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Research Article

The Role of Digital Transformation in Enhancing Employee Competencies: A CMMI-Mediated Approach Towards Sustainable Organizational Development

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ABSTRACT

This study investigates the impact of Digital Transformation (DT) on Employee Competencies, focusing on the mediating role of Capability Maturity Model Integration (CMMI). It examines how digital platforms, data media, and automation contribute to the enhancement of employee competencies while promoting sustainability in organizational growth. A quantitative survey was conducted with 150 small and medium-sized enterprises (SMEs) in Xi'an, Shanxi Province, using 300 structured questionnaires, yielding 265 valid responses. Data were analyzed through Smart PLS-SEM to ensure the reliability and validity of the models and to test the hypotheses. The results confirmed strong reliability and validity, with composite reliability, factor loadings, Cronbach's α, and average variance extracted (AVE) meeting statistical requirements. Structural model analysis supported all hypotheses, revealing that digital transformation components—digital platforms, digital data, digital media, and automation—positively impacted Employee Competencies, either directly or through CMMI's mediating effect. Furthermore, CMMI integration enhanced the organization's ability to achieve sustainable development by fostering continuous improvement in employee capabilities. This study contributes to Digital Transformation research by emphasizing CMMI's role in the DT-Employee Competency relationship and offers practical insights on leveraging digital technologies and process maturity models to achieve sustainability through workforce development.

Keywords: Digital Transformation Capability Maturity Model Integration Sustainable Organizational Development PLS-SEM.

INTRODUCTION

Digital transformation is not only essential for adapting to emerging technologies but also acts as a crucial driver of sustainable development (Brunetti et al., 2020). By modernizing through digital platforms and digital media, organizations can shift from traditional operational models to eco-friendly, low-carbon processes, thereby supporting sustainability (Plantin & Punathambekar, 2019). Since 2016, companies have increasingly focused on reducing their carbon footprint and resource consumption, with digital solutions playing a key role in meeting stakeholder expectations for environmental and social responsibility (Chuang & Huang, 2018). The COVID-19 pandemic further highlighted the importance of digital skills, especially in cultivating employees' green competencies, which has proven effective in reducing costs, boosting productivity, and minimizing reliance on environmental resources (Piwowar-Sulej et al., 2024). Companies that prioritize green skill development not only achieve higher productivity but also gain greater recognition and social influence among stakeholders (Stahl et al., 2020).

In remote work settings, the combination of digital platforms and digital media further amplifies the impact of digital transformation on sustainable development. Digital platforms provide organizations with tools and technologies that support automation, standardization, and improved operational efficiency (Plantin & Punathambekar, 2019). For

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example, digital platforms allow employees quick access to the necessary information and resources, enhancing productivity and task accuracy. Additionally, digital platforms offer more learning opportunities and channels for employee skill development.

Meanwhile, digital media plays a crucial role in communication and collaboration. Digital media not only enables cross-departmental and cross-hierarchical communication but also fosters knowledge sharing and teamwork (Khan et al., 2021). When digital platforms and digital media are used together, they create a comprehensive digital ecosystem that enables employees to collaborate effectively and share information in real-time. This integration allows organizations to respond more quickly to market changes and facilitates knowledge and skill dissemination across the organization(Aripin et al., 2023).

The interaction between digital platforms and digital media also supports Capability Maturity Model Integration (CMMI). Digital platforms enhance the implementation of CMMI by standardizing and automating business processes, while digital media provides a foundation for knowledge sharing and collaboration within the CMMI framework, helping organizations achieve higher process maturity (Minh & Thanh, 2022a). For instance, through digital media, employees can share best practices and successful experiences, which helps to enhance overall process maturity and improve CMMI effectiveness. Thus, the integration of digital platforms and digital media not only promotes employee skill development but also significantly contributes to continuous improvement and process optimization within organizations (Gökalp, E., & Martinez, V, 2021).

