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MODERN METAVERSE TECHNOLOGY AND DIGITAL CULTURE SYNERGY: A STRATEGIC PATHWAY TO ENHANCED ORGANIZATIONAL PERFORMANCE

Vimala Venugopal Muthuswamy[1*], N.Nithya,

[1]Department of Management, School of Business, King Faisal University, Al-Ahsa 31982, Saudi Arabia.
Email: fmuthuswamy@kfu.edu.sa
[2]Professor, Department of MBA, Sona College of Technology, Salem, Tamil Nadu, India.
Nithya.n@Sonabusinessschool.com

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Corresponding Author: Vimala Venugopal Muthuswamy (fmuthuswamy@kfu.edu.sa)

ABSTRACT

This study investigates the influence of metaverse technology on organizational performance, emphasizing the mediating roles of digital culture and employee digital capability. Drawing on contemporary digital transformation theories, the research examines how immersive technologies reshape workplace practices, improve operational efficiency, and foster a digital-ready workforce, leading to higher organizational performance. A structured survey was conducted among the employees working in retail and e-commerce organizations. Partial Least Square-Structural Equation Modeling (PLS-SEM) was employed to test the study hypotheses. The results reveal that metaverse technology significantly enhances organizational performance, primarily through the development of a strong digital culture. On the other hand, the mediation effect of employee digital capability was insignificant. Furthermore, digital literacy is found to be an influential factor having significant influence on employee digital capability. Digital literacy contributed to organizational performance by strengthening the relationship between metaverse technology and employee digital capability. The study contributes to the growing body of literature on metaverse-enabled organizational transformation and offers practical insights for managers seeking to adopt immersive technologies responsibly.

KEYWORDS: Metaverse Technology, Digital Culture Synergy, Employee Digital Capability, Organizational Performance, Digital Leadership.

1. INTRODUCTION

The rapid advancement of immersive technologies has ushered in a new era of digital transformation, with the metaverse emerging as one of the most disruptive innovations influencing global industries (Hwang & Seo, 2025). For retail and e-commerce organizations, the metaverse offers a unique blend of virtual interaction (Pillai et al., 2024), immersive experiences, and intelligent automation that fundamentally reshapes how firms engage customers, manage operations, and develop internal capabilities. Metaverse technologies have significant importance in retail and e-commerce industry, however, the implementation of metaverse is lacking (Singh & Gupta, 2025). As organizations shift from traditional digital platforms to more interactive, experiential environments, the strategic adoption of metaverse technologies becomes essential for maintaining competitiveness and relevance in an increasingly digital economy. This transformation is no longer optional; it represents a new frontier of organizational innovation, value creation, and performance enhancement.

Retail and e-commerce organizations are increasingly pressured to advance operational efficiency, customer engagement, and competitive positioning (Felix & Rembulan, 2023), however many continue to struggle with sustaining strong organizational performance in the face of rapid digital transformation. Although numerous organizations are starting to have access to more sophisticated technology (Behera et al., 2024; Kamoonpuri & Sengar, 2023; Zhang & Wang, 2023), the way that organizations have integrated metaverse tools into their business processes has generally been misaligned with organizational goals, and inconsistent across departments. Most businesses do not have a very strong digital culture; therefore, there can be resistance to change and slow acceptance of using new forms of immersive technology, such as Augmented reality (AR) and Virtual Reality (VR), to improve collaboration between digital teams and traditional business units. In addition, for many companies, employee digital capability remains very low (Fu et al., 2023); therefore, employees are not able to utilize metaverse tools to advance service quality and provide a personalized experience to their customers through digital engagement. Retail and e-commerce can have a strategic challenge as they seek to understand how metaverse technology, workforce capability, and digital culture collectively impact the performance of an organization.

Metaverse technology can potentially solve the practical challenges faced by retail and e-commerce organizations by offering immersive customer experiences, enhancing operational efficiency, and strengthening internal collaboration. Nonetheless, there are still significant gaps in the body of knowledge on the connection between metaverse and organizational performance in retain industry. Several previous studies highlighted the metaverse in areas of video games, education, and entertainment (Bhat et al., 2025; Nevelsteen, 2018; Ulfia et al., 2025), while empirical studies of its use within the retail and e-commerce sectors are limited in number. Most existing research has focused only on the adoption of metaverse technologies (Ahmad et al., 2024; Bhat et al., 2025; Shahzad & Zhang, 2025), and consequently has not considered how digital culture, as well as employee capability, can be effective or beneficial with the use of metaverse technology. The intermediary role of digital culture and employee digital ability in helping organizations realize the full benefits of metaverse technology has not been sufficiently examined. Furthermore, little research has been conducted into how digital literacy moderates such relationships in highly volatile digital business environments. Therefore, there is an opportunity for an overall model that demonstrates how organizations use metaverse technology in combination with organizational culture, employee readiness and literacy in order to accomplish improved organizational performance.

The objective of this study is to investigate the influence of metaverse technology on organizational performance, emphasizing the mediating roles of digital culture and employee digital capability. In addition, this research builds on the body of literature by developing an empirical model that looks at the influence of metaverse technology on organizational performance in the retail and e-commerce industries through the integration of an organization digital culture, employee digital capabilities, and employee digital literacy into a single framework, allowing for a more complete theoretical understanding of how each concept may mediate or moderate the use of metaverse technologies and provide further insights into how they work together as interdependent factors. This research further contributes to the knowledge by investigating how the metaverse is not solely based on consumer technology but also a strategic advantage for internal processes within organizations. Finally, the outcomes of this research deliver managers with an understanding of how the development of a strong Digital culture, enhanced

employee digital capabilities, and a strong digital literacy can help organizations to realize the full potential of the metaverse within the retail and e-commerce industries.

