



Does IT ambidexterity, digital dynamic capability and patient agility capability influence the performance of outpatient installation services?

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Abstract

Introduction. Utilizing information technology (IT) can accelerate operational procedures, enhance service quality, and increase the accessibility of patient medical data for doctors and medical practitioners. Hospitals need digital dynamic capability to adapt to environmental conditions and patient needs, as well as patient agility capability to achieve superior health service performance.

Method. This study aims to examine the relationships among IT ambidexterity, digital dynamic capability, patient agility capability, and patient service performance. Quantitative research was conducted through questionnaire assessments using Google Forms, targeting managerial-level health workers in outpatient installations at Class C hospitals in Surabaya City, Indonesia.

Analysis. The empirical hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) with data from 114 health worker respondents.

Results. The results indicate that IT ambidexterity and patient agility capability positively influence patient service performance. Nevertheless, digital dynamic capability does not have a significant impact on improving patient service performance. Additionally, digital dynamic capability and patient agility capability serve as mediating variables between IT ambidexterity and hospital patient service performance.

Conclusion. This study contributes to the literature by expanding the conceptual framework linking IT ambidexterity to digital dynamic capability, patient agility capability, and patient service performance within the hospital environment.

Introduction

Public health is a primary concern of government to ensure a better quality of life for its citizens. The Indonesian government is actively working to improve healthcare facilities, particularly hospitals. Hospitals play a crucial role in enhancing patients' health status by providing quality services that meet patients' needs and expectations while adhering to professional and medical ethical standards.

The performance of a hospital largely depends on the quality of its competent workforce and the effective and efficient utilization of infrastructure. A high patient volume requires a workforce that can deliver services efficiently and effectively (Mandal, 2020). Infrastructure means information technology (IT) and the use of digital technologies to transform processes and organisations (digitalization). In the era of digitalization, hospital services require the implementation of integrated digital technology systems. Hospitals that adopt and appropriately modify IT systems are more likely to achieve continuous improvements in service quality performance (Alolayyan et al., 2020; Zayas-Cabán & Wald, 2020). Implementing a digital service-based strategy therefore serves as a key guideline for enhancing patient service performance. This service performance is typically characterized by a high patient volume, increased patient satisfaction, and a low rate of patient complaints (Al-Damen, 2017).

Changes in information technology can drive digital transformation within healthcare organizations (digitalization). Digitalization focuses on patients, service efficiency, and data integration as the foundation for decision-making and policy development (Stoumpos et al., 2023). Implementing digital transformation in hospitals aims to create a sustainable business model that simplifies patient care procedures, thereby accelerating service delivery and reducing operational costs (Van de Wetering, 2021). To remain competitive, hospitals must continuously analyse their strengths, weaknesses, and opportunities while effectively managing IT assets, internal resources, and organizational capabilities (Mandal, 2020). Basically, hospitals can explore new IT resources and leverage existing IT practices, a concept known as IT ambidexterity. Hospital departments that engage in both exploring new IT resources and exploiting existing IT applications are better positioned to adapt to changing patient needs. To support this process, hospitals require digital dynamic capability that can be sustained over time, enabling healthcare workers to effectively create patient agility and respond to evolving service demands (Van de Wetering, 2021).

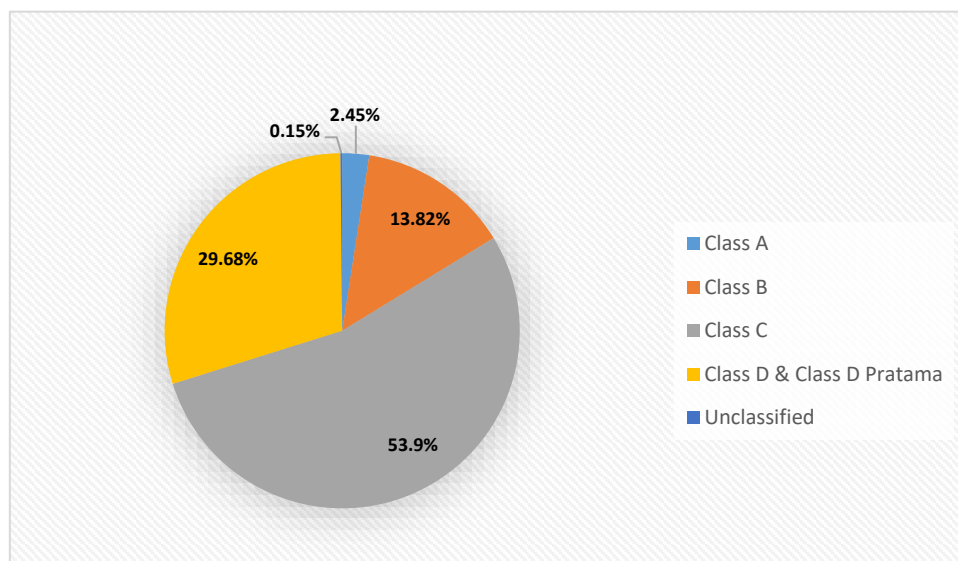


Figure 1. Distribution of the number of hospitals in Indonesia by class
Source: Ministry of Health of the Republic of Indonesia (2025).

The organization of hospitals in Indonesia, according to the Regulation of the Minister of Health of the Republic of Indonesia No. 56 of 2014, comprises general hospitals and special hospitals. The number of hospitals in Indonesia in 2024 based on their class is 3,228. The representation of hospitals by class is provided in Figure 1. Class A hospitals numbered 79 (2.45%), Class B hospitals is 446 (13.82%), Class C hospitals were the most numerous at 1,740 (53.9%), and Class D and Class D Pratama hospitals amounted to 958 (29.68%). Additionally, five hospitals (0.15%) had not yet been classified. Class C hospitals represent the largest group and face intense competition in delivering health services due to similarities in service standards, staffing levels, facilities, and infrastructure. Consequently, Class C hospitals develop competitive strategies focused on providing safe, effective, and high-quality patient care to build patient trust, loyalty, and satisfaction.