However, organizations face numerous challenges in digital transformation, including resistance to change, integration with legacy systems, data security concerns, skills gaps, and the lack of clear digital strategies. Overcoming these challenges requires comprehensive change management, strategic planning, and robust cybersecurity measures (Minh & Thanh, 2022a). This study explores how the Capability Maturity Model Integration (CMMI) can mediate the relationship between digital transformation efforts and employee skill development, offering insights into optimizing technology investments and fostering a skilled, adaptable workforce (Nazara et al., 2024).

In recent years, digital transformation has accelerated globally, fundamentally reshaping organizational operations and competitive strategies. It involves not only the adoption and application of new technologies but also a complete overhaul of business processes, operational models, and customer engagement approaches. Leveraging digital technologies enables organizations to enhance operational efficiency, improve customer experiences, and maintain competitiveness in a dynamic market (University of Arkansas et al., 2013). Despite the broad attention digital transformation has received, both academia and industry continue to deepen their understanding of its implications. Among the tools of transformation, CMMI has gained recognition as a crucial framework, playing a key mediating role in optimizing digital transformation processes (Zhang et al., 2021).

CMMI integrates advanced data analytics, machine learning, and automation capabilities, significantly optimizing data-driven decision-making processes within organizations. By enhancing the flow of actionable data insights, CMMI improves decision-making efficiency across functions, ensuring that insights derived from data are effectively utilized to support digital transformation (Hashim et al., 2024). Research suggests that organizations using CMMI are better equipped to leverage data analytics, resulting in more effective digitalization efforts and improved market competitiveness(Omol et al., 2024) .

In addition to technological frameworks, employee skill development is vital to the success of digital transformation. Employees are critical in implementing digital transformation strategies and effectively utilizing CMMI tools to translate data-driven insights into actionable strategies(Sedrakyan et al., n.d.-a). Consequently, investing in employee training and upskilling is essential to maximize the benefits of CMMI and digital transformation(Şener, n.d.). Studies show that organizations providing upskilling opportunities tend to achieve higher levels of CMMI adoption and more significant improvements in transformation outcomes, enhancing both employee competencies and overall organizational performance (Hashim et al., 2024).

This research aims to investigate the mediating role of CMMI in digital transformation and its impact on employee skill development. Through an empirical study of small and medium-sized enterprises (SMEs) in Xi’an, China, this research will analyze the effects of digital transformation on employee competencies and examine CMMI’s mediating role in this context. Xi’an, as a major business and economic hub in China, has experienced substantial growth in its business environment over recent years. Focusing on SMEs in Xi'an, this study will explore the practical challenges, strategies, and outcomes associated with digital transformation. Using quantitative research methods, data will be

collected and analyzed from companies implementing digital transformation, providing valuable insights into CMMI's role in advancing employee skill development.

The Relationship between Digital Platforms and Capability Maturity Model Integration (CMMI)

Digital platforms have become an essential component of organizational transformation, helping businesses streamline processes and improve operational efficiency(Munachi Ijeoma Ononiwu et al., 2024). The capability maturity model, developed to measure process maturity, greatly benefits from these platforms through enhanced process standardization and resource allocation (Minh & Thanh, 2022b). Studies have shown that digital platforms enable higher levels of process integration and automation, ultimately contributing to the implementation of CMMI (Sedrakyan et al., n.d.-b).

H1: Digital platforms have a positive effect on Capability Maturity Model Integration (CMMI).

The Relationship between Digital Media and Capability Maturity Model Integration (CMMI)

Digital media, acting as a medium for communication and collaboration both within and beyond organizational boundaries, contributes significantly to process improvement and organizational maturity(Marion & Fixson, 2021). Research by Smith and Groh (2020) highlights how the use of social media platforms enhances knowledge transfer and fosters a collaborative environment, which directly influences the efficiency of processes and the adoption of CMMI standards.

H2: Digital media has a positive effect on Capability Maturity Model Integration (CMMI).

The Relationship between Digital Platforms and Employee Competencies

Digital platforms provide employees with sophisticated tools and technology that help them perform tasks more efficiently and acquire new skills. According to studies by Cetindamar Kozanoglu & Abedin, (2021), the integration of digital tools into daily operations increases individual productivity and competence, thereby promoting the development of employee skills. By facilitating access to knowledge and improving task management, digital platforms empower employees to enhance their competencies (Trenerry et al., 2021).