2. LITERATURE REVIEW

2.1. Theoretical Foundation

This study is grounded in Dynamic Capabilities Theory (DCT), which explains how organizations integrate, build, and reconfigure internal and external competencies to respond to rapid technological change (Carmona, 2022; Zotoo et al., 2021). To maintain competitive advantage, companies must develop and implement advanced digital capabilities in response to the development of metaverse technology. As stated by the DCT, technological investment alone does not provide a company with superior performance; it is the development of reciprocal cultural and human capabilities along with the investment in technology that allows a company to effectively integrate and utilize new technologies. Organizations operating in the metaverse must adapt their organizational structure, processes, and employees for the full use of immersive technology (Steven, 2025). Metaverse provides a means to change the way that organizations interact, collaborate and deliver services leading towards a rich digital culture promoting openness, innovation and technology. In addition, DCT views developing skills within employees as an essential component for developing employee digital capability for which metaverse technologies can be leveraged to produce improved performance outcomes (van de Wetering et al., 2018). Digital Literacy is viewed as a moderating variable and enables the firm to leverage the technological potential of the metaverse into both cultural changes and individual skill development that align with the DCT view of capability reconfiguration. DCT provides a comprehensive framework for understanding the way in which metaverse technology boosts digital culture and human capability, as well as improving organizational performance. Based on DCT, Figure 1 highlighted the framework of the study showing the association between metaverse technology, digital culture, employee digital capability, digital literacy and organizational performance.

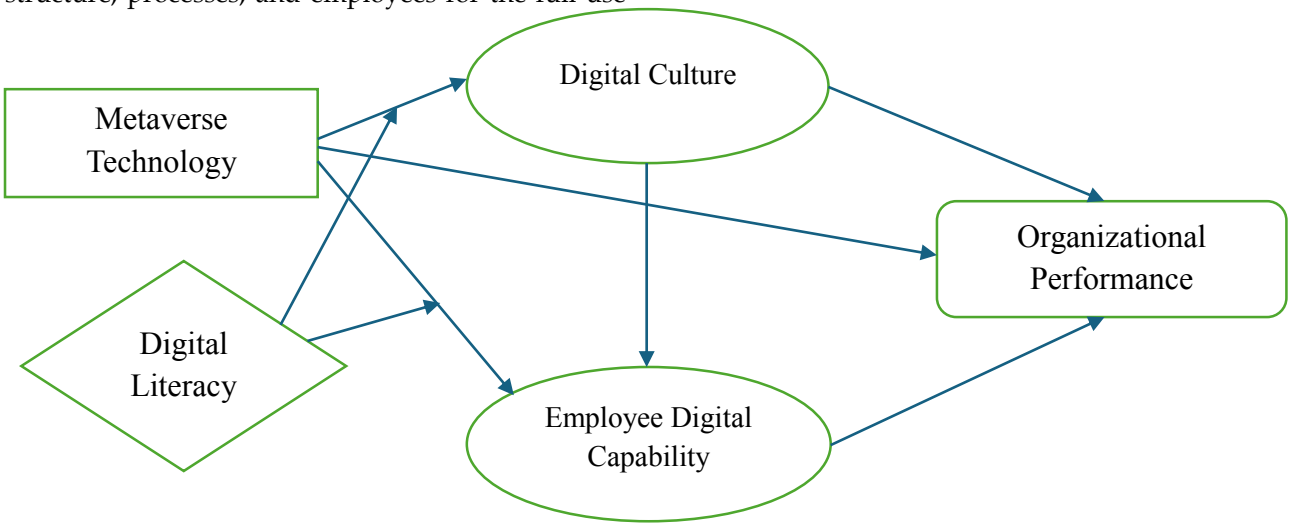

Figure 1: Framework of the Study.

2.2. Hypotheses Development

2.2.1. Metaverse Technology and Organizational Performance

Metaverse technology is increasingly recognized as a transformative force capable of reshaping organizational processes, communication, and value creation (Kumar et al., 2025). The retail and e-commerce industry can benefit greatly from having access to the metaverse (Bourlakis et al., 2009; Gadalla et al., 2013). The metaverse creates new level of customer experience through VR, AR, mixed reality, and simulated environments. As a result, the metaverse increases the level of customer satisfaction, as well as how quickly companies can react to customer needs. In addition, the metaverse allows for the creation of huge amounts of data that can help provide customers with more personalized services (Valaskova et al., 2022). As a result, many companies using the metaverse can gain a competitive advantage by offering unique and innovative digital experiences; therefore, companies that utilize this technology can experience a significant boost in sales as well as brand loyalty. One

of the other advantages of the metaverse is that it allows companies to operate in the virtual world leading to higher organizational performance. Therefore, metaverse allows companies to expand their geographic footprint without needing to build out a physical infrastructure Therefore, organizations that strategically adopt metaverse technologies are more likely to achieve superior performance outcomes leading to the following hypothesis:
Hypotheses 1: Metaverse technology has a positive influence on organizational performance.