Hospitals require basic digital platforms, such as Hospital Management Information System (HMIS), Electronic Medical Record (EMR), digital medical record keeping, and telemedicine systems (Ministry of Health of the Republic of Indonesia, 2021). Nationally, 85.04% of hospitals in Indonesia have implemented Hospital Management Information Systems. In Surabaya, HMIS utilization among employees reached 100% in hospitals that had already adopted the system (Simatupang et al., 2022). The application of this system is comprehensively integrated across all hospital service units, especially in outpatient installations with high service intensity. Zheng (2019) argues that organizations can enhance service delivery by leveraging IT advancements, improving operational efficiency, and utilizing organizational resources and capabilities effectively. In this scope, hospitals are encouraged to adopt similar strategies to strengthen patient services.

The current study linking IT ambidexterity to patient service performance through digital dynamic capability and patient agility capability in hospital settings using PLS-SEM presents novelty and originality. It integrates three elements that have been less frequently explored synchronously in the literature: IT ambidexterity in the healthcare sector, digital dynamic capability as a technology-organization capacity mediator, and patient agility capability as a healthcare service organizational outcome. Although previous research by van de Wetering and Versendaal (2021) highlights the causal relationships among IT ambidexterity, digital dynamic capability, and patient agility, this study extends the model by incorporating patient service performance as the final outcome and positioning patient agility capability as a mediator. Substantively, the study contributes by adopting the PLS-SEM model in the Class C hospitals in Surabaya City, expanding the outcome variable to include patient service performance, and integrating digital organizational capabilities with patient-oriented capabilities. This approach addresses a gap between health IT research, which predominantly focuses on technology adoption, and patient service performance studies, which rarely empirically examines how internal dynamic capabilities translate digital technology investments into service outcomes (Al-Amin et al., 2024).

In this paper, the researchers employed a quantitative approach using primary data collected from questionnaires administered to managerial-level health workers at outpatient installations of Class C general hospitals in Surabaya. Based on this context, the authors aim to examine the impact of IT ambidexterity and digital dynamic capability as independent variables, along with the mediating role of patient agility capability, on patient service performance in hospitals.

This study is particularly relevant in the era of digitalization, as it seeks to evaluate how the use of information and digital technologies influence outcomes in Class C hospitals facing high market competition. This study also contributes to the scope of healthcare services in hospitals from a unique perspective, because most existing literature is focused on large organizations. By applying PLS-SEM, the study strengthens quantitative evidence regarding these mechanisms and provides more specific practical implications for hospital management. Therefore, this research offers a theoretical innovation that distinguishes it from previous studies by bridging the gap in health IT research (specifically concerning which technologies have been adopted and which external

factors influence outcomes) through the introduction of a series of internal dynamic capabilities as mediating mechanisms.

Theoretical background and hypothesis

Resource-based view (RBV)

Resource-based view (RBV) theory provides a theoretical foundation for a strategic approach that focuses on an organization's internal assets, resources, and capabilities as sources of sustainable competitive advantage (Barney, 1991; Wernerfelt, 1984). When applied to IT, resource-based view encompasses IT knowledge, IT operations, and IT infrastructure (Jensen et al., 2016). In this research, resource-based view serves as the foundational theory because it emphasizes the effective management of human resources and digital technologies to support IT ambidexterity within hospital organizations. Organizations that simultaneously exploit and explore their IT resources are better positioned to develop strategic capabilities and respond to changing environmental conditions. In line with the dynamic capability landscape, effective IT ambidexterity management enables organizations to grow, reconfigure, and optimize digital resources, thereby strengthening digital dynamic capability and supporting organizational adaptation to changing market trends (Alaskar et al., 2024; Kero & Bogale, 2023).

Dynamic capability view (DCV)

In conditions of intense competition and economic uncertainty, a company must sustain its performance while maintaining a competitive advantage. Corporate organizations need dynamic capabilities to analyse rapidly changing environments and develop optimal strategies (Wilden & Gudergan, 2015). Teece et al. (2016), pioneers in the study of dynamic capabilities, identify three core components of a company's dynamic capabilities: the ability to sense opportunities and threats, seize opportunities, and reconfigure the asset base. Dynamic capabilities represent an integrative approach to understanding new sources of competitive advantage and a company's ability to respond swiftly (Salge & Vera, 2009). This study employs the dynamic capability view (DCV) theory to underpin digital dynamic capability and patient agility capability, as hospitals must possess dynamic innovation to effectively address patient needs (.

Ambidexterity

To maintain long-term corporate success, organizations must explore new fundamentals by exploiting existing capabilities and investigating new competencies. This is known as ambidexterity, that is, an organization's ability to simultaneously exploit current business operations and explore new opportunities and radical innovations (Adler & Heckscher, 2013; Clauss et al., 2021). This concept underpins superior ambidextrous organizations, which foster more radical innovation (Andriopoulos & Lewis, 2009). It is a key characteristic that enables organizations to respond effectively to rapid changes. Corporate organizations that leverage their capabilities and analyse potential opportunities are better positioned to succeed (Schnellbacher & Heidenreich, 2020). Zhang et al. (2019) demonstrated that balancing exploration and exploitation can optimize organizational effectiveness and efficiency.

Digital dynamic capability

Dynamic capability encompasses two key resource-based components: dynamism and capability (Wernerfelt, 1984). Dynamism refers to a company's ability to update its competencies and capacities to adapt to a rapidly changing business environment. Capability involves the strategic actions of adapting, integrating, and reconfiguring resources to align with environmental conditions (Teece et al., 2016). Digital dynamic capability is an organization's proficiency in managing digital technologies, driving digital transformation, and developing innovative services

and products (Khin & Ho, 2019). The ability to adapt by leveraging the resource base through innovation is crucial for hospitals aiming to enhance patient-centred digital utilization (Evans et al., 2017).

