn adaptively enables health workers to overcome technological barriers and integrate technology to improve health services.

Research by Meskó et al. (2017) shows that healthcare workers with adaptive learning skills are quicker to master complex healthcare technologies, such as AI-based applications for patient diagnosis and management. In addition, Wong et al. (2019) emphasized that learning agility enables healthcare workers to remain relevant and competent in the face of rapid technological developments.

Based on previous research, learning agility has a positive and significant influence on the development of Professional Health Digital Competencies. Individuals who have high learning agility are able to understand, adopt, and apply digital technology effectively in their work. In the context of health and medical personnel, this ability is very important to ensure that digital technology can be used optimally to improve the quality of health services. Therefore, increasing learning agility among health workers can be a key strategy in digital transformation efforts in the health sector.

Hypothesis: Learning Agility plays a mediating role in the relationship between Personal Resources (Motivation for Digital Skill Development, Technology Literacy, and Adaptability for change) with Professional Health Digital Competencies.

This study analyzes the mediating role of learning agility on the relationship between Personal Resources and Professional Health Digital Competencies. Based on the results discussed in the previous sub-chapter, the hypothesis can be accepted. This shows that learning agility can mediate the relationship between personal resources consisting of motivation for digital skill development, technology literacy, and adaptability for change so that it influences and/or improves professional health and medical digital competency. The development of professional digital competencies, especially in health workers, is greatly influenced by various personal resources factors such as motivation for digital skill development, technology literacy, and adaptability for change. These three factors provide an important foundation for individuals to understand, adopt, and apply digital technology in their work. However, this process does not only depend on the individual's resources, but also on how individuals utilize adaptive learning abilities (learning agility) to integrate these personal resources in achieving higher digital competencies.

Technical, critical understanding of technology, and the ability to use it productively. Individuals with high technological literacy tend to be more confident in adopting new digital technologies and using them to achieve professional goals.

While personal resources provide the foundation for developing digital competencies, learning agility acts as a key mechanism that bridges personal resources and Professional Health Digital Competencies. Learning agility refers to an individual's ability to learn from experience, apply that learning in new situations, and continually develop their skills. (DeRue et al., 2012). In this context, learning agility acts as a catalyst that enables individuals to optimize their personal resources.

The role of learning agility as a mediator is becoming increasingly important given the complexity and dynamics of the work environment in this field. Research by Trenerry et al. (2021) showed that healthcare workers with high learning agility were better able to adopt digital technologies, such as electronic medical records (EMR) systems, telemedicine applications, and AI-powered tools. The study also found that personal resources such as motivation to learn new technologies, technological literacy, and adaptability to change were important factors influencing healthcare workers' ability to utilize their learning agility.

Learning agility is a resource that health workers must have to continue learning from their work experiences and integrating new technologies into their daily practices. In this context, learning agility helps bridge the gap between individual capabilities and technological needs in the workplace. Based on previous research, learning agility has been shown to play a significant role as a mediator in the relationship between personal resources (motivation for digital skill development, technology literacy, and adaptability for change) with Professional Health Digital Competencies. Individuals who have high motivation to learn new technologies, good technology literacy, and the ability to adapt to change are more likely to develop their digital competencies when supported by adaptive learning skills.

4. Conclusion

Based on the results of this research analysis, it can be concluded that personal resources consisting of motivation for digital skill development, technology literacy, and adaptability for change towards Professional Health and Medical Digital Competencies with the mediation role of learning agility show a positive and significant influence both in direct and indirect influence testing. The direct relationship between personal resources and learning agility is positive and significant, which explains that personal resources play a role in forming learning agility as the foundation of individual readiness to learn and face a dynamic work environment that increasingly requires digital competence. In addition, the mediation role of learning agility is significant as a mediating variable that can connect personal resources with increasing professional health and medical digital competencies. This study aims to identify the relationship between individual resources (personal resources) and Professional Health Digital Competencies, as well as the role of learning agility as a mediator in the relationship. All hypotheses proposed in this study have been tested and show positive and significant results. The results of this study provide relevant theoretical and practical contributions, while opening up opportunities for further research that can expand the scope of analysis related to increasing the digital competence of medical and health workers.