2.2.2. Metaverse Technology, Digital Culture and Employee Digital Capability

Metaverse technology plays a pivotal role in strengthening both digital culture (Lin & Chen, 2024) and employee digital capability within retail and e-commerce organizations. The metaverse platforms give employees a new perspective on the workplace with their use of data to create an immersive and interactive environment that promotes the use of a digital-first mindset (Hwang, 2023; Showkat et al., 2025). Companies may develop innovation environment by establishing an organization oriented toward technology experimentation through agility, the ability to learn continuously and work collaboratively by using 3D visualization and AI-enabled communications tools provided by metaverse platforms. By creating a metaverse environment that supports employee growth and learning, organizations can continue to reinforce their core values of creativity, connection and digital engagement. In addition, the use of metaverse platforms can develop employee digital skills (Mustafa et al., 2025) through experience to more superior tools. Therefore, metaverse has a positive contribution to development digital environment (Hwang & Seo, 2025; Mamakou & Nakos, 2025). Ultimately, metaverse platforms and tools provide an innovative, interactive platform for employees to engage in numerous training processes which ultimately improve their skills. By combining the technological elements of metaverse with the experiential aspects of the metaverse, companies are transforming how they are operating, along with new methods for employees to develop the required digital skills. Hence, this discussion led to the following hypotheses:
Hypotheses 2: Metaverse technology has a positive influence on digital culture.
Hypothesis 3: Metaverse technology has a positive influence on employee digital capability.

2.2.3. Digital Culture, Employee Digital Capability and Organizational Performance

A strong digital culture combined with high levels of employee digital capability greatly improves organizational success in retail and e-commerce. Customers can benefit from using the company technology to enhance their shopping experience. The presence of a digital culture can provide the organization the opportunity to establish its beliefs and values (Al Koliby et al., 2024), including innovation, collaboration, and adaptability, making it easier for organizations to incorporate new systems rapidly, improve efficiency and adjust to changes in consumer preferences. Digital workplace practices also provide organizations with more opportunities for collaboration and improved productivity for their workers (Tkalac Verčič et al., 2025), while developing new methods for thinking about their organizations. Workplaces that are developing a digitally capable workforce can more successfully create a higher performance level because employees will have the requisite skill required to successfully introduce new digital technologies, such as new virtual platforms, analytic tools and automation. An employee ability to perform their job accurately is a result of the ability to perform digitally competent tasks (Alainati et al., 2025), providing quality interactions with customers, and easily adapting to new work practices. An organization that successfully enhances digital culture with employee digital capability can experience full utilization of technology, increased productivity, improved service quality, and a continuing competitive advantage. From this discussion, the following hypotheses are proposed:
Hypotheses 4: Digital culture has a positive influence on organizational performance.
Hypotheses 5: Employee digital capability has a positive influence on organizational performance.

2.2.4. Mediating Role of Digital Culture and Employee Digital Capability

Metaverse technology enhances organizational performance more effectively when supported by a strong digital culture and high employee digital capability. Organizations utilize digital culture to create innovation and enter into collaborative relationships through technology capabilities in the metaverse. Digital culture is also integral to creating digital social capital for organizations (Feng & Tan, 2024) that enable them to generate improved organizational performance. Organizations that utilize metaverse technologies create greater digital capacity among employees (Hwang & Seo, 2025) by enabling access to highly developed virtual environments, interactive tools, and data tools that

enhance employee productivity, creativity and enable employees to work at a greater level of efficiency. By creating enhanced capabilities for their employees to utilize metaverse technology, organizations improve the quality of the work produced by employees, improve customer relationship management, and improve the speed of all types of organizations. Thus, the use of metaverse technologies is dependent on digital culture of organization and the digital capacity of its employees, leading to following hypotheses:

Hypotheses 6: Digital culture mediates the relationship between metaverse technology and organizational performance.

Hypotheses 7: Employee digital capability mediates the relationship between metaverse technology and organizational performance.

2.2.5. Moderating Role of Digital Culture

Digital literacy strengthens the effect of metaverse technology on both digital culture and employee digital capability, making it a crucial moderating factor. Digital literacy helps employees comprehend and successfully navigate and utilize metaverse technologies (Diseiye et al., 2024; Hou et al., 2023). Employees who demonstrate high levels of digital literacy are more trained to incorporate metaverse tools into their everyday work processes and behaviors. Employee digital literacy also gives the ability to develop the necessary skill (Cetindamar et al., 2021; Cetindamar Kozanoglu & Abedin, 2021) for effective and confident use of metaverse tools. Additionally, employees with a higher level of digital literacy are able to quickly adapt to new and changing virtual technologies and acquire new skills using an advanced digital capability. In contrast, employees who have lower levels of digital literacy may have less potential to maximize the benefits of metaverse technologies for their own use. Therefore, digital literacy positively enhances the substantial benefits associated with using metaverse technologies and creating a stronger link between the culture of the organization and the culture within the metaverse, leading to the following hypotheses:

Hypotheses 8: Digital literacy moderates the relationship between metaverse technology and digital culture.

Hypotheses 9: Digital literacy moderates the relationship between metaverse technology and employee digital capability.

3. METHODOLOGY

3.1. Research Design

This research employed quantitative cross-sectional research design to investigate how metaverse technology, digital culture, employee digital capability, and digital literacy affect organizational performance of retail and e-commerce firms. A structured questionnaire was developed and employed to collect data from employees of retail and e-commerce firms. A quantitative approach is appropriate to test the hypotheses and examine the strength of the associations between different variables. The use of this method allows for an evaluation of both direct and indirect effects between variables, including moderation effects.