Hypothesis development

In addressing the challenges of the digital transformation era, hospitals must implement an IT ambidexterity strategy. This strategy reflects a hospital organization's strategic capability to develop IT resources. IT ambidexterity strengthens hospital departments' digital competencies and enables the effective management of innovative digital technologies, thereby supporting the development of digital dynamic capability (Van de Wetering, 2021; Khin & Ho, 2019). Based on this foundation, the first hypothesis is assumed as follows:

H₁ IT ambidexterity positively influences digital dynamic capability.

In the context of IT ambidexterity, IT exploration enables the identification and acquisition of digital technologies and IT skills. IT exploration helps hospital departments adapt to and accommodate changes in patients' needs and preferences. In contrast, IT exploitation focuses on deliberately enhancing IT resources, such as redesigning electronic medical records (EMRs), developing new patient services, and improving the accessibility of patient data as medical information (Lee et al., 2015). Park et al. (2017) emphasize that organizations must be capable of responding to both internal and external organizational conditions in a dynamic environment, including customer demand, supply chains, new technologies, government regulations, and competition. Referring to the above arguments, the second hypothesis is developed as follows:

H₂ IT ambidexterity positively influences patient agility capability.

Utilizing digital dynamic capability is essential for developing innovative, effective, and high-quality services in rapidly changing environments (Wilden & Gudergan, 2015). Hospital departments enhance their sensing capabilities, namely their ability to identify and anticipate evolving patient needs and emerging opportunities within the healthcare environment (Khin & Ho, 2019). Digital dynamic capability are designed to achieve patient agility capability and are critical for hospitals to detect and respond to patient needs. Such organizations become agile in highly competitive settings, enabling them to sustain competitive advantages. The role of digital dynamic capability supports agility in addressing patient needs.

While digital dynamic capability and patient agility capability are theoretically related, they operate at different analytical levels. Digital dynamic capability functions as an antecedent enabling infrastructure, whereas patient agility capability reflects realized responsiveness in service delivery (Held et al., 2025; Liu et al., 2024). The third hypothesis is formulated as follows:

H₃ Digital dynamic capability positively influences patient agility capability.

Discussing patient service performance derived from IT ambidexterity inevitably involves digital dynamic capability channels. The relationship among these three elements is complex, with digital dynamic capability positively influencing the impact of IT ambidexterity on service performance (Trieu et al., 2023; Van Lieshout et al., 2021). Nowadays, IT ambidexterity fosters new opportunities focused on renewable innovation, enabling the industrial network framework to maintain a balance in pursuing digital dynamic capability. By leveraging strong dynamic capabilities, IT ambidexterity motivates and facilitates organizational resilience. The strategic environment shaped by IT ambidexterity, through open dynamic capabilities, can create new pathways and advancements

for patient service performance. Hence, enhanced patient service performance provides a competitive advantage. The fourth hypothesis is formulated as follows:

H₄ IT ambidexterity positively influences patient service performance.

Technologically based capabilities are essential for hospitals to achieve patient agility in clinical practice. This requires digital transformation through the adoption of advanced digital technologies. Digital dynamic capability enable hospital departments to better absorb and process sensitive patient information and clinical data, as well as access patient health records (Khin & Ho, 2019). Such capabilities (including learning, coordination, and integration through product, service, and process innovation) require a thorough understanding of internal resources. Thus, hospital departments must be able to respond swiftly to patients' healthcare service needs by leveraging digital innovation to ensure quality, efficiency, and improved patient care (Van de Wetering, 2021). The fifth hypothesis is formulated as follows:

H₅ Digital dynamic capability positively influences patient service performance.

Effective IT-based patient service agility enables doctors to improve clinical communication, remotely monitor patients, enhance clinical decision support, and elevate the quality of medical services (Van de Wetering, 2021). Hospitals with strong patient agility provide flexible, high-quality, and timely services, thereby improving patient outcomes (Van de Wetering et al., 2022). The ability to sense and respond to patient needs (patient-oriented approach) can enhance customer trust and positively impact organizational performance, helping maintain competitiveness. Based on these insights, the sixth hypothesis is developed as follows:

H₆ Patient agility capability positively influences patient service performance.

Various studies highlight the role of IT in enhancing the relationship between dynamic capabilities and organizational agility. Awwad et al. (2022) demonstrate that, alongside IT intelligence, dynamic capabilities are central to driving organizational success. Similarly, Lee et al. (2015) explain that IT ambidexterity significantly influences organizational agility, as it heavily depends on the work environment's capacity to support agile responses in realizing dynamic organizational agility. To achieve productive service performance, leadership skills are essential for managing IT ambidexterity effectively. Specifically, these leadership skills involve agility in planning and making well-informed decisions.

In addition, balancing organizational ambidexterity and agility in IT access is crucial for enhancing service performance. For example, Çelik and Uzunçarşılı (2023) found that organizational ambidexterity positively impacts company performance, while agility in IT innovation fundamentally affects service performance. In the face of uncertainty in business competition, companies must actively configure IT capabilities to respond to change. Agility in IT capabilities enables organizations to develop effective business programmes and strategies (Werder & Richter, 2022). Moreover, demands for service quality are closely linked to ambidexterity and agility in achieving service user satisfaction (Rohmah, 2022). Lastly, the seventh and eighth hypotheses are formulated as follows:

H₇ Digital dynamic capability mediates the relationship between IT ambidexterity and patient service performance.

H₈ Patient agility capability mediates the relationship between IT ambidexterity and patient service performance.

Model

The conceptual framework proposes that IT ambidexterity and digital dynamic capability contribute to patient agility capability and patient service performance in hospital organizations. Patient agility capability acts as a mediating variable that enables hospitals to respond effectively to patient needs and changing service demands. The relationships among these variables are illustrated in Figure 2.

