Contents lists available at Science-Gate

International Journal of Advanced and Applied Sciences

Journal homepage: https://www.science-gate.com/IJAAS.html

Prioritizing dynamic capabilities for digital transformation: An AHP approach in Chinese property management companies

Ruirui Lan [1, 2], Abdullah Hashim Hariati [3, *]

[1]Faculty of Smart Health Care, Zhejiang Dongfang Polytechnic, Wenzhou, China
[2]Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor, Malaysia
[3]Center for Real Estate Studies, Institute for Smart Infrastructure & Innovative Construction, Universiti Teknologi Malaysia, Johor, Malaysia

ARTICLE INFO

Article history:
Received 7 February 2026
Received in revised form
17 July 2026
Accepted 22 July 2026

Keywords:
Dynamic capabilities
Digital transformation
Capability prioritization
Analytic hierarchy process
Property management

ABSTRACT

In the digital economy, companies increasingly rely on dynamic capabilities to support digital transformation. This study examines property management companies in China and applies the Analytic Hierarchy Process (AHP) to prioritize three dynamic capability dimensions—sensing, seizing, and transforming. These dimensions comprise 7, 7, and 11 secondary capabilities, which are further divided into 17, 15, and 28 sub-capabilities, respectively. The results show that proactive-driven sensing, strategic agility, and creating a unified digital infrastructure are the highest-priority capabilities, highlighting the importance of opportunity recognition, flexible decision-making, and system integration in supporting effective digital transformation. These findings improve the understanding of the hierarchical structure and relative importance of dynamic capabilities in property service-intensive industries and provide practical guidance for property management companies in resource allocation, process optimization, and the phased implementation of digital initiatives.

1. Introduction

Digital transformation has emerged as a strategic imperative for companies seeking to enhance competitiveness in increasingly volatile and technology-driven environments. For property management companies, characterized by complex service processes, high customer interaction, and fragmented operational scenarios, digital transformation offers significant potential to improve operational efficiency, service quality, and value creation. However, in practice, many property management companies face substantial constraints, including limited resources, diverse technological options, and unclear transformation pathways (Shen et al., 2022).

To address these challenges, companies must develop capabilities that enable them to sense environmental changes, seize emerging opportunities, and continuously reconfigure organizational resources. Dynamic capability theory, originally proposed by Teece et al. (1997), provides a powerful theoretical lens for understanding how companies achieve sustained competitive advantage under conditions of uncertainty. According to this framework, companies' adaptive capacity depends on their abilities to sense opportunities and threats, seize opportunities through effective decision-making and resource allocation, and transform organizational structures and asset bases to support long-term renewal (Teece, 2007).

Although dynamic capability theory has been widely applied to explain companies' strategic responses to environmental change, existing research exhibits three notable limitations. First, prior studies largely emphasize conceptual development or empirical analysis in manufacturing and high-technology industries, offering limited insight into traditional service sectors such as property management. Second, while the sensing–seizing–transforming framework is well established, empirical research rarely examines the relative importance of internal capability components. Third, methodological approaches in existing studies are predominantly qualitative or regression-based, providing limited guidance on how companies should prioritize capability development under resource constraints.

* Corresponding Author.
Email Address: hariati@utm.my (A. H. Hariati)
https://doi.org/10.21833/ijaas.2026.07.015
Corresponding author's ORCID profile:
https://orcid.org/0009-0001-4453-1626

Against this backdrop, this study aims to address these gaps by developing a hierarchical dynamic capability framework tailored to the digital transformation context of property management companies and applying the Analytic Hierarchy Process (AHP) to systematically evaluate and prioritize secondary and sub-capabilities. By doing so, the study seeks to answer the following research question: Which dynamic capabilities should property management companies prioritize to effectively advance digital transformation?

This study makes three primary contributions. First, it operationalizes dynamic capabilities as measurable decision criteria, extending their application from conceptual analysis to applied decision-making contexts. Second, it provides a quantitative prioritization framework that supports evidence-based decision-making for digital transformation in the property management industry. Third, by focusing on an industry-specific application, this study demonstrates how multi-criteria decision-making methods can be used to address practical digital transformation challenges in service-oriented sectors. The findings offer actionable insights for managers and practitioners seeking to allocate resources more effectively and reduce uncertainty in organizational digital transformation initiatives.