H3: Digital platforms have a positive effect on employee competencies.

The Relationship between Digital Media and Employee Competencies

Digital media encourages collaboration and communication among employees, both of which are critical for skill development(Saniuk et al., 2023). According to (Rasheed et al., 2020), the use of digital communication tools such as social media and collaborative platforms helps foster teamwork, knowledge sharing, and professional growth(Masood et al., 2023). These tools are essential for modern employee skill development, helping employees stay updated on industry trends and improve their communication skills (Chen & Wei, 2020).

H4: Digital media has a positive effect on employee competencies.

The Mediating Role of Capability Maturity Model Integration (CMMI)

CMMI, as a process improvement framework, aids organizations in managing and refining their processes, fostering an environment that enhances employee skill development(Gellert, n.d.). Recent studies, such as those by Chen, C. Y., & Lee, J. C. (2022), highlight that CMMI contributes to standardizing processes and improving project outcomes, which positively impacts employee performance and competencies. By strengthening organizational infrastructure through CMMI, digital platforms can more effectively enhance employee skills (Gu, N., Cai, Z., & Zhao, S. 2024).

H5: Capability Maturity Model Integration (CMMI) significantly mediates the relationship between digital platforms and employee competencies.

H6: Capability Maturity Model Integration (CMMI) significantly mediates the relationship between digital media and employee competencies.

The Relationship between Capability Maturity Model Integration (CMMI) and Employee Competencies.

Finally, the implementation of CMMI directly influences employee competencies. Organizations that have adopted CMMI models report higher levels of employee efficiency and performance, as noted in the research by Jiang, S.

(2021, March). These improvements are attributed to the streamlined processes and enhanced organizational infrastructure made possible by CMMI, which indirectly improves employee skills (Smith & Groh, 2020).

H7: Capability Maturity Model Integration (CMMI) has a positive effect on employee competencies.

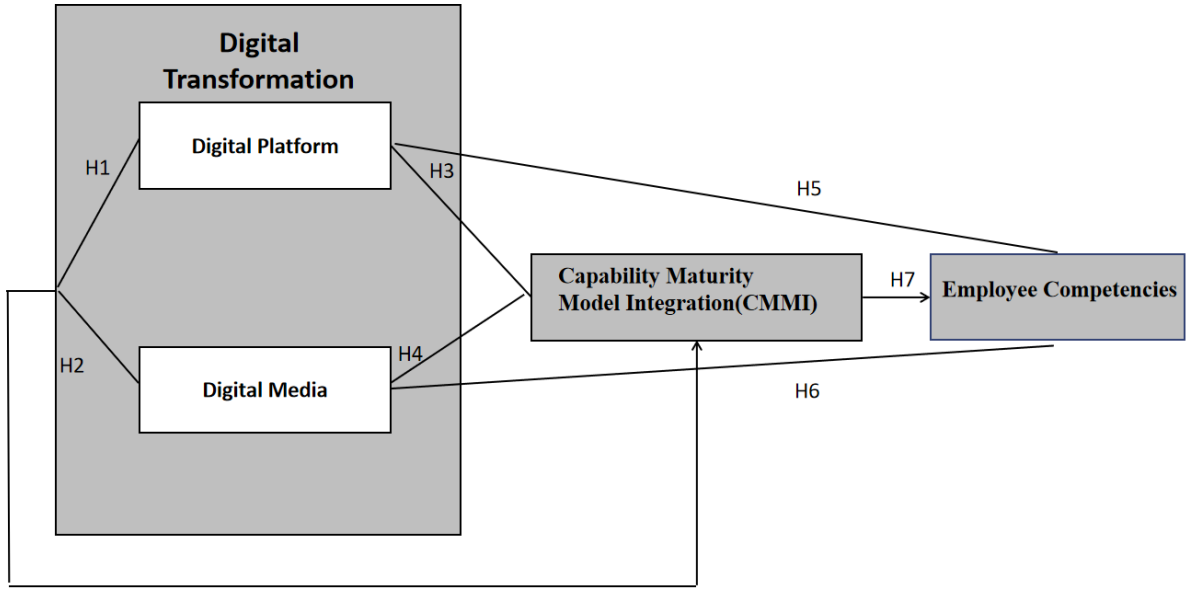

Figure 1. Hypothetical framework(Source: Created by Dailibo)