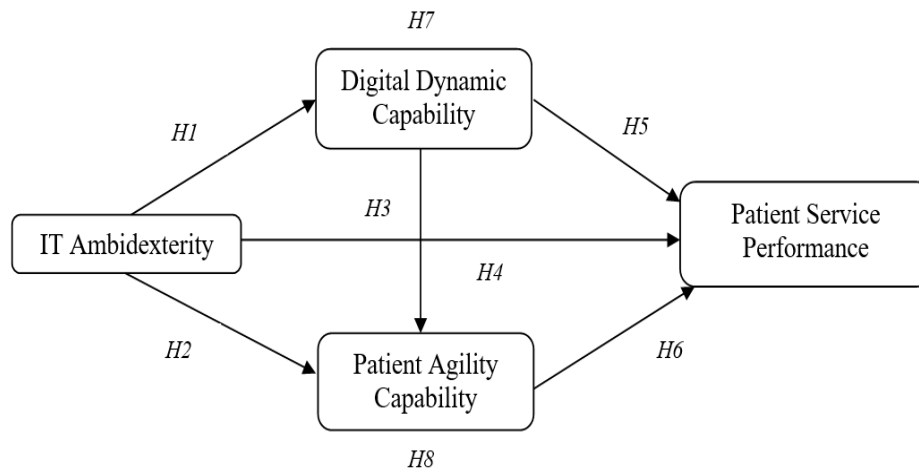


Figure 2. Conceptual framework © The Authors

The conceptual framework includes one independent variable, namely IT ambidexterity. Two intervening variables have been developed: digital dynamic capability and patient agility capability. Patient service performance serves as the dependent variable. This model aims to directly test the influence of IT ambidexterity on patient service performance in hospitals. Additionally, the intervening variables (digital dynamic capability and patient agility capability) are used to examine the relationship between IT ambidexterity and its indirect effect on hospital patient service performance.

Method

Data and participants

The target population comprised managerial health workers operating in outpatient installations at six Class C General Hospitals in Surabaya, Indonesia. The respondents included managerial-level health workers at class C hospital outpatient installations in Surabaya (hospital directors, hospital service managers, heads of outpatient installations, heads of health service units, and hospital IT managers). They were considered to possess a strategic understanding of IT implementation and digitalization, and its implications for dynamic capabilities and patient service performance. All participants in this study were able to assess the performance of their respective units in the outpatient care setting.

Purposive sampling was employed to select managerial-level healthcare personnel directly involved in IT decision-making, digital capability development, and outpatient services. This approach was considered appropriate because the targeted population possessed specific responsibilities and experience relevant to the study variables, including digitalization, patient services, and IT capabilities (Memon et al., 2025).

Data were collected using an online questionnaire featuring a five-point Likert scale, distributed via a Google Form link to managerial-level health professionals. The Likert scale scores range from highest (5 strongly agree) to lowest (1 strongly disagree). The questionnaire was open from 31 May 2025 to 9 August 2025. A total of 117 respondents completed the questionnaire. Assessments from three respondents were excluded due to inconsistencies in evaluating the utilization of digital technology in the hospital. Accordingly, the final analysis included data from 114 respondents (see Table 1).

Job positions	Respondents	Percentage (%)
Hospital directors	5	4.39
Hospital service managers	10	8.77
Heads of outpatient care installations	5	4.39
Specialist doctors	51	44.74
Head of shift supervisors	20	17.54
Head of medical records units	5	4.39
Head of laboratory units	4	3.51
Head of pharmacy units	5	4.39
Head of outpatient pharmacies	4	3.51
Head of IT departments	5	4.39
Totals	114	100

Table 1. Sample characteristics of managerial-level respondents

Data collection adhered to three main scientific standards commonly applied. First, the research instruments were designed based on constructs previously tested in the literature and adapted to the health service context, utilizing a closed-ended Likert scale questionnaire to measure respondents' perceptions of each variable. Second, the validation process involved conducting validity and reliability tests through statistical analysis to ensure the internal consistency of the instruments. Third, ethical approval for the research was obtained from the relevant institutional ethics committee in the outpatient installations at Class C hospitals in Surabaya, ensuring adherence to principles of respondent data confidentiality, voluntary participation, and the exclusive use of data for academic purposes.

Variables

The four identified variables are: (1) IT ambidexterity; (2) digital dynamic capability; (3) patient agility capability; and (4) patient service performance (see Figure 2). Each variable comprises a different number of dimensions and indicators. Explanations and operational definitions of all variables are summarized in Table 2.

Variables	Dimensions	Indicators
IT ambidexterity	IT exploration	Explores new IT resources Experiments to manage new IT
	IT exploitation	- Implement new IT resources - Utilization of digitization and IT services
Digital dynamic capability	Mastery of digital technology	Capable of mastering digital technology
	Capability to drive digital transformation	Implements digital system changes
	Capability in developing service innovations	Development of digital technology systems
Patient agility capability	Patient sensing capability	- Responsive to changes in patient service needs - Determine new and changing patient needs
	Patient response capability	Quickly respond with updates; Changes in the needs of patients
Patient service performance	Health service quality	High-quality outpatient care services; Guarantees integrated feedback
	Accessibility of medical services	- Improves the accessibility of medical services; - Facilitate services via applications and websites
	Patient satisfaction	- Able to provide satisfaction; - Receive patient complaints

Table 2. Variable attributes

Table note: Adopted from: Broekharst et al. (2023), Burns (1998), Chahal and Kumar (2012), Cowing et al. (2009), Foglia et al. (2019), Govindasamy and Wattal (2018), Husien et al. (2020), Kuntz et al. (2023), and Sarmiento Falla and Karwowski (2024).

Unlike the other variables, digital dynamic capability was operationalized using three dimensions measured with a single indicator. This technique is acceptable in PLS-SEM when construct dimensions are concrete, unambiguous, and conceptually well-defined (Hair et al., 2021). Each indicator represents a distinct organizational capability related to digital technology mastery, transformation, and innovation.