2. Literature review

Digital transformation refers to the systematic integration of digital technologies into business processes, organizational structures, and value creation mechanisms, aiming for comprehensive organizational restructuring (Gong and Ribiere, 2021). Unlike incremental technology upgrades, digital transformation is continuous and dynamic, requiring companies to adapt strategies and operations in response to evolving technological and market environments (Leso et al., 2024; Ruirui and Hashim, 2025; Soluk and Kammerlander, 2021).

Dynamic capabilities theory provides a valuable lens for understanding how companies configure capabilities to support digital transformation (Warner and Wäger, 2019). Specifically, companies rely on sensing capabilities to identify technological changes, market demands, and risks (Ghosh et al., 2022; Khurana et al., 2022). Seizing capabilities enable companies to convert these insights into actions via strategic resource allocation and product and service innovation (Yeow et al., 2018). Transforming capabilities facilitate the renewal of assets, processes, and organizational structures to sustain digital transformation outcomes (Ellström et al., 2022; Teece, 2023).

While prior research has examined dynamic capabilities extensively in manufacturing and high-technology sectors (Jie et al., 2025; Yang et al., 2023), evidence from traditional service industries such as property management remains limited. Property management companies operate in highly fragmented service environments characterized by extensive customer interactions, diverse operational contexts, and dispersed service sites. These features make the identification, prioritization, and integration of dynamic capabilities particularly critical for digital transformation success. Moreover, resource constraints in these companies often preclude simultaneous development of all capabilities, highlighting the need to systematically prioritize which capabilities are most impactful.

Recent studies suggest that sensing capabilities often dominate opportunity recognition, whereas transforming capabilities are crucial for long-term organizational renewal (Soluk and Kammerlander, 2021; Teece, 2018; Warner and Wäger, 2019). However, empirical evidence on the relative importance of secondary and sub-capabilities in the property management context is scarce. Addressing this gap, the present study develops a hierarchical framework of dynamic capabilities tailored to property management companies and applies the AHP to systematically evaluate and prioritize capabilities. This approach enables both theoretical refinement and practical guidance for capability development, resource allocation, and strategic decision-making during digital transformation.

3. Research methodology

To address the research question of how property management companies should prioritize dynamic capabilities for digital transformation, this study adopts AHP as the primary analytical method. AHP is particularly suitable for evaluating complex, interrelated organizational capabilities in contexts where quantitative data are limited and strategic judgments are required. It allows systematic quantification of subjective expert assessments and facilitates hierarchical prioritization of capabilities (Piprani et al., 2020).

3.1. Capability framework construction

A dynamic capability framework was developed through semi-structured interviews with eight managers from four leading Chinese property management companies. All four companies had already implemented digital transformation and possessed substantial experience in applying digital technologies in property management operations. The participants included project managers, regional/general managers, and digital transformation leads, all of whom had participated in or led digital transformation initiatives and could fully comprehend the interview content. Interviews were conducted between May and September 2025, with each session lasting 60–90 minutes.

The interview data were analyzed using iterative coding with the support of NVivo 15 software. First, sub-capability items were identified from the interview transcripts through open coding. Subsequently, these sub-capabilities were reviewed and grouped into coherent secondary capabilities based on conceptual similarities and relevance,

forming a structured dynamic capability framework aligned with industry practice. To enhance the reliability of the coding process, two authors independently reviewed and categorized the identified sub-capabilities, and any discrepancies were discussed until a consensus was reached. The coding results were further refined through repeated comparisons with existing literature, ensuring both theoretical grounding and practical relevance.

The final framework consists of three primary capability dimensions—sensing, seizing, and transforming—comprising multiple secondary and sub-capabilities. These were organized hierarchically into three levels: Level 1 represents primary capabilities, Level 2 represents secondary capabilities, and Level 3 represents sub-capabilities (Figs. 1-3).