MATERIALS AND METHODS

Population and procedure

The data collection targeted managers from small and medium-sized enterprises (SMEs) in Xi'an, Shanxi Province, with over 20 employees. These managers were selected due to their role as key decision-makers within their organizations and their access to essential internal information. We chose the SME sector in Xi'an for its notable contribution to local economic growth and its increasing alignment with sustainable development initiatives. The focus on SMEs in this context is justified for several reasons: first, Shaanxi Province's GDP reached approximately 3.6 trillion RMB in 2023, with a year-on-year growth of 5%, indicating the region’s steady economic development and Xi’an’s prominent role as a driving force within it (Shanxi Provincial Bureau of Statistics, 2023). Second, SMEs are crucial contributors to this growth, particularly in sectors such as high-tech, traditional manufacturing, cultural industries, and modern services. Xi’an’s strategic emphasis on fostering a resilient SME sector has encouraged both technological advancement and sustainable practices, establishing a foundation for balanced economic progress and environmental responsibility.

Third, while SMEs drive economic development, they also face challenges due to limited resources, especially in implementing digital transformation. Thus, exploring how SMEs in Xi'an can leverage digital platforms and digital media to facilitate this transformation is particularly relevant, with a focus on utilizing the Capability Maturity Model Integration (CMMI) to enhance employee competencies. In the context of global sustainable development goals, SMEs must consider not only economic growth but also the sustainability of their technological advancements. By adopting digital platforms and digital media, SMEs can motivate employees to actively participate in digital transformation, fostering digital awareness and enhancing internal capabilities. Moreover, implementing CMMI not only improves employee skills but also strengthens an enterprise’s credibility and competitive edge in the marketplace. This dual approach, emphasizing sustainable development through digital transformation and capability enhancement, supports the long-term growth of Xi'an’s SMEs and contributes to the development of a digital local economy.

This study utilized a cross-sectional design with self-reported data collection methods. To ensure the representativeness of the data, the research team employed a multi-respondent survey approach, adopting a systematic sampling and survey procedure. First, in collaboration with local industry associations, 150 SMEs in Xi'an were randomly selected as the sample pool. Sample selection was based on factors such as industry type, company size, and whether the firm had implemented GHRM practices. Researchers contacted the human resource managers of these SMEs to gather detailed insights into their GHRM practices, particularly in areas such as green recruitment, green training, green rewards, and green performance evaluations. Only companies that had already adopted GHRM measures were invited to participate, ensuring that survey data would be both accurate and relevant.

With formal consent obtained from the companies, 300 structured questionnaires were distributed to senior managers of the selected SMEs between September and November 2024. Each questionnaire was accompanied by a cover letter explaining the research background, objectives, and assurances of anonymity and confidentiality. This careful approach aimed to alleviate concerns among managers and improve their willingness to participate and provide candid responses. To further enhance the response rate, follow-up reminders were sent every two weeks after the initial distribution, totaling three reminders. In the end, 265 completed questionnaires were received, with 253 (representing 84.33% of the total collected) meeting the study’s research criteria and thus included in the final analysis.

The questionnaire was initially prepared in English to ensure high quality and consistency in the measurement tool. For precise comprehension among managers, the research team paid special attention to linguistic accuracy during the translation process, taking care to avoid ambiguities or misunderstandings that could arise from cross-language issues. In summary, this study followed stringent sampling and data collection protocols, providing reliable and valid data for subsequent analysis.