Analysis tools

This research employs a quantitative approach, which is developed through the deductive collection and verification of measurable data to link the theoretical framework with the relevance of existing findings. By utilizing a questionnaire survey instrument, the study aims to investigate the causal relationships between the independent variable and the dependent variable, as well as the effects of intervening variables on the connection between them (see Table 2 and Figure 2).

The measurement and analysis of the conceptual framework were conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). This method is appropriate because it explains the variance in the variables, can be applied to relatively small sample sizes, and is capable of handling complex models without strict assumptions regarding data distribution (Hair & Alamer, 2022). Using PLS-SEM also provides high efficiency in testing the proposed hypotheses. The data tabulation includes testing the measurement model, structural model, and mediation effects.

Results

Descriptive statistics

Descriptive statistics provide a summary of respondents' answers to each statement in the research questionnaire. These statements are designed to measure each variable based on reliability and validity assessments (Hermanto et al., 2024). The questionnaire comprised seventeen

statements aimed at evaluating the research hypothesis variables: four items assess IT ambidexterity, three items assess digital dynamic capability, four items assess patient agility capability, and six items assess patient service performance. The distribution of interval categories for respondent characteristics, based on the Likert scale, is summarized in Tables 3, 4, 5, and 6.

Tables 3 and 4 present respondents' assessments of IT ambidexterity and digital dynamic capability. The average scores for IT ambidexterity (4.38 ± 0.103) and digital dynamic capability (4.29 ± 0.113) indicate that respondents generally agreed that their hospitals effectively utilize existing IT resources while exploring new technological opportunities to support digital transformation initiatives. The findings further suggest that participating hospitals possess the capability to manage digital technologies, adapt to changing service requirements, and support innovation in outpatient care services.

Statements		Mean average	Category
<i>IT exploration</i>			
1.	The hospital explores new IT resources within a specific period.	4.36	Strongly agree
2.	The hospital conducts experiments to manage new IT in outpatient care services.	4.25	Strongly agree
<i>IT exploitation</i>			
3.	Hospitals, in their operational activities, implement new IT resources to support healthcare services.	4.41	Strongly agree
4.	Outpatient care services also utilize existing digital applications and IT services.	4.50	Strongly agree
Overall average		4.38 ± 0.103	Strongly agree

Table 3. Distribution of assessments for IT ambidexterity

Source: field observations.

Statements		Mean average	Category
<i>Mastery of digital technology</i>			
5.	Healthcare professionals are capable of mastering digital technology to support outpatient care services.	4.17	Agree
<i>Capability to drive digital transformation</i>			
6.	The hospital implements digital system changes in outpatient medical activities and healthcare service administration.	4.39	Strongly Agree
<i>Capability in developing service innovations</i>			
7.	The ability of hospitals to develop digital technology systems in accordance with outpatient service needs.	4.32	Strongly Agree
Overall average		4.29 ± 0.113	Strongly Agree

Table 4. Distribution of assessments for digital dynamic capability

Source: field observations.

Statements		Mean average	Category
<i>Patient sensing capability</i>			
8.	The hospital is responsive to changes in patient service needs.	4.10	Agree
9.	The hospital can determine new and changing patient needs.	3.88	Agree
<i>Patient response capability</i>			
10.	After identification, the hospital can quickly respond with updates.	4.07	Agree
11.	The hospital responds quickly to changes in the needs of outpatient patients before they become aware.	3.94	Agree
Overall average		3.99 ± 0.105	Agree

Table 5. Distribution of assessments for patient agility capability

Source: field observations.

Statements		Mean average	Category
<i>Health service quality</i>			
12.	The hospital offers high-quality outpatient care services.	4.54	Strongly Agree
13.	The hospital guarantees integrated feedback.	4.46	Strongly Agree
<i>Accessibility of medical services</i>			
14.	The hospital improves the accessibility of medical services to expedite outpatient care.	4.37	Strongly Agree
15.	The hospital facilitates the accessibility of medical services for patients via applications and websites.	4.23	Strongly Agree
<i>Patient satisfaction</i>			
16.	The hospital feels capable of providing patient satisfaction.	4.44	Strongly Agree
17.	The hospital receives few patient complaints.	4.11	Agree
Overall average		4.36 ± 0.161	Strongly Agree

Table 6. Distribution of assessments for patient service performance

Tables 5 and 6 summarize respondents' evaluations of patient agility capability and patient service performance. The average scores of patient agility capability (3.99 ± 0.105) and patient service performance (4.36 ± 0.161) indicate positive perceptions of hospitals' ability to sense and respond to patient needs while maintaining satisfactory service performance. Overall, the results suggest that outpatient units are capable of delivering responsive, patient-oriented, and high-quality healthcare services.

Evaluation of data feasibility

Quantitative data processing was performed using SmartPLS 4.0 software. The evaluation of the measurement model included assessments of reliability and validity. As presented in Table 7, all dimensions satisfy the recommended thresholds, with composite reliability values exceeding 0.6, Cronbach's alpha values of at least 0.7, AVE values above 0.5, and outer loading values greater than 0.7. In general, these results confirm that the measurement model demonstrates adequate reliability and validity.

	Dimensions	Indicators	Outer loading	Composite reliability	Cronbach's Alpha	AVE
ITA	ITE 1	ITE 1(a)	0.914	0.794	0.793	0.828
		ITE 1(b)	0.906			
	ITE 2	ITE 2(a)	0.856	0.677	0.673	0.753
		ITE 2(b)	0.808			
DDC	MDT	MDT 1	0.751	0.781	0.761	0.675
	CDDT 2	CDDT 1	0.870			
	CDSI 3	CDSI 1	0.840			
PAC	PSC	PSC 1	0.887	0.721	0.716	0.778
		PSC 2	0.913			
	PRC	PRC 1	0.895	0.773	0.765	0.809
		PRC 2	0.870			
PSP	HSQ	HSQ 1	0.949	0.894	0.893	0.904
		HSQ 2	0.952			
	AMS	AMS 1	0.916	0.772	0.752	0.800
		AMS 2	0.872			
	PS	PS 1	0.937	0.848	0.840	0.862
		PS 2	0.920			

Table 7. Internal consistency, discriminant validity and convergent validity

Source: compilation and elaboration of field data with SmartPLS.