Pairwise comparisons were conducted first among secondary capabilities under each primary capability (cross-indicator comparisons) and subsequently among sub-capabilities within each secondary capability (internal comparisons), enabling systematic assessment across and within hierarchical levels.

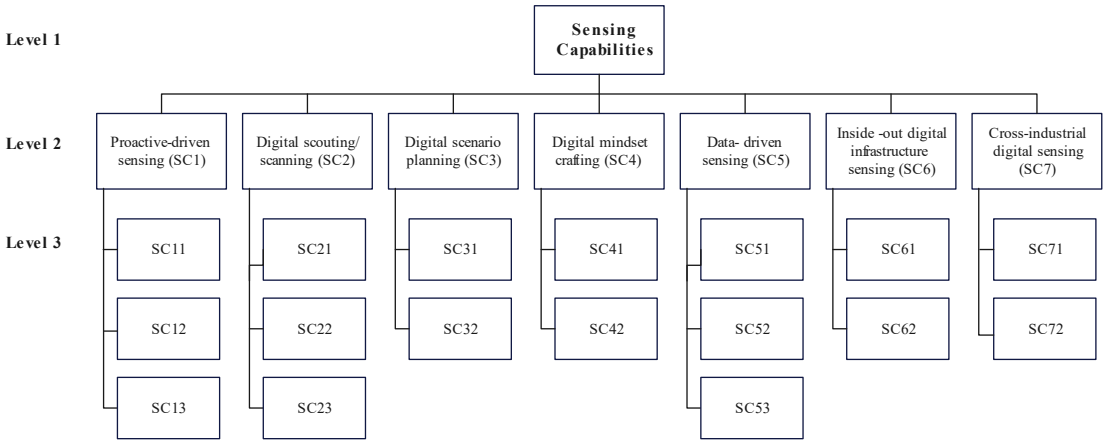

Fig. 1: Analytical hierarchy framework for sensing capabilities

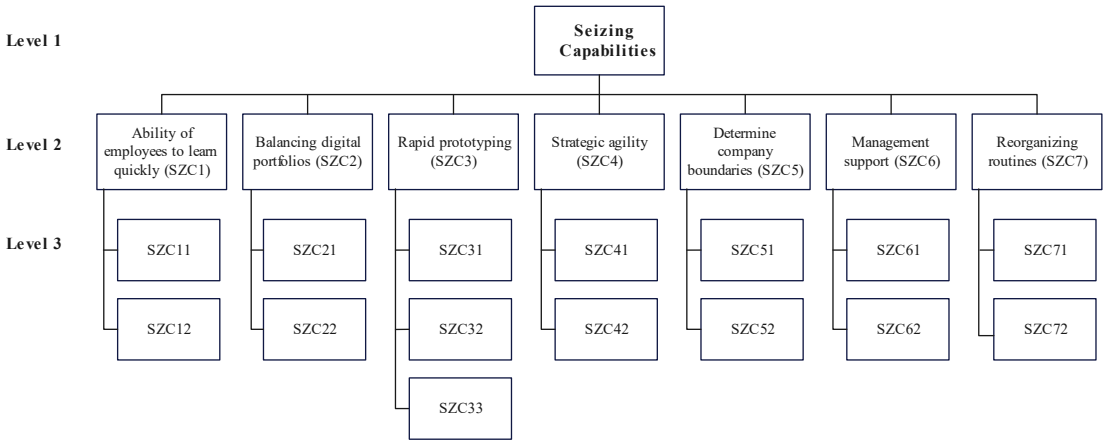

Fig. 2: Analytical hierarchy framework for seizing capabilities

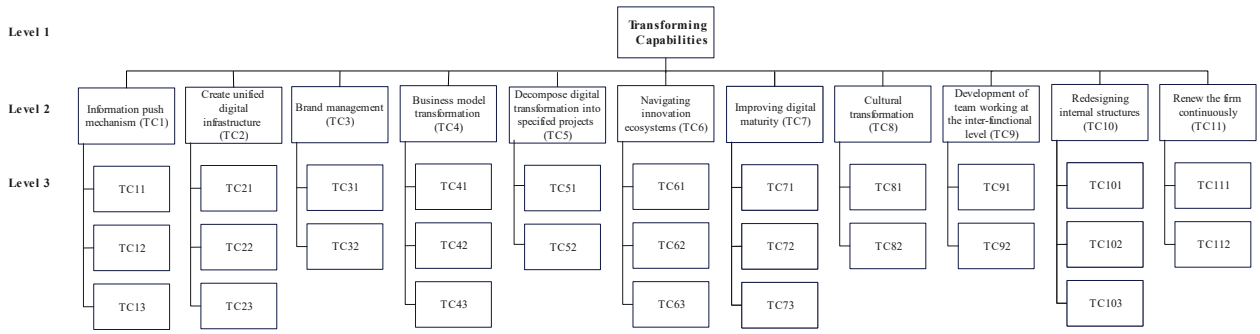

Fig. 3: Analytical hierarchy framework for transforming capabilities

3.2. Data collection and expert evaluation

To systematically assess the relative importance of dynamic capabilities, data for the AHP analysis were collected using structured pairwise comparison questionnaires. The population included senior managers, industry practitioners, and academic scholars with extensive experience in

property management and digital transformation in China. A purposive sampling strategy was adopted to select experts with sufficient expertise, resulting in a final sample of ten participants (Table 1). Specifically, all experts had more than ten years of professional experience in the property management or digital transformation domain and held senior or middle management positions (e.g., general manager, director of digital solutions, or project manager), or served as senior scholars or industry consultants. This ensured that the panel possessed sufficient expertise to provide informed and reliable judgments.

Table 1: Expert profiles for the AHP evaluation

Expert ID	Affiliation type	Interviewee's role
E1	Property management	Director of digital solutions
E2		Area supervisor
E3		Regional deputy general manager
E4		Project manager
E5		Regional general manager
E6		Project manager
E7		Director of digital transformation
E8	Academic institution	Faculty specializing in property management
E9		
E10		