According to the descriptive analysis, the majority of participants in the sample were male (61.3%), with most aged 35 and above, representing 47.8% of the respondents, followed by those aged 26 to 34 (33.2%). The educational level was generally high, with 65.2% holding graduate degrees. A significant majority (84.7%) of participants were married, and 63.9% held middle or upper management positions. Furthermore, 67.5% of the participants had more than 7 years of work experience. These demographic characteristics reflect the typical profile of employees in Xi'an’s SME sector.

Measurements

The survey tool used in this study was adapted from existing resources. It employed a Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5) to measure Digital Transformation and Employee Competencies. All scales demonstrated acceptable reliability levels ($\alpha > .70$; Hair et al., 2019). The Digital Transformation scale, based on existing frameworks, consists of 10 items across two dimensions: digital platform and digital media. The digital platform dimension includes five items, while digital media contains five items. Additionally, the Capability Maturity Model Integration (CMMI) scale includes twenty items measuring capability maturity levels within the organization. For example: "The company's digital platforms improve operational efficiency," "Employees receive continuous training on digital tools," and "Specific digital transformation goals are set for each department."

The Employee Competencies scale, adapted from prior studies, comprises ten items, including: "Improvement in employees' digital skills" and "Enhanced problem-solving abilities due to digital transformation."

Data Analysis Tools and Techniques

This study uses Structural Equation Modeling (SEM) to analyze the collected data. According to Hair et al. (2019), SEM includes two main approaches: Covariance-Based SEM (CB-SEM) and Partial Least Squares SEM (PLS-SEM). CB-SEM focuses on testing theories by analyzing the inherent relationships among variables, using the sample’s covariance matrix for model assessment. In contrast, PLS-SEM is a variance-based method that estimates parameters by considering total variance (Hair et al., 2017). As a causal-predictive approach, PLS-SEM is designed to produce causal explanations within statistical models (Chin et al., 2020). It bridges the gap between explanation and prediction, which is important for generating insights in management research (Hair et al., 2019). Given these characteristics, PLS-SEM is well-suited to the needs of this study.

The study’ s research framework divides digital transformation into two core components: digital platforms and digital media. Hypotheses H1 and H2 evaluate the influence of these components on the Capability Maturity Model Integration (CMMI). Hypotheses H3 and H4 assess the direct impact of digital platforms and digital media on employee competencies. Hypotheses H5 and H6 examine whether CMMI mediates the relationships between digital platforms and employee competencies, as well as between digital media and employee competencies. Lastly, hypothesis H7 investigates the direct impact of CMMI on employee competencies. Therefore, PLS-SEM is used to analyze the complex interconnections between digital platforms, digital media, CMMI, and employee competencies, providing insights into the causal relationships within the model.

RESULTS

The Measurement Model

The results of the measurement model for Digital Platform, Digital Media, Capability Maturity Model Integration and Employee Competencies are presented in Table 1. All constructs have Outer Loadings exceeding 0.7, CR exceeding 0.70, AVE greater than 0.50, and Cronbach's α coefficients above 0.7. The measurement model in this study (Figure 2) is deemed to have strong reliability and validity based on the findings presented in Table 1.

Table 1: Measurement Model

Variable	Indicator	Factor Loadings	AVE	CR	Cronbach’s alpha
DP	DP1	0.861	0.755	0.939	0.919
	DP2	0.863			
	DP3	0.908			
	DP4	0.843			
	DP5	0.867			
DM	DM1	0.864	0.759	0.940	0.920
	DM2	0.85			
	DM3	0.852			
	DM4	0.878			
	DM5	0.91			
CMMI	CMMI1	0.826	0.711	0.937	0.918
	CMMI2	0.918			
	CMMI3	0.82			
	CMMI4	0.829			
	CMMI5	0.829			
	CMMI6	0.834			
EC	EC1	0.781	0.673	0.925	0.901
	EC2	0.804			
	EC3	0.786			
	EC4	0.799			
	EC5	0.938			
	EC6	0.803			