Table note: ITA = IT Ambidexterity; ITE 1 = IT Exploration; ITE 2 = IT Exploitation; DDC = Digital Dynamic Capability; MDT = Mastery of Digital Technology; CDDT = Capability to Drive Digital Transformation; CDSI = Capability in Developing Service Innovations; PAC = Patient Agility Capability; PSC = Patient Sensing Capability; PRC = Patient Response Capability; PSP = Patient Service Performance; HSQ = Health Service Quality; AMS = Accessibility of Medical Services; PS = Patient Satisfaction.

Inner model and mediation effect

Testing the conceptual framework through an inner model test aims to determine the relationships between variable components. Parameters used include path coefficient values, the coefficient of determination (R^2), model fit test (Q^2), and effect size test (Russolillo, 2012). To assess the significance of relationships between variables, the p-value and t-value are examined. A p-value < 0.05 indicates that the mediation variable has an indirect effect, while a t-value > 1.96 signifies statistical significance.

Table 8 reports the direct and indirect causality results. Regarding direct effects, IT ambidexterity has a significant impact on digital dynamic capability ($t = 10.002$; $p = 0.000$), supporting the first hypothesis. IT ambidexterity also significantly affects patient agility capability ($t = 2.033$; $p = 0.042$), confirming the second hypothesis. Moreover, digital dynamic capability significantly influences patient agility capability ($t = 3.744$; $p = 0.000$), supporting the third hypothesis. IT ambidexterity has a significant effect on patient service performance ($t = 3.366$; $p = 0.001$), validating the fourth hypothesis. Nonetheless, digital dynamic capability does not significantly affect patient service performance ($t = 0.789$; $p = 0.430$), leading to the rejection of the fifth hypothesis. Patient agility capability significantly impacts patient service performance ($t = 1.971$; $p = 0.039$), supporting the sixth hypothesis. In terms of indirect effects, IT ambidexterity does not have a significant effect on patient service performance mediated by digital dynamic capability ($t = 1.278$; $p = 0.201$), resulting in the rejection of the seventh hypothesis. Conversely, IT ambidexterity significantly affects patient service performance mediated by patient agility capability ($t = 3.344$; $p = 0.001$), supporting the eighth hypothesis. Out of the eight proposed hypotheses, six were accepted, and two were rejected.

Furthermore, statistical interpretation shows that IT ambidexterity promotes enhanced digital dynamic capability, patient agility capability, and patient service performance. Likewise, digital dynamic capability functions to drive improvements in patient agility capability and patient service performance. Although the relationship is positive, digital dynamic capability has not had a significant long-term impact on patient service performance due to its limited influence. Patient agility capability, in turn, further enhances patient service performance. IT ambidexterity has been shown to improve patient service performance through patient agility capability. On the other hand, digital dynamic capability does not serve as a mediator in the relationship between IT ambidexterity and patient service performance. The mediating effect of digital dynamic capability on the relationship between IT ambidexterity and patient service performance shows a significant increase; however, it is not sufficiently consistent under current conditions. Conversely, patient agility capability is more reliable and plays a more dominant role in shaping IT ambidexterity, which gradually leads to improved patient service performance.

Paths	Original sample	t-value	p-value	Hypotheses	Remark
ITA → DDC	0.604	10.002	0.000	H1	Significant
ITA → PAC	0.209	2.033	0.042	H2	Significant
DDC → PAC	0.397	3.744	0.000	H3	Significant
ITA → PSP	0.399	3.366	0.001	H4	Significant
DDC → PSP	0.104	0.789	0.430	H5	Insignificant
PAC → PSP	0.229	1.971	0.039	H6	Significant
ITA → DDC → PSP	0.048	1.278	0.201	H7	Insignificant
ITA → PAC → PSP	0.240	3.344	0.001	H8	Significant

Table 8. Testing the relationship between variables
Source: compilation and elaboration of field data with SmartPLS.

For the record, the two rejected hypotheses (H₅ and H₇) are implied by the dynamic capability view theory (DCV): in this case, digital dynamic capability has no significant effect on patient service performance. The resource-based view theory (RBV) through IT ambidexterity, mediated by digital dynamic capability, also shows no significant effect on patient service performance. The theoretical significance of these findings is that, although hospital organizations develop digital dynamic capability, namely, the ability to sense, capture, and reconfigure digital resources, this does not automatically guarantee improvements in patient service performance due to an implementation or integration gap between capabilities and measured outcomes. From a resource-based view theory perspective, although IT ambidexterity can represent a potential competitive advantage (because it is valuable, rare, and difficult to imitate), it has not been supported by stable digital capabilities. Hence, the insignificant results suggest that this advantage has not translated into improved performance outcomes, possibly due to suboptimal operational environments, practical implementation, organizational culture, or connections with other internal process factors. Similarly, from the dynamic capability view theory perspective, the development of digital dynamic capability must be supported by organizational structure, the external environment, human resources, and patient responsiveness to effectively convert these capabilities into enhanced service performance. In practice, insignificant results signal that merely developing capabilities is insufficient; organizations must ensure that the mechanisms for translating capabilities into performance are effectively implemented and that the implementation context (including adaptive processes, management support, and organizational fit) is appropriate. The literature demonstrates that digital capabilities are collectively linked to sensing-responding capabilities and agility; however, in situations such as patient service performance in hospitals,

additional steps may be necessary for these effects to translate into tangible performance improvements (van de Wetering & Versendaal, 2021).