Each expert independently performed pairwise comparisons of the secondary and sub-capabilities within each primary capability dimension using the standard 1–9 AHP scale, where 1 indicates equal importance, and 9 indicates extreme importance. This approach quantifies subjective judgments and supports construction of a hierarchical prioritization that reflects both theoretical and practical relevance. To ensure high response rates and data quality, experts were briefed on the study's objectives and confidentiality policies, provided with detailed instructions and scoring examples, and offered real-time clarifications during face-to-face sessions. Online follow-ups via WeChat, email, and phone were used when needed, and polite reminders or extended deadlines were offered to ensure completeness.

3.3. AHP analysis procedure

The AHP analysis followed three standard steps. First, pairwise comparison matrices were constructed for secondary and sub-capabilities within each primary capability dimension. Second, priority weights were calculated, and the consistency of expert judgments was evaluated. All matrices met the AHP consistency requirement, with a consistency ratio (CR) below the threshold of 0.1 (Saaty, 2008). Third, individual expert judgments were aggregated using the geometric mean to derive group-level weights and rankings (Adenle et al., 2021), providing a collective assessment of the relative importance of capabilities. This procedure enabled robust prioritization of secondary and sub-capabilities within each dynamic capability dimension.

3.4. Consistency check

Consistency of the expert judgments was assessed using standard AHP procedures. The pairwise comparison matrices for secondary sensing, seizing, and transforming capabilities all satisfied the consistency criterion, with CR values ranging from 0.005 to 0.009, indicating satisfactory internal consistency (Tables 2–4). This confirms that the experts' assessments were reliable and suitable for deriving weighted rankings of capabilities.