3.2. Questionnaire Development

This study measured five variables which include metaverse technology, digital culture, employee digital capability, digital literacy and organizational performance. These variables are measured by adapting scale items from previous studies. Metaverse technology is measured by using three scale items adapted from Yang et al. (2022). Digital culture is measured by using five scale items adapted from Proksch et al. (2024). Furthermore, five scale items were adapted from Shin et al. (2023) to measure employee digital capability. Digital literacy is measured through three scale items adapted from Cetindamar et al. (2021). Finally, five scale items are adapted from Shin et al. (2023) to measure organizational performance.

Table 1: Questionnaire Items.

Variable	Scale Items	Sources
Metaverse Technology (MT)	1. "The retail industry should employ metaverse innovative technologies in the future. 2. I will continuously try to implement metaverse technology in business activities. 3. I would like to continue using the metaverse innovation technology for the improvement of business growth."	Yang et al. (2022)

Digital Culture (DC)	1. "We openly discuss failures with all team members. 2. Decisions are based on the opinion of the whole team, not on a single person only. 3. We work in cross-functional teams (combining people from IT, marketing, finance, etc.). 4. In our company, we avoid strong hierarchies in project work. 5. Every team member brings in ideas and suggestions for digital products and services."	Proksch et al. (2024)
Employee Digital Capability (EDC)	1. "Our organization offer different training (courses, literature, coaching) to improve the digital expertise of our team members. 2. Digital skills are an important selection criterion in recruiting new team members. 3. Our team members use all digital services and products we offer. 4. Our team has the necessary skills to further digitalize our company. 5. We actively discuss our digital projects within our company, including failures and best practices."	Shin et al. (2023)
Digital Literacy (DL)	1. "I am confident in browsing, searching, filtering data, information and digital content. 2. I regularly use cloud information storage services. 3. I verify the sources of information, I find."	Cetindamar et al. (2021)
Organizational Performance (OP)	1. "Compared with key competitors, our company is more successful. 2. Compared with key competitors, our company has a greater market share. 3. Compared with key competitors, our company is growing faster. 4. Compared with key competitors, our company is more profitable. 5. Compared with key competitors, our company is more innovative."	Shin et al. (2023)

3.3. Population And Sample Size

Population of this study is the employees from retail and e-commerce organizations that have contact with digital technology, directly or indirectly, as part of their job responsibilities, including those in the managerial, administrative and operational functions within those organizations. These respondents are considered appropriate because employees are the primary users of metaverse tools and play a significant role in the development of digital culture and capability. Since, this study employed PLS-SEM, the general PLS-SEM sample size guideline proposed by Hair Jr et al. (2016); Hair Jr et al. (2021), complex models that include multiple predictors, mediators, and moderators require a minimum of 100 to 300 respondents to ensure acceptable statistical power as well as model stability. Therefore, this study considered 200 sample size which is satisfactory.

3.4. Sampling And Data Collection

A purposive sampling technique was employed to select respondents who have relevant experience with digital platforms, virtual tools, or technology-enabled workflows in their organizations. Using this method of research guarantees that the respondents have the level of knowledge required to provide valuable perspectives concerning the adoption of the metaverse and its influence on organizations. Data was collected with the help of an online survey that was sent out through professional networks, through direct contact within organizations, as well as by online survey. Confidentiality and anonymity were assured for all the participants to ensure maximum levels of honesty when responding to the survey. Five hundred (500) questionnaires were distributed among the respondents, and 239 valid responses were received. After data collection, it was completed, verified for completeness, and subsequently used in statistical analyses. Finally, data statistics are reported in Table 2.

Table 2: Data Statistics.

Items	No.	Missing	Mean	Median	Min	Max	SD	Kurtosis	Skewness
MT1	1	0	3.243	3	1	7	1.497	-0.447	0.091
MT2	2	0	3.243	3	1	7	1.783	-0.547	0.45
MT3	3	0	3.515	3	1	7	1.872	-0.773	0.325
DC1	4	0	3.481	3	1	7	1.885	-0.751	0.401
DC2	5	0	3.527	3	1	7	1.708	-0.435	0.316
DC3	6	0	3.49	4	1	7	1.797	-0.684	0.244
DC4	7	0	3.494	4	1	7	1.818	-0.87	0.143
DC5	8	0	3.665	4	1	7	1.858	-0.771	0.21

EDC1	9	0	3.695	3	1	7	1.849	-0.725	0.315
EDC2	10	0	3.657	3	1	7	1.921	-0.754	0.368
EDC3	11	0	3.548	3	1	7	1.869	-0.686	0.388
EDC4	12	0	3.573	3	1	7	1.844	-0.604	0.373
EDC5	13	0	3.594	3	1	7	1.874	-0.742	0.322
DL1	14	0	3.481	3	1	7	1.78	-0.465	0.45
DL2	15	0	3.523	4	1	7	1.899	-0.894	0.213
DL3	16	0	3.46	3	1	7	1.801	-0.603	0.324
OP1	17	0	3.644	3	1	7	1.758	-0.584	0.27
OP2	18	0	3.029	3	1	7	1.465	-0.031	0.624
OP3	19	0	3.142	3	1	7	1.48	0.582	0.915
OP4	20	0	3.192	3	1	7	1.419	0.951	0.956
OP5	21	0	3.105	3	1	7	1.444	0.529	0.781

3.5. Demographic Profile of Respondents

The demographic profile shows that 74% of respondents are males and 26% are females. Most participants fall within the 26–35 age group (46.86%), reflecting a young and digitally active workforce. Therefore, most of the respondents were young and digitally active. In terms of education, a large proportion hold master's degrees (45.19%), indicating a well-qualified respondent pool. Therefore, there was no problem in understanding the survey questions, since the employees were well educated. The work experiences among respondents highlight the largest percentage (33.05%) those who worked between 1 and 3 years. This is followed by the group between 4 and 6 years (28.45%).