5. References

- Abdelilah, B., El Korchi, A., & Balambo, M. A. (2018). Flexibility and agility: evolution and relationship. *Journal of Manufacturing Technology Management*, 29(7), 1138–1162. <https://doi.org/10.1108/JMTM-03-2018-0090>
- Abdul Hamid, R. (2022). The Role of Employees' Technology Readiness, Job Meaningfulness and Proactive Personality in Adaptive Performance. *Sustainability*, 14(23), 15696. <https://doi.org/10.3390/su142315696>
- Adams, V., Murphy, M., & Clarke, A. E. (2009). Anticipation: Technoscience, life, affect, temporality. *Subjectivity*, 28(1), 246–265. <https://doi.org/10.1057/sub.2009.18>
- Afsar, B., & Umrani, W. A. (2019). Transformational leadership and innovative work behavior. *European Journal of Innovation Management*, 23(3), 402–428. <https://doi.org/10.1108/EJIM-12-2018-0257>
- Alkali, Y. E., & Amichai-Hamburger, Y. (2004). Experiments in Digital Literacy. *CyberPsychology & Behavior*, 7(4), 421–429. <https://doi.org/10.1089/cpb.2004.7.421>
- Ancarani, A., & Di Mauro, C. (2018). Successful digital transformations need a focus on the individual. In *Digitalisierung im Einkauf* (pp. 11–26). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-16909-1_2
- Arun, N., Coyle, P. T., & Hauenstein, N. (2012). Learning Agility: Still Searching for Clarity on a Confounded Construct. *Industrial and Organizational Psychology*, 5(3), 290–293. <https://doi.org/10.1111/j.1754-9434.2012.01447.x>
- Attenborough, J., Abbott, S., Brook, J., & Knight, R.-A. (2019). Everywhere and nowhere: Work-based learning in healthcare education. *Nurse Education in Practice*, 36, 132–138. <https://doi.org/10.1016/j.nepr.2019.03.004>
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, 43(1), 83–104. <https://doi.org/10.1002/hrm.20004>
- Bauer, K. N., Orvis, K. A., Ely, K., & Surface, E. A. (2016). Re-examination of Motivation in Learning Contexts: Meta-analytically Investigating the Role Type of Motivation Plays in the Prediction of Key Training Outcomes. *Journal of Business and Psychology*, 31(1), 33–50. <https://doi.org/10.1007/s10869-015-9401-1>
- Bayramzadeh, S., & Aghaei, P. (2021). Technology integration in complex healthcare environments: A systematic literature review. *Applied Ergonomics*, 92, 103351. <https://doi.org/10.1016/j.apergo.2020.103351>
- Beasley, L., Grace, S., & Horstmanshof, L. (2020). Responding and adapting to change: an allied health perspective. *Leadership in Health Services*, 33(4), 339–349. <https://doi.org/10.1108/LHS-07-2019-0050>