Dependent variables	R-Square	R-Square adjusted	Q ²
DDC	0.357	0.352	0.861
PAC	0.287	0.274	0.874
PSP	0.363	0.345	0.908

Table 9. Coefficient of determination (R^2) and model fit (Q^2)

Source: compilation and elaboration of field data with SmartPLS.

The R^2 aims to assess the model's predictive accuracy. An R^2 value between 0 and 1 indicates predictive accuracy and a higher level of model fit (Chicco et al., 2021). The Q^2 statistic is used to measure the model's relevance, with a Q^2 value > 0 indicating model relevance. The dependent variables listed in Table 9 (digital dynamic capability, patient agility capability, and patient service performance) demonstrate high model fit accuracy, as evidenced by positive R^2 values between 0 and 1. The Q^2 values further confirm this: digital dynamic capability has a Q^2 of 0.861, patient agility capability has 0.874, and patient service performance has 0.908. Table 9 also recapitulates that the proposed model is appropriate, as all Q^2 values exceed the established criterion.

Dependent variables	Independent variable (ITA)	Effect size
DDC	0.556	Strong
PAC	0.031	Weak
PSP	0.155	Moderate

Table 10. Effect size (f^2)

Source: compilation and elaboration of field data with SmartPLS.

By testing the f^2 , the standard aims to determine the influence of independent and dependent variables. Suhan et al. (2018) describe that f^2 values fall into three categories: 0.02 indicates a weak effect, 0.15 indicates a moderate effect, and 0.35 indicates a strong effect between independent and dependent variables (see Table 10).

Discussion

The relationship between IT ambidexterity and digital dynamic capability

This study verifies that IT ambidexterity positively influences digital dynamic capability in outpatient services. Therefore, H_1 is accepted. Outpatient installation services at Class C general hospitals in Surabaya have implemented digital technology systems by adopting Hospital Management Information Systems (HMIS), with some also adopting electronic medical record systems (EMR) and telemedicine. These hospitals have leveraged IT resources to meet service needs and integrated them into operational procedures. This finding aligns with the study by Figueiredo et al. (2024), which demonstrated that IT ambidexterity enhances the development of digital dynamic capability within hospital departments. Ambidexterity fosters dynamic resource utilization and experimentation, leading to improved patient service efficiency (Popadiuk et al., 2018).

The relationship between IT ambidexterity and patient agility capability

This research found that IT ambidexterity positively influences patient agility capability; therefore, H_2 is accepted. The role of digital technology is to expedite doctors' work in recording patient diagnoses and treatments, enabling medical personnel to provide care more efficiently (Khin & Ho, 2019). Outpatient services require digital technology to enhance service agility and achieve patient satisfaction. Van de Wetering (2021) demonstrated that the ability of hospital departments to both explore and exploit IT resources and practices can enhance patient agility.

The relationship between digital dynamic capability and patient agility capability

The study found that digital dynamic capability positively influences patient agility capability in outpatient installation services. Hence, H_3 is accepted. This effect is attributed to hospital departments' ability to dynamically adapt IT implementations, thereby accelerating patient care (Khin & Ho, 2019). For example, Atobishi et al. (2024) state that digital dynamic capability enhances patient agility in public sector agencies. Strong digital dynamic capability can improve the support of patient services in hospitals.

Digital dynamic capability represents an organizational capability related to mastering digital technologies, resource integration, innovation, and transformation, whereas patient agility capability reflects the ability to sense and respond to patient needs in a timely and flexible manner (Gong & Ribiere, 2025; Manisha & Ramya, 2025). Thus, digital dynamic capability functions as an enabling capability, while patient agility capability represents its manifestation in service delivery.

The relationship between IT ambidexterity and patient service performance

H_4 was also accepted because IT ambidexterity directly influences patient service performance. IT ambidexterity capabilities streamline service delivery by integrating digital systems across service units. This ambidexterity fosters digital transformation, accelerating the patient service system. Research indicates that IT ambidexterity positively impacts hospital performance and increases patient satisfaction (Popescu et al., 2022). Hospital departments with ambidextrous capabilities can better determine data, develop innovative digital opportunities, and improve patient services, thereby enhancing patient agility capability. Leveraging digital technology resources alongside ambidextrous IT capabilities makes service delivery more effective and responsive to patients' immediate medical needs and demands (Van de Wetering, 2021). Consequently, IT investment is a critical source of business value, and hospitals require skilled human resources to maximize IT ambidexterity. Hospitals committed to ambidextrous management of IT resources are better equipped to detect and respond promptly to patients' medical needs (Mao et al., 2015).

The relationship between digital dynamic capability and patient service performance

The research found that digital dynamic capability did not significantly influence patient service performance in outpatient installations; therefore, H_5 is rejected. These findings suggest the existence of a gap between the development of digital capabilities and their conversion into measurable service outcomes. Although hospitals possess the capability to adapt digital systems and reconfigure digital resources, improvements in patient service performance may not occur without adequate structures, process integration, organizational readiness, and management support.

This interpretation is consistent with Samsuden et al. (2024), who noted that the effect of digital dynamic capability on performance may become insignificant when integration and organizational readiness remain limited. In the context of Class C hospitals, barriers such as IT infrastructure, training, organizational support, and implementation quality may further constrain the translation of digital capabilities into service performance (Alotaibi et al., 2025). Consequently, digital dynamic capability may require complementary mechanisms, including service responsiveness and patient agility capability, before generating tangible performance improvements.

In the healthcare sector, particularly in outpatient installations at Class C hospitals, several obstacles may hinder the translation of digital dynamic capability into improved patient service performance, including suboptimal IT infrastructure, limited training, organizational support, and resistance to rapid change. Consistent with Alotaibi et al. (2025), these factors represent important barriers to the effective implementation of digital capabilities. Under such conditions, digital dynamic capability may require complementary mechanisms, such as patient agility capability and service responsiveness, before generating measurable performance improvements. Therefore, the

insignificant result does not imply that digital dynamic capability is unimportant; rather, it suggests that organizational readiness, implementation quality, and contextual conditions remain critical in converting digital capabilities into tangible service outcomes.