4. DATA ANALYSIS AND FINDINGS

PLS-SEM is a appropriate data analysis technique to analyze complex models including mediating and moderating variables (Hair Jr et al., 2016; Hair Jr et al., 2021). Overall, the process involved two main types of assessments: evaluating the measurement model and evaluating the structural model. Measurement model evaluation (see Figure 2) was used to determine the reliability and validity of survey instruments. When evaluating the survey instruments for reliability, three specific criteria were used to assess factor loading as well as the Cronbach alpha and composite reliability (CR) values of the survey instrument; all three criteria must be greater than 0.70 to be considered an acceptable level of reliability. The reliability and validity results indicate that all constructs meet the required thresholds. Factor loadings for each item are above 0.75, confirming strong item contributions. Cronbach Alpha (α) and composite reliability (CR) values for all variables exceed 0.90, showing excellent internal consistency. These results show that all the scale items and constructs are reliable. Additionally, the Average Variance Extracted (AVE) values, ranging from 0.735 to 0.856 are well above the 0.50 benchmark, confirming strong convergent validity (Henseler et al., 2014; Henseler et al., 2009). Overall, all the values show high reliability and validity across all constructs. Measurement model results are reported in Table 3.

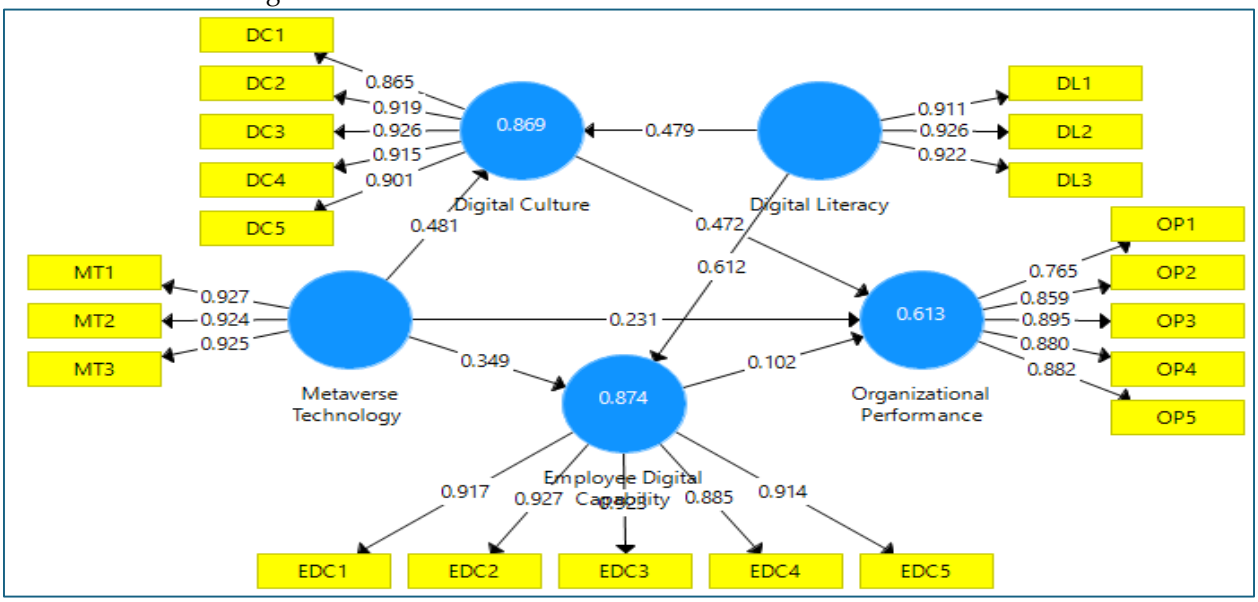

Figure 2: Measurement Model Assessment.

Table 3: Convergent Validity.

Variable	Items	Loading	Alpha	CR	AVE
Digital Culture	DC1	0.865	0.945	0.958	0.82
	DC2	0.919			
	DC3	0.926			
	DC4	0.915			
	DC5	0.901			
Digital Literacy	DL1	0.911	0.909	0.943	0.846
	DL2	0.926			
	DL3	0.922			
Employee Digital Capability	EDC1	0.917	0.95	0.962	0.834
	EDC2	0.927			
	EDC3	0.923			
	EDC4	0.885			
	EDC5	0.914			
Metaverse Technology	MT1	0.927	0.916	0.947	0.856
	MT2	0.924			
	MT3	0.925			
Organizational Performance	OP1	0.765	0.91	0.933	0.735
	OP2	0.859			
	OP3	0.895			
	OP4	0.88			
	OP5	0.882			

This study reported discriminant validity by using Heterotrait-Monotrait Ratio of correlations (HTMT), as shown in Table 4. An HTMT value below 0.90 (or more strictly, 0.85) suggests sufficient discriminant validity (Dirgiatmo, 2023; Hafkesbrink, 2021). Table 4 highlighted that HTMT values are acceptable. This suggests that the constructs demonstrate a secure level of discriminant validity. It shows that digital culture, digital literacy, employee digital capability, metaverse technology and organizational performance are all distinct concepts and have a separate measurement of their respective role in the model.

Table 4: HTMT.