- Dunn, P., & Hazzard, E. (2019b). Technology approaches to digital health literacy. *International Journal of Cardiology*, 293, 294–296. <https://doi.org/10.1016/j.ijcard.2019.06.039>
- Falloon, G. (2020). From digital literacy to digital competence: the teacher digital competency (TDC) framework. *Educational Technology Research and Development*, 68(5), 2449–2472. <https://doi.org/10.1007/s11423-020-09767-4>
- Hair Jr, J. F., C. Black, W., J. Babin, B., & E. Anderson, R. (2019). *Multivariate Data Analysis* (8th Edition). Cengage.
- Hameed, F., & Hameed, K. (2023). *The Role of Digital Transformation in Healthcare: A Sustainability Perspective, Design and Integration Challenges, Security and Privacy Challenges, Blockchain Technology, Applications, Future Research Directions*. <https://doi.org/10.20944/preprints202308.0867.v1>
- Hargitai, D. M., & Bencsik, A. (2023). The Role of Leadership in Digital Learning Organizations. *Emerging Science Journal*, 7, 111–124. <https://doi.org/10.28991/ESJ-2023-SIED2-09>
- Hasse, C. (2017). Technological literacy for teachers. *Oxford Review of Education*, 43(3), 365–378. <https://doi.org/10.1080/03054985.2017.1305057>
- Hobfoll, S. E. (2002a). Social and Psychological Resources and Adaptation. *Review of General Psychology*, 6(4), 307–324. <https://doi.org/10.1037/1089-2680.6.4.307>
- Hobfoll, S. E. (2002b). Social and Psychological Resources and Adaptation. *Review of General Psychology*, 6(4), 307–324. <https://doi.org/10.1037/1089-2680.6.4.307>
- Hong, K. S., & Lee, D. (2018). Impact of operational innovations on customer loyalty in the healthcare sector. *Service Business*, 12(3), 575–600. <https://doi.org/10.1007/s11628-017-0355-4>
- Hsu, C.-L., & Lin, J. C.-C. (2018). Exploring Factors Affecting the Adoption of Internet of Things Services. *Journal of Computer Information Systems*, 58(1), 49–57. <https://doi.org/10.1080/08874417.2016.1186524>
- Jarva, E., Oikarinen, A., Andersson, J., Tomietto, M., Kääriäinen, M., & Mikkonen, K. (2023). Healthcare professionals' digital health competence and its core factors; development and psychometric testing of two instruments. *International Journal of Medical Informatics*, 171, 104995. <https://doi.org/10.1016/j.ijmedinf.2023.104995>
- Jarva, E., Oikarinen, A., Andersson, J., Tuomikoski, A., Kääriäinen, M., Meriläinen, M., & Mikkonen, K. (2022). Healthcare professionals' perceptions of digital health competence: A qualitative descriptive study. *Nursing Open*, 9(2), 1379–1393. <https://doi.org/10.1002/nop2.1184>
- Jiang, Z. (2017). Proactive personality and career adaptability: The role of thriving at work. *Journal of Vocational Behavior*, 98, 85–97. <https://doi.org/10.1016/j.jvb.2016.10.003>
- Jimenez, G., Spinazze, P., Matchar, D., Koh Choon Huat, G., van der Kleij, R. M. J. J., Chavannes, N. H., & Car, J. (2020). Digital health competencies for primary healthcare