Table 2: Pairwise comparisons among secondary sensing capabilities

Criteria	SC1	SC2	SC3	SC4	SC5	SC6	SC7
SC1	1	1.550	2.252	2.024	1.664	2.703	3.521
SC2	0.645	1	2.237	1.305	0.923	2.070	2.924
SC3	0.444	0.447	1	0.545	0.595	1.473	1.792
SC4	0.494	0.766	1.835	1	0.896	2.242	2.793
SC5	0.601	1.084	1.681	1.116	1	1.770	3.215
SC6	0.370	0.483	0.679	0.446	0.565	1	1.473
SC7	0.284	0.342	0.558	0.358	0.311	0.679	1

consistency ratio CR = 0.007

Table 3: Pairwise comparisons among secondary seizing capabilities

Criteria	SZC1	SZC2	SZC3	SZC4	SZC5	SZC6	SZC7
SZC1	1	1.136	1.018	0.365	2.545	0.478	0.890
SZC2	0.880	1	0.861	0.388	2.597	0.392	0.712
SZC3	0.982	1.162	1	0.438	2.959	0.481	0.758
SZC4	2.742	2.578	2.285	1	4.098	1.053	2.899
SZC5	0.393	0.385	0.338	0.244	1	0.262	0.334
SZC6	2.094	2.548	2.078	0.950	3.820	1	2.375
SZC7	1.123	1.405	1.320	0.345	2.993	0.421	1

consistency ratio CR = 0.009

4. Findings and discussions

Tables 5–7 summarize the final weights and rankings of secondary and sub-capabilities under the three dynamic capability dimensions. The findings reveal distinct prioritization patterns in property management companies' digital transformation efforts.

4.1. Prioritization of sensing capabilities

Within the sensing dimension, SC1 (25.26%) stands out as the most influential capability. It drives digital transformation by enabling companies to identify operational bottlenecks, service inefficiencies, and evolving customer needs proactively. Among its sub-capabilities, SC11

(44.03%) is paramount, forming the foundation for structured, closed-loop service improvement. SC12 (30.35%) supports this process by integrating feedback from multiple channels, ensuring that customer inputs are systematically captured and acted upon. SC13 (25.62%) complements these activities by translating identified needs into actionable responses. Together, these sub-capabilities emphasize the centrality of process optimization, reinforcing the company's ability to respond strategically to operational and market challenges (Baiyere et al., 2020).

Table 4: Pairwise comparisons among secondary transforming capabilities

Criteria	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11
TC1	1	0.649	2.294	0.929	0.917	1.658	0.870	1.121	1.757	1.704	1.443
TC2	1.540	1	3.333	1.919	1.751	2.294	1.587	2.016	2.801	1.799	2.119
TC3	0.436	0.300	1	0.384	0.427	0.804	0.412	0.548	0.797	0.543	0.682
TC4	1.077	0.521	2.605	1	1.036	2.375	1.072	1.506	1.706	1.282	1.942
TC5	1.091	0.571	2.344	0.965	1	2.070	1.282	1.597	2.320	1.681	1.613
TC6	0.603	0.436	1.244	0.421	0.483	1	0.656	0.870	1.140	0.691	0.821
TC7	1.149	0.630	2.425	0.933	0.780	1.524	1	1.490	1.631	1.148	1.835
TC8	0.892	0.496	1.826	0.664	0.626	1.150	0.671	1	1.295	1.029	1.495
TC9	0.569	0.357	1.254	0.586	0.431	0.877	0.613	0.772	1	0.631	0.978
TC10	0.587	0.556	1.842	0.780	0.595	1.448	0.871	0.972	1.585	1	1.534
TC11	0.693	0.472	1.466	0.515	0.620	1.218	0.545	0.669	1.023	0.652	1

consistency ratio CR = 0.005

Following SC1, SC2 (17.97%) and SC5 (16.92%) serve as essential supporting capabilities. In SC2, SC21 (51.12%) is the most critical, enabling companies to scan emerging technologies, track customer behaviors, and gather competitive intelligence, which collectively help anticipate market trends and inform strategic decision-making (Warner and Wäger, 2019; Wohlleber et al., 2022). In SC5, SC51 (42.78%) and SC53 (41.73%) are key sub-capabilities, reflecting the importance of leveraging internal data for customer segmentation and operational monitoring. By systematically analyzing operational and customer data, companies can detect early signals of inefficiency and identify areas for process or service improvement, while SC52 (15.49%) remains less central, indicating cautious adoption of sensitive data analytics (Seppänen et al., 2025).