	Digital Culture	Digital Literacy	Employee Digital Capability	Metaverse Technology	Organizational Performance
Digital Culture					
Digital Literacy	0.675				
Employee Digital Capability	0.761	0.789			
Metaverse Technology	0.803	0.669	0.754		
Organizational Performance	0.815	0.788	0.772	0.801	

Structural model assessment is shown in Figure 3. PLS bootstrapping is employed to test the study hypotheses. The relationship between metaverse technology, digital culture, employee digital capability, digital literacy and organizational performance was examined. T-value 1.96 and p-value 0.05 were considered to check the significance of the relationship (Hair et al., 2013; Hair Jr et al., 2022). Furthermore, beta values were used to examine the direction of the relationship. Table 5 presents beta value, standard deviations, t-value, and p-values for all relationships considered in the study.

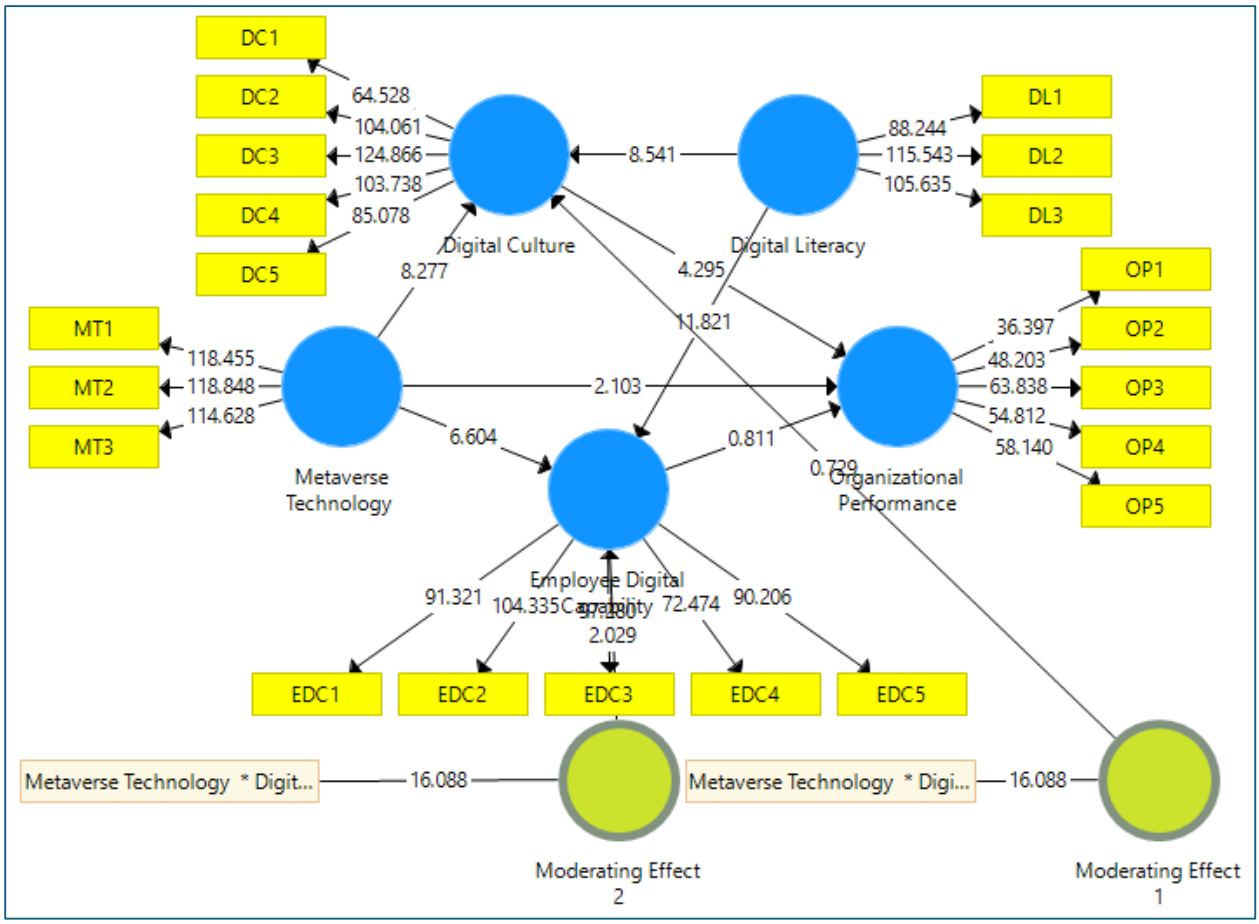

Figure 3: Structural Model Assessment.

The relationship between digital culture and organizational performance is significantly positive, evidenced by a path-coefficient of.472, t-statistic of 4.295 and p-value of 0. The results indicate that metaverse technology has a positive impact on digital culture (β =.478, t = 8.277, p = 0), employee digital capability (β =.34, t = 6.604, p = 0) and organizational performance (β =.231, t = 2.103, p =.036). The results further indicate, however, that the relationship between employee digital capability and organizational performance is insignificant (β =.102, t = 0.811, p =.418), suggesting that digital skills alone do not directly impact organizational performance. For moderation analysis, the outcomes of the study show that digital literacy does not moderate the connection between metaverse technology and digital culture in a significant way (β =.023, t = 0.729, p =.466), however it moderates the relationship between digital literacy and employee digital capability (β =.065, t = 2.029, p =.043) which is also reported in Figure 4.

Table 5: Direct Effect and Moderation Effect.