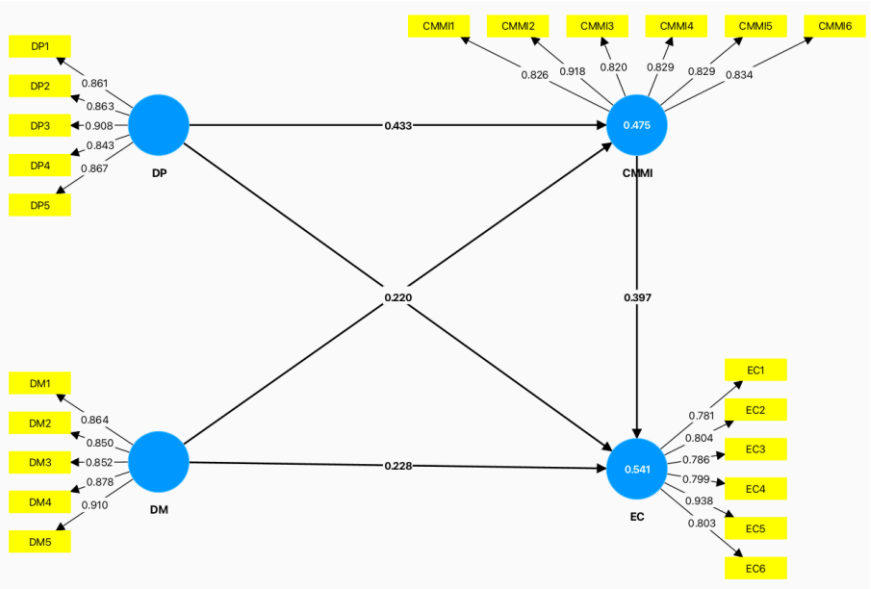

Figure 2. Measurement Model(Source: Created by Dailibo)

To examine the interrelationships within the structural model of this study, the Discriminant Validity of the constructs, based on the HTMT (Hair et al., 2021), is presented in Table 2. All values for HTMT fall below 0.85, demonstrating that our constructs exhibit good discriminant validity.

Table 2: HTMT

	CMMI	**DM**	**DP**	**EC**
CMMI				
DM	0.651			
DP	0.691	0.678		
EC	0.742	0.662	0.673	

Structural Model

To avoid significant multicollinearity impacts on the structural model estimates, VIF values for predictive variables should ideally be below 5, with a preference for values under 3 (Hair et al., 2021). In this study, all VIF values are below 5, confirming that multicollinearity is not a concern.

Table 3: VIF

	VIF
CMMI1	2.286
CMMI2	4.272
CMMI3	2.297
CMMI4	2.378
CMMI5	2.342
CMMI6	2.418
DM1	2.615
DM2	2.394

	VIF
DM3	2.51
DM4	2.944
DM5	3.764
DP1	2.497
DP2	2.626
DP3	3.81
DP4	2.479
DP5	2.598
EC1	2.069
EC2	2.165
EC3	2.065
EC4	2.205
EC5	4.89
EC6	2.122

Next, this study assess the model's relevance and fit by examining the R^2 and Q^2, to investigate the predictive relevance of the research model (Hair et al., 2021). As shown in Table 4:

R^2 value for CMMI and EC are 0.475 and 0.541, which is considered acceptable. If the coefficient of determination is close to 0, it suggests minimal impact, while higher values indicate greater predictive capability (Hair et al., 2021).

In the structural model, predictive relevance is evaluated using Q^2 (Stone-Geisser). Q^2 values above 0 indicate that the model has predictive relevance for a specific endogenous construct, whereas values of 0 or below suggest a lack of predictive relevance(Cohen et al. , 2010). Table 4 shows that the Q^2 value for CMMI and EC are 0.467 and 0.449, indicating that the model possesses a significant level of predictive capability.

Table 4: R^2 and Q^2

	R-square	Predictive Relevance Q^2
CMMI	0.475	0.467
EC	0.541	0.449

In the step 2, the path coefficient indicates the relationship between IV and DV, determined using the bootstrapping method. If the T-statistic >1.96 and the significance level P-value <0.05, The hypothesis has been accepted, and the path coefficient results are displayed in Table 5.