Moderate-level capabilities, SC4 (15.65%) and SC3 (10.04%), provide strategic support for the sensing system. SC41 (53.45%) emphasizes establishing a clear digital vision, ensuring that digital initiatives are aligned with organizational priorities and long-term objectives (Ahmad et al., 2022). SC42 (46.55%), promoting digital thinking across the organization, reinforces this alignment by embedding a digital mindset throughout teams (Neeley and Leonardi, 2022). SC3 transforms insights from other capabilities into actionable applications, with SC32 (55.48%) focusing on designing practical digital use cases (Trischler and Westman Trischler, 2022), while SC31 (44.52%) supports scenario planning by interpreting relevant policies. This combination ensures that sensing activities are translated into feasible operational strategies and digital implementations.

Lower-weight capabilities such as inside-out digital infrastructure sensing (SC6, 8.29%) and cross-industrial digital sensing (SC7, 5.86%) play an exploratory role. Internal infrastructure evaluation addresses tangible operational issues, while learning from other industries provides inspiration for innovative practices (Ratsimandresey and Miemczyk, 2023). Though these capabilities are not immediate drivers, their relatively lower ranking may also reflect the current stage of digital maturity in property management firms, where exploratory and cross-industry learning activities are still developing and are not yet systematically embedded into operational routines.

Overall, the AHP results reveal a clear prioritization logic in the sensing capability system. Property management companies should first strengthen capabilities related to proactive problem identification, data-driven insights, and behavioral tracking, while gradually developing mechanisms for digital scenario planning, internal infrastructure assessment, and cross-industry learning. Less immediate but strategically significant capabilities, such as mindset shaping and cross-industry exploration, serve as long-term enablers supporting the sustainability and scalability of digital transformation.

4.2. Prioritization of seizing capabilities

Seizing capabilities reflect how companies translate sensed opportunities into actionable initiatives. SZC4 (26.58%) and SZC6 (23.79%) are the top priorities, emphasizing the necessity of flexible decision-making, timely resource allocation, and strong leadership for successful digital implementation. This aligns with Teece (2007) and Warner and Wäger (2019), who argue that dynamic resource allocation and flexible strategy adjustment are central mechanisms for capturing opportunities under uncertainty. Within SZC4, SZC42 (52.74%) slightly outweighs SZC41 (47.26%), highlighting the importance of adapting projects and priorities in real time. In the context of property management, where companies oversee multiple projects and service lines simultaneously, strategic agility enables rapid responses to shifting customer needs, regulatory changes, and technology adoption requirements. Digital transformation often encounters organizational and operational barriers, making management support particularly critical (Mladenova, 2024).

Table 5: Weighting of secondary capabilities and sub-capability of sensing capabilities

Secondary capabilities	Weight	Rank	Sub-capability	Weight	Rank
Proactive-driven sensing (SC1)	25.26%	1	Identifying pain points in business processes (SC11)	44.03%	1
			Collecting multi-channel customer feedback (SC12)	30.35%	2
			Identifying and responding to customer needs (SC13)	25.62%	3
Digital scouting/ scanning (SC2)	17.97%	2	Scanning emerging technologies (SC21)	51.12%	1
			Tracking customer behavior to identify demand (SC22)	29.87%	2
			Gathering competitive intelligence (SC23)	19.01%	3
Digital scenario planning (SC3)	10.04%	5	Interpreting digital-related policy developments (SC31)	44.52%	2
			Designing digital use cases in advance (SC32)	55.48%	1
Digital mindset crafting (SC4)	15.65%	4	Establishing digital vision (SC41)	53.45%	1
			Promoting digital thinking across the organization (SC42)	46.55%	2
Data- driven sensing (SC5)	16.92%	3	Segmenting customers using data modeling (SC51)	42.78%	1
			Recognizing customer emotions using voice analysis (SC52)	15.49%	3
			Monitoring digital operational activities (SC53)	41.73%	2
Inside -out digital infrastructure sensing (SC6)	8.29%	6	Diagnosing internal system functionality (SC61)	51.31%	1
			Assessing digital infrastructure capabilities (SC62)	48.69%	2
Cross-industrial digital sensing (SC7)	5.86%	7	Monitoring industry convergence trends (SC71)	46.55%	2
			Learning from other industries (SC72)	53.45%	1