- professionals: A scoping review. *International Journal of Medical Informatics*, 143, 104260. <https://doi.org/10.1016/j.ijmedinf.2020.104260>
- Kim, G., & Lee, W. J. (2021). The Venture Firm's Ambidexterity: Do Transformational Leaders Boost Organizational Learning for Venture Growth? *Sustainability*, 13(15), 8126. <https://doi.org/10.3390/su13158126>
- Konttila, J., Siira, H., Kyngäs, H., Lahtinen, M., Elo, S., Kääriäinen, M., Kaakinen, P., Oikarinen, A., Yamakawa, M., Fukui, S., Utsumi, M., Higami, Y., Higuchi, A., & Mikkonen, K. (2019a). Healthcare professionals' competence in digitalisation: A systematic review. *Journal of Clinical Nursing*, 28(5–6), 745–761. <https://doi.org/10.1111/jocn.14710>
- Konttila, J., Siira, H., Kyngäs, H., Lahtinen, M., Elo, S., Kääriäinen, M., Kaakinen, P., Oikarinen, A., Yamakawa, M., Fukui, S., Utsumi, M., Higami, Y., Higuchi, A., & Mikkonen, K. (2019b). Healthcare professionals' competence in digitalisation: A systematic review. *Journal of Clinical Nursing*, 28(5–6), 745–761. <https://doi.org/10.1111/jocn.14710>
- Mastenbroek, N. J. J. M., Jaarsma, A. D. C., Scherpbier, A. J. J. A., van Beukelen, P., & Demerouti, E. (2014). The role of personal resources in explaining well-being and performance: A study among young veterinary professionals. *European Journal of Work and Organizational Psychology*, 23(2), 190–202. <https://doi.org/10.1080/1359432X.2012.728040>
- Mayo, A. T., Woolley, A. W., John, L., March, C., Witchel, S., & Nowalk, A. (2024). Coordination in Dynamic Teams: Investigating a Learning–Productivity Trade-Off. *Organization Science*. <https://doi.org/10.1287/orsc.2022.16729>
- McKinsey. (2021). *NEF spotlight: Global health in the post COVID-19 era*.
- Mêda, P., Sousa, H., Gonçalves, M., Calvetti, D., Dias, P., & Camargo, F. (2020). *People, Process, Technology in Construction 4.0 - Balancing Knowledge*,
- Nazeha, N., Pavagadhi, D., Kyaw, B. M., Car, J., Jimenez, G., & Tudor Car, L. (2020a). A Digitally Competent Health Workforce: Scoping Review of Educational Frameworks. *Journal of Medical Internet Research*, 22(11), e22706. <https://doi.org/10.2196/22706>
- Nazeha, N., Pavagadhi, D., Kyaw, B. M., Car, J., Jimenez, G., & Tudor Car, L. (2020b). A Digitally Competent Health Workforce: Scoping Review of Educational Frameworks. *Journal of Medical Internet Research*, 22(11), e22706. <https://doi.org/10.2196/22706>
- Nazeha, N., Pavagadhi, D., Kyaw, B. M., Car, J., Jimenez, G., & Tudor Car, L. (2020c). A Digitally Competent Health Workforce: Scoping Review of Educational Frameworks. *Journal of Medical Internet Research*, 22(11), e22706. <https://doi.org/10.2196/22706>
- Notari, M., Baumgartner, A., & Herzog, W. (2014). Social skills as predictors of communication, performance and quality of collaboration in project-based learning. *Journal of Computer Assisted Learning*, 30(2), 132–147. <https://doi.org/10.1111/jcal.12026>
- Oberländer, M., Beinicke, A., & Bipp, T. (2020). Digital competencies: A review of the literature and applications in the workplace. *Computers & Education*, 146, 103752. <https://doi.org/10.1016/j.compedu.2019.103752>

- Öztirak, M., & Bayram, V. (2023). The Mediator Role of Individual Motivation in The Relationship Between Digital Leadership and Organizational Agility. *Journal of Organizational Behavior Research*, 8(2), 200–215. <https://doi.org/10.51847/z16VKvyCpn>
- Shiferaw, K. B., Tilahun, B. C., & Endehabtu, B. F. (2020). Healthcare providers' digital competency: a cross-sectional survey in a low-income country setting. *BMC Health Services Research*, 20(1), 1021. <https://doi.org/10.1186/s12913-020-05848-5>
- Taber, B. J., & Blankemeyer, M. (2015). Future work self and career adaptability in the prediction of proactive career behaviors. *Journal of Vocational Behavior*, 86, 20–27. <https://doi.org/10.1016/j.jvb.2014.10.005>
- Tack, C., Holdsworth, L., Wilson, A., McComiskie, E., McCabe, P., Wilkinson, W., & King, M. (2022). Digital competency: a survey of UK allied health professionals. *British Journal of Healthcare Management*, 28(8), 1–15. <https://doi.org/10.12968/bjhc.2021.0123>
- Teixeira, M. A. P., Bardagi, M. P., Lassance, M. C. P., Magalhães, M. de O., & Duarte, M. E. (2012). Career Adapt-Abilities Scale—Brazilian Form: Psychometric properties and relationships to personality. *Journal of Vocational Behavior*, 80(3), 680–685. <https://doi.org/10.1016/j.jvb.2012.01.007>
- WHO. (2021). *Global strategy on digital health 2020-2025*.