Table 5: Hypothesis Testing

Hypothesis	Interaction	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
H1	**DP -> CMMI**	0.433	0.058	7.425	0
H2	**DM -> CMMI**	0.33	0.06	5.528	0
H3	**DP -> EC**	0.392	0.051	7.668	0
H4	**DM -> EC**	0.359	0.049	7.256	0

Hypothesis	Interaction	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
H5	DP -> CMMI -> EC	0.172	0.033	5.209	0
H6	DM -> CMMI -> EC	0.131	0.028	4.692	0
H7	**CMMI -> EC**	0.397	0.051	7.834	0

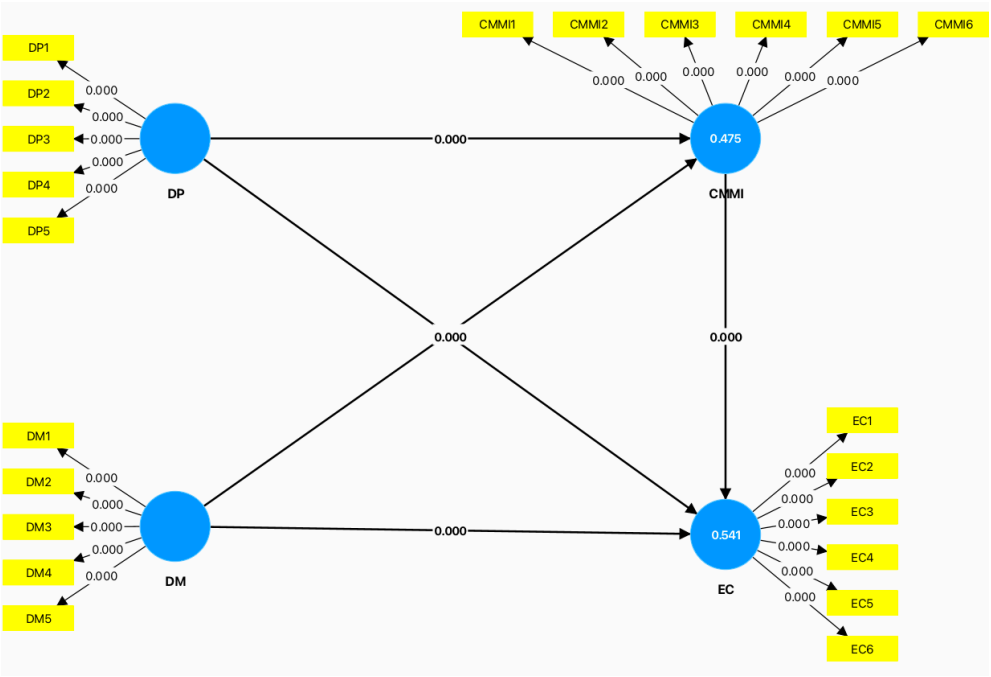

Figure 3. Structural Model (Source: Created by Dailibo)

DISCUSSION

This study aimed to explore the impact of digital transformation on employee competencies, with a particular focus on the mediating role of the Capability Maturity Model Integration (CMMI). The hypotheses tested in this research provide insights into how digital platforms and digital media influence employee competencies directly and indirectly through CMMI. The following discussion addresses each hypothesis and its implications.

H1: Digital Platform and CMMI

The results indicate that the digital platform has a positive effect on CMMI, supporting H1. This finding suggests that digital platforms serve as a foundation for organizations to implement CMMI practices effectively. Digital platforms enable streamlined processes, efficient data management, and a unified structure, all of which are essential for successful CMMI adoption. This aligns with prior research, which highlights that digital platforms can improve process maturity by offering consistent and scalable systems (Rygge, M. K. 20240. Therefore, organizations seeking to enhance their maturity model integration should invest in robust digital platforms that facilitate cohesive and structured operations.

H2: Digital Media and CMMI

The study also finds that digital media positively influences CMMI, confirming H2. This suggests that digital media, such as social media and other digital communication tools, supports CMMI adoption by promoting knowledge sharing, collaboration, and communication within organizations. Digital media enables employees to access and share information more effectively, enhancing decision-making and encouraging continuous process improvement. These findings resonate with studies showing that digital media can support process maturity by enhancing communication and collaboration across different functions (Mandagi et al., 2024).