Moderate-weight capabilities, including SZC7 (12.35%) and SZC3 (11.43%), indicate that companies favor incremental validation of digital initiatives through process optimization and low-cost pilot projects rather than large-scale system replacements, mitigating transformation risks. This approach is consistent with prior studies that conceptualize digital transformation as a phased implementation process supported by continuous feedback loops (Ahmad et al., 2022; Imran et al., 2021). In property management, piloting digital solutions, such as smart access control systems, automated parking management, or mobile service apps, allows companies to test functionality, adapt workflows, and refine customer-facing services before full-scale deployment.

Other capabilities, such as SZC1 (11.08%) and SZC2 (9.99%), support transformation but depend on organizational and strategic frameworks. Employee learning is particularly important for frontline staff using digital tools, including smart inspection apps, intelligent access systems, and resident service platforms (Marinova et al., 2017). Within SZC1, SZC11 (52.91%) carries slightly more weight than SZC12 (47.09%), emphasizing the need to cultivate both awareness and motivation for digital adoption. Balancing the digital portfolio supports integrating new products with existing services across multiple communities and operational scenarios. Among SZC2, SZC22 (55.21%) carries slightly more weight than SZC21 (44.79%), showing that scenario integration is more crucial than individual customization for operational efficiency (Marcinkowski and Gawin, 2019).

The lowest-weight capability is SZC5 (4.79%), reflecting the limited internal digital capacity of property management companies during the early stages of transformation. At this phase, companies often draw on external digital expertise and complementary resources to compensate for limited internal capabilities, before gradually internalizing critical digital functions. Within SZC5, SZC51 (58.78%) carries greater significance than SZC52 (41.22%), emphasizing the importance of flexibly adjusting collaboration scopes, defining responsibility boundaries, and establishing appropriate control mechanisms. As Chen et al. (2016) emphasized, companies must develop the ability to determine when outsourcing technological activities is appropriate and when internalization becomes strategically necessary, in order to avoid over-reliance on external partners.

Overall, the prioritization of seizing capabilities in property management indicates that strategic agility and top-level management support form the foundation for translating sensed opportunities into actionable initiatives, while incremental process optimization, pilot testing, and employee learning enable effective implementation. Less immediate capabilities, such as boundary determination, play a supporting role in ensuring flexibility and risk mitigation during the early stages of digital transformation.

Table 6: Weighting of secondary capabilities and sub-capability of seizing capabilities

Secondary capabilities	Weight	Rank	Sub-capability	Weight	Rank
Ability of employees to learn quickly (SZC1)	11.08%	5	Fostering continuous learning (SZC11)	52.91%	1
			Applying knowledge to practical solutions (SZC12)	47.09%	2
Balancing digital portfolios (SZC2)	9.99%	6	Designing personalized service (SZC21)	44.79%	2
			Operating across integrated digital scenarios (SZC22)	55.21%	1
Rapid prototyping (SZC3)	11.43%	4	Piloting digital products (SZC31)	26.63%	3
			Iterative optimization (SZC32)	39.11%	1
			Developing minimum viable products (MVPs) (SZC33)	34.27%	2
Strategic agility (SZC4)	26.58%	1	Allocating resources dynamically (SZC41)	47.26%	2
			Adjusting strategies flexibly (SZC42)	52.74%	1
Determine company boundaries (SZC5)	4.79%	7	Maintaining boundary flexibility (SZC51)	58.78%	1
			Integrating in-house development with external partnerships (SZC52)	41.22%	2
Management support (SZC6)	23.79%	2	Implementing digital performance incentive systems (SZC61)	41.43%	2
			Driving top-down strategic initiatives (SZC62)	58.58%	1
Reorganizing routines (SZC7)	12.35%	3	Developing new digital workflows (SZC71)	44.53%	2
			Digitalization of business processes (SZC72)	55.47%	1

4.3. Prioritization of transforming capabilities

In terms of transforming capabilities, TC2 (16.45%) ranks first, indicating that system integration and data standardization are foundational for sustaining digital transformation. For property management companies managing multiple projects and service lines, a lack of unified data and system architecture can significantly diminish the long-term value of digital investments. Among its sub-capabilities, TC22 (38.27%) is the most critical, aligning with prior research that integrated infrastructure facilitates information flow, cross-functional collaboration, and scalability (Li et al., 2020). Practically, TC2 enables companies to monitor resident services, equipment maintenance, and key operational performance indicators across geographically dispersed projects, enhancing decision-making speed and operational resilience.