Relationship	Beta Value	Mean	SD	T Statistics (|O/STDEV|)	P Values
Digital Culture -> Organizational Performance	0.472	0.479	0.11	4.295	0
Employee Digital Capability -> Organizational Performance	0.102	0.097	0.125	0.811	0.418
Metaverse Technology -> Digital Culture	0.478	0.479	0.058	8.277	0
Metaverse Technology -> Employee Digital Capability	0.34	0.344	0.051	6.604	0
Metaverse Technology -> Organizational Performance	0.231	0.228	0.11	2.103	0.036
Moderating Effect 1 -> Digital Culture	0.023	0.023	0.032	0.729	0.466
Moderating Effect 2 -> Employee Digital Capability	0.065	0.065	0.032	2.029	0.043

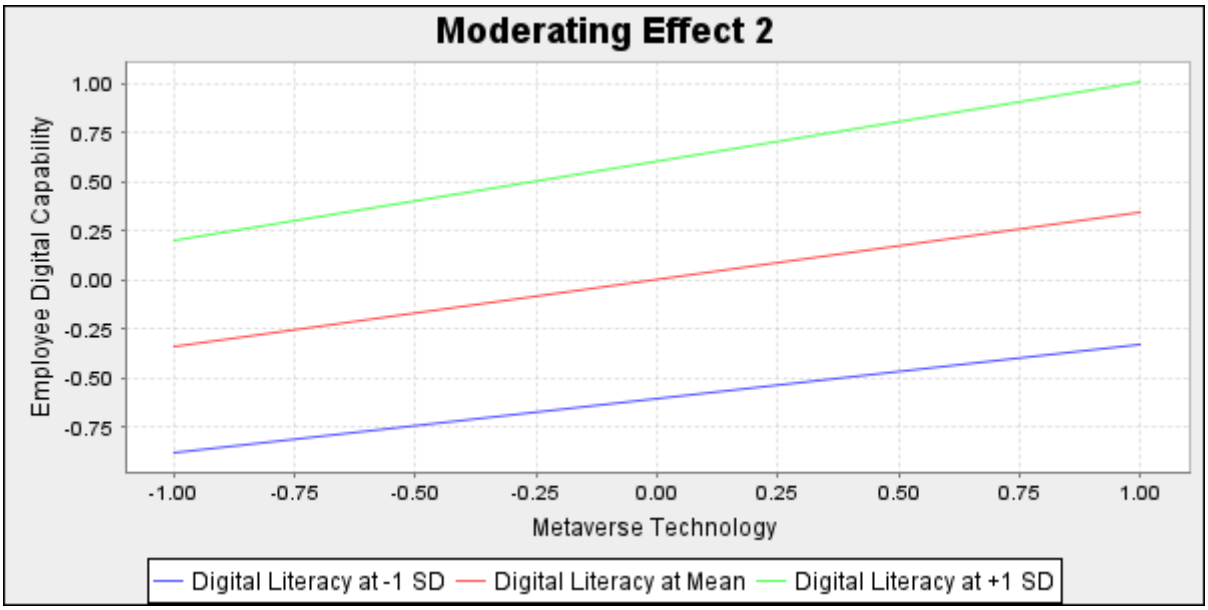

Figure 4: Moderation Effect of Digital Literacy Strengthens the Relationship Between Metaverse Technology and Employee Digital Capability.

According to mediation analysis results, metaverse technology influences organizational performance through the pathway of digital culture (β = 0.226, t = 3.808, p = 0), while the effect of metaverse technology on organizational performance does not have a statistically significant influence via the pathway of employee digital capability (β = 0.035, t = 0.776, p = 0.438). This directs that digital culture transfers the positive impact of metaverse technology on organizational performance. However, employee digital capability cannot transfer the influence of metaverse technology on organizational performance. All these results are reported in Table 6.

Table 6. Indirect Effect.

	Beta Value	Mean	SD	T Statistics (|O/STDEV|)	P Values
Metaverse Technology -> Digital Culture -> Organizational Performance	0.226	0.229	0.059	3.808	0
Metaverse Technology -> Employee Digital Capability -> Organizational Performance	0.035	0.034	0.045	0.776	0.438

5. DISCUSSION

The findings show that metaverse technology significantly enhances organizational performance in retail and e-commerce organizations. Results of hypothesis 1 reported that metaverse technology has the potential to improve organizational performance by advancing various operations and customer services. The operational efficiency of organizations, customer engagement with their brand, and ability to make decisions are all enhanced through real-time simulation technology. These findings are consistent with the digital transformation literature (Du et al., 2025; Leão & da Silva, 2021; Qadri et al., 2025), which supports the notion that advanced technologies positively influence an organization productivity and competitive advantage. Hence, the increase in metaverse technology implementation increases business performance. Therefore, the adoption of the metaverse can be viewed as a strategic contributor to achieving improved performance.