H3: Digital Platform and Employee Competencies

Supporting H3, the digital platform has a direct positive effect on employee competencies. Digital platforms provide employees with tools and resources to perform their tasks more efficiently and develop new skills, particularly in data-driven and technology-enhanced work environments. The accessibility of digital resources and automation enables employees to adapt to new workflows, thereby improving their technical and analytical skills. This aligns with the literature that emphasizes the role of digital platforms in empowering employees to leverage data and technology effectively(Holzmann & Gregori, 2023).

H4: Digital Media and Employee Competencies

Similarly, H4 is supported, as digital media positively influences employee competencies. Digital media allows employees to engage with continuous learning resources and interact with broader networks, which contributes to skill development. Social media platforms, for example, enable knowledge exchange and professional networking, both of which foster skill growth. This finding supports existing research showing that digital media can play a critical role in professional development by facilitating knowledge sharing and collaboration (Brown & Green, 2020).

H5 and H6: CMMI as a Mediator

Based on the data analysis results, this discussion focuses on the mediating role of the Capability Maturity Model Integration (CMMI) between digital platforms, digital media, and employee competencies. The findings support hypotheses H5 and H6, revealing that CMMI significantly enhances the effect of digital tools on employee competency development. Specifically, CMMI provides a structured framework that helps organizations translate the information and tools provided by digital platforms and media into practical skill enhancement.

Through the support of CMMI, digital platforms facilitate process optimization, enabling employees to develop technical and data-handling skills more effectively. Likewise, digital media, enhanced by CMMI, improves employees' communication and collaboration abilities, fostering an environment of knowledge sharing. Overall, the integration of CMMI not only contributes to process improvement but also ensures a comprehensive enhancement of employee competencies within the context of digital transformation.

These findings highlight that organizations implementing digital transformation should focus not only on adopting digital tools but also on employing maturity models like CMMI. This combination helps to maximize the benefits of digital transformation on employee skills, underlining the importance of integrating digital transformation efforts with maturity models to optimize skill development outcomes.

H7: CMMI and Employee Competencies

Finally, H7 is supported, as CMMI positively affects employee competencies. This finding underscores the role of maturity models like CMMI in developing employees' skills. CMMI not only helps streamline processes but also facilitates a structured approach to learning and development within organizations. When organizations adopt CMMI, they create a culture of continuous improvement, which enables employees to acquire relevant skills that align with organizational goals. This result aligns with prior studies showing that organizations with high maturity levels in CMMI frameworks tend to have better-trained and more capable employees (García, I., Pacheco, C., 2025).

CONCLUSIONS

In the conclusion of this study, the concept of green sustainability offers a new perspective, enhancing the relevance of the impact of digital transformation on employee competencies. First, digital platforms and digital media not only facilitate improvements in organizations' digital maturity through Capability Maturity Model Integration (CMMI) but also serve as important drivers for achieving sustainable development goals. Digital platforms increase resource efficiency through process standardization and automation, reducing energy consumption and thus lowering the carbon footprint. Meanwhile, digital media plays a key role in promoting knowledge sharing and cross-departmental collaboration, helping employees enhance environmental awareness and encourage low-carbon practices.

Additionally, CMMI acts as a bridge in this process, making the effects of digital transformation more comprehensive and profound. The implementation of CMMI promotes process improvement within organizations, ensuring that the use of digital platforms and media aligns with green standards, thereby fostering the development of employees'

green skills. These skills not only enhance employees' professional capabilities but also strengthen the organization's social influence in terms of environmental responsibility.

The findings of this study indicate that CMMI plays a significant mediating role between digital platforms, digital media, and employee competencies, providing a pathway for organizations to build a low-carbon, efficient digital ecosystem. For organizations, driving green transformation and employee skill development through digital means can improve operational efficiency while meeting environmental responsibility requirements. Therefore, incorporating green sustainability goals into future digital transformation strategies will support long-term sustainable development for organizations.

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