The relationship between patient agility capability and patient service performance

The results also affirm that patient agility capability positively influences patient service performance; therefore, H_6 is accepted. Patient agility capability reflects a hospital's ability to sense patient needs and respond promptly to changes in service demands (Wu & Hu, 2012). In outpatient installations, this capability supports responsive, patient-oriented, and high-quality healthcare services. Consistent with Sarmiento Falla and Karwowski (2024), stronger patient agility capability contributes to higher service performance, while the integrated use of IT enhances operational efficiency and supports the digitalization of clinical practice systems (Mao et al., 2023).

The relationship between IT ambidexterity and patient service performance through digital dynamic capability

Other statistical tests contradict the findings indicate that digital dynamic capability does not significantly mediate the relationship between IT ambidexterity and patient service performance. This suggests that the indirect pathway through digital dynamic capability is not statistically supported, highlighting the role of a potential conversion gap between IT capability development and realized service outcomes. These non-significant results do not imply that digital dynamic capability is detrimental; rather, they indicate that its impact on performance is indirect and contingent upon supporting mechanisms such as organizational readiness, process integration, and service-level responsiveness (e.g., patient agility capability).

This reality verifies that H_7 is rejected, indicating that the role of digital dynamic capability in mediating the relationship between IT ambidexterity and patient service performance is not statistically significant. This also occurs because IT ambidexterity does not provide a sufficient foundation for digital dynamic capability. Besides, the presence of digital dynamic capability in the relationship between IT ambidexterity and patient service performance does not necessarily result in improved service quality, such as enhanced operational efficiency or better understanding of patient needs. Broadly speaking, this indicates that possessing both capabilities alone is insufficient to automatically enhance service outcomes, due to the existence of a conversion gap between the projected capabilities and actual results. Within the frameworks of the dynamic capability view (DCV) and resource-based view (RBV) even if an organization successfully develops IT ambidexterity resources and digital dynamic capability, tangible improvements in patient service performance may not materialize unless supporting factors (e.g., operational adaptation, internal processes, IT integration, human resource readiness, and organizational culture) are aligned and coherent. Kokubun (2025) underscores that the effect of ambidexterity in digital capabilities on organizational performance may be weak or even insignificant if the organization's readiness and management support depend solely on digitalization. These current facts highlight the need to deepen our understanding of how the influence of IT ambidexterity on service outcomes must be complemented by contextual conditions, strategic alignment, and complementary implementation mechanisms.

The relationship between IT ambidexterity and patient service performance through patient agility capability

The final empirical test proves that IT ambidexterity, mediated by patient agility capability, has a significant impact on patient service performance. The presence of IT ambidexterity, balanced with strong patient agility capability, facilitates improvements in patient service performance. Based on the situations observed at the study site, hypothesis H_8 is accepted. Overall, this study investigates the role of agility capability in relation to IT ambidexterity and its effect on patient

service performance. IT ambidexterity can significantly enhance patient service performance through agility capability, which enables the organization to respond swiftly to restructuring amid evolving digital demands. First, IT ambidexterity enables organizations to maintain an adaptive and flexible IT portfolio by balancing reliability and efficiency through exploitation, while exploration opens up service innovation. Lee (2015) reveals that IT ambidexterity enhances organizational agility by facilitating versatile operational capabilities. Second, once agility is established, service performance naturally improves, including flexibility, service quality, customer or patient satisfaction, and speed of response, all of which can increase over time (Rawat & Barnes, 2025). Organizations with agility can respond to and address customer or patient needs more quickly, utilize IT in real time, and adjust service processes accordingly. Thus, agility serves as a critical intermediary, enabling investments in IT ambidexterity to translate into tangible improvements in patient service performance: without agility, IT alone is insufficient to produce service enhancements.

Conclusions

This research highlights both the direct and indirect relationships among IT ambidexterity, patient agility capability, digital dynamic capability, and patient service performance. The hypotheses regarding the direct relationships are as follows:

- (1) IT ambidexterity significantly enhances digital dynamic capability;
- (2) IT ambidexterity significantly improves patient agility capability;
- (3) digital dynamic capability significantly increases patient agility capability;
- (4) IT ambidexterity significantly boosts patient service performance;
- (5) digital dynamic capability slightly not supported patient service performance, but this effect is not statistically significant;
- (6) patient agility capability significantly enhances patient service performance;
- (7) digital dynamic capability does not significantly mediate the relationship between IT ambidexterity and patient service performance; and
- (8) patient agility capability significantly mediates the relationship between IT ambidexterity and patient service performance.

This research demonstrates that IT ambidexterity plays a central role in enhancing digital dynamic capability, patient agility capability, and patient service performance in hospital outpatient services. The findings indicate that hospitals that effectively balance the exploration of new IT opportunities with the exploitation of existing IT resources are better positioned to strengthen organizational capabilities and improve service outcomes. While digital dynamic capability contributes to the development of patient agility capability, it does not directly improve patient service performance. This finding suggests that the development of digital capabilities alone is insufficient unless supported by appropriate implementation, organizational readiness, and service-level responsiveness. In contrast, patient agility capability emerged as a significant determinant of patient service performance and successfully mediated the relationship between IT ambidexterity and service outcomes.

The study contributes to the literature by extending the understanding of how IT ambidexterity influences patient service performance through organizational and service capabilities in the hospital context. From a practical perspective, hospital managers should focus not only on strengthening digital capabilities but also on developing patient agility capability to ensure that digital investments translate into measurable improvements in healthcare service performance.

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Ethical approval and data consent statements

Informed consent was obtained from all individual participants included in the study. Participation was voluntary, and respondents were assured that their responses would remain confidential and anonymous. Informed consent was obtained from all subjects involved in this study, and the study was approved by the Ethics Committee of the outpatient installations at Class C hospitals in Surabaya.

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