Furthermore, results of hypothesis 2 indicate that metaverse technology strongly contributes to the development of digital culture. The implementation of metaverse technology among the retail and e-commerce organizations increases the digital culture which has vital importance for organizations. An employee who uses the metaverse adapts to new behaviors in multiple technological areas and strengthens the environment of the organization based on innovation as well as digital integration. Similar with these results, previous studies reported a positive relationship between metaverse technology and digital culture (Limano, 2023; Lin & Chen, 2024). Furthermore, results of hypothesis 3 revealed that employee digital capability can be enhanced through metaverse technology. The study

confirms that metaverse technology enhances employee digital capability by helping the employees to advanced tools such as virtual interfaces, simulations, and AI-driven systems. The use of metaverse technology in retail and e-commerce sector enhances employees' digital activities which improves their performance. The way employees interact with metaverse features enables them to develop digital confidence, adaptability and technical proficiency. Similarly, prior studies also reported the positive connection between metaverse technology and employee digital capability (Hwang, 2023; Hwang et al., 2022)

A strong digital culture positively affects organizational performance by fostering innovation, agility, and collaborative problem-solving. As hypothesis 4 reported the positive effect of digital culture on organizational performance. In retail and e-commerce, a culture based around a digital presence allows for quicker responses to customers and better quality of decisions leading to efficiency in business operations. Evidence from previous research has indicated that the promotion of digital culture can enhance productivity, enhance customer satisfaction and greater overall business success (Junaedi et al., 2023; Proksch et al., 2024). Hence, digital culture becomes a key driver of organizational success. Additionally, hypothesis 5 revealed no connection between employee digital capability and organizations performance. These results are not consistent with the preceding studies (Atobishi et al., 2024; Heredia et al., 2022; Shin et al., 2023). The limited influence of employee digital capability on organizational performance may be attributed to the fact that while employees may acquire competencies, they must be supported through structural, strategic or cultural aspects such as leadership and technology integration.

The findings confirm that digital culture effectively mediates the relationship between metaverse technology and organizational performance. This connection between the metaverse and organizational success supports many theoretical frameworks that consider cultural readiness as an essential factor for digital transformation. These results are supported by hypothesis 6. However, hypothesis 7 reported insignificant mediation effect employee digital capability between metaverse technology and organizational performance. This could suggest that the advancement in digital skills that take place in the metaverse alone cannot enhance an organizational performance without the additional support of its organizational systems and processes. Firms may therefore have integrated metaverse technologies into their production systems. Furthermore, organizational performance may also be more closely correlated to the collective technological readiness of their employees, rather than to the individual technological capabilities of their employees, thus diminishing the mediating influence of digital capabilities.

Furthermore, hypothesis 8 reported that digital literacy cannot moderate the relationship between metaverse technology and digital culture, suggesting that metaverse technology may influence digital culture regardless of employee literacy level. Retail and e-commerce firms may provide structured training, automated interfaces, or guided digital workflows, reducing the reliance on individual digital literacy. Thus, digital culture formation may be driven more by organizational practices and leadership support. In addition, hypothesis 9 confirms that digital literacy strengthens the effect of metaverse technology on employee digital capability. Hence, the promotion of digital literacy can enhance organizational performance by strengthening the positive relationship between metaverse technology and employee digital capability. Therefore, digital literacy is proved to be a significant factor which causes to enhance employee digital capability and these results are consistent with literature (Cetindamar Kozanoglu & Abedin, 2021; Jiang et al., 2025).

6. CONCLUSION

This study examined the influence of metaverse technology, digital culture, employee digital capability, and digital literacy on organizational performance in retail and e-commerce organizations. The study presents the result that implementation of metaverse technology has the potential to improve the digital culture and digital capability of an organization, and these improvements lead to improved performance. Digital culture is shown to be the mediator of the relationship between metaverse adoption and performance. Digital literacy has a critical role in contributing to the positive impact of metaverse technology on employee capability. The study shows that employee digital capability cannot directly affect performance of the organization or mediate between the metaverse and performance. In order for organizations to gain the full advantage from technology adoption, supportive elements such as the digital culture, developing the skills of employees, and enhancing digital literacy are required. These insights provide a roadmap for retail

and e-commerce organizations aiming to attain sustainable competitive advantage in the digital era.

6.1. Implications Of the Study

Findings of the study have valuable implications for the practitioners to promote organizational performance. For instance, results of this study showed how metaverse technology is beneficial. Thus, through investment in metaverse technology, retail and e-commerce companies can optimize their operations, lower expenses and provide customers with immersive experiences, improving buying behaviors and enhancing loyalty. Additionally, the outcomes of the study validate that digital culture provides positive contributions to company success; therefore, creating a digital culture promotes employees of organization to engage in technology related processes, collaborate and creatively innovate, resulting in increased continual company flexibility. Findings of the study recommended to promote metaverse technology implementation, since using the metaverse for customer engagement enables interactive shopping experiences, product visualization, and personalized services, strengthening brand loyalty and competitive advantage. Additionally, this study recommended promoting training activities because cross-functional training initiatives prepare employees to work across different departments and platforms, maximizing the benefits of metaverse technology. Hence, this study provided valuable insights for the practitioners to enhance organizational performance of retain and e-commerce companies.

6.2. Limitations And Future Directions

Although this study has significant contribution to theory and practice, however, this study has few limitations which could be the directions for future studies. First, this study is limited to retail and e-commerce organizations, which may reduce its generalizability to other industries with different technological or operational characteristics. Future studies should also consider various organizations which are extensively using metaverse technology. Second, this study focused on employees already familiar with digital tools, potentially overlooking perspectives of less digitally experienced staff. Future studies should use various control variables and data should also be collected from those employees having less awareness about metaverse technology. The other important control variables include: firm size, technological infrastructure, and management practices. Third, the fast-paced evolution of metaverse platforms may reduce the long-term applicability of findings. To address these limitations, future studies should consider future orientated technologies related to metaverse. Fourth, this study relied on perception-based questionnaires rather than objective performance metrics, which may affect the precision and reliability of the results. Hence, future studies should use secondary data on metaverse technology and organizational performance to authenticate the results based on questionnaire surveys.

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