Following TC2, TC5 (11.86%) and TC4 (11.42%) occupy the next positions. Within TC5, TC51 (60.53%) ensures that strategic objectives are translated into actionable, phased projects, mitigating the risk of overextension. For TC4, sub-capabilities such as TC43 (35.78%) highlight how companies extend value creation beyond operational optimization into new service domains (Shen et al., 2022). Moderately important capabilities include TC7 (10.49%) and TC1 (10.40%). Within TC7, TC71 (41.15%) plays a key role in addressing critical capability gaps by recruiting digital talent, which not only supports the implementation of digital systems but also strengthens workforce competencies and accelerates the deployment of digital initiatives (Ajayi-Nifise et al., 2024). For TC1, TC13 (38.44%)—the closed-loop service response mechanism—ensures that resident service requests, such as maintenance, complaints, and facility issues, are handled in a timely and coordinated manner, while simultaneously supporting continuous operational monitoring and enabling organizations to make rapid, informed decisions (Oyetunji et al., 2025).

Capabilities related to organizational alignment and culture—TC10 (8.40%) and TC8 (8.02%)—support the cultivation of a digital-first culture. Within TC8, TC82 (52.02%) slightly outweighs TC81 (47.99%). Although prior studies emphasize the importance of cultural transformation (Sousa-Zomer et al., 2020), its relatively low ranking here may reflect multiple factors, including the gradual nature of organizational change and the practical challenges companies face in shaping organizational culture (Smit, 2021).

In addition, it is possible that managers perceive cultural transformation as a long-term outcome of digital initiatives rather than an immediate capability to be prioritized. Moreover, compared with more tangible and operational capabilities, cultural transformation is relatively abstract and difficult to measure, which may lead to its lower prioritization in practice.

Table 7: Weighting of secondary capabilities and sub-capability of transforming capabilities

Secondary capabilities	Weight	Rank	Sub-capability	Weight	Rank
Information push mechanism (TC1)	10.40%	5	Visualizing real-time data (TC11)	25.74%	3
			Establishing a real-time notification mechanism (TC12)	35.82%	2
			Establishing closed-loop service response mechanisms (TC13)	38.44%	1
Create unified digital infrastructure (TC2)	16.45%	1	Integrating systems to ensure service collaboration (TC21)	31.56%	2
			Developing data middle-platforms (TC22)	38.27%	1
			Designing data governance frameworks (TC23)	30.16%	3
Brand management (TC3)	4.58%	11	Building digital touchpoints for customer-brand interaction (TC31)	67.20%	1
			Monitoring public opinion (TC32)	32.80%	2
Business model transformation (TC4)	11.42%	3	Expanding into new business domains (TC41)	34.74%	2
			Transitioning to urban service operations (TC42)	29.48%	3
			Innovating business models through technology (TC43)	35.78%	1
Decompose digital transformation into specified projects (TC5)	11.86%	2	Prioritizing digital initiatives (TC51)	60.53%	1
			Implementing projects in phases (TC52)	39.47%	2
Navigating innovation ecosystems (TC6)	6.09%	9	Building digital service ecosystem platforms (TC61)	38.66%	1
			Constructing strategic cooperation networks (TC62)	35.66%	2
			Engaging in joint technological development (TC63)	25.68%	3
Improving digital maturity (TC7)	10.49%	4	Recruiting digital talent (TC71)	41.15%	1
			Identifying digital workforce maturity (TC72)	24.68%	3
			Providing systematic digital training (TC73)	34.16%	2
Cultural transformation (TC8)	8.02%	7	Institutionalizing digital work practices (TC81)	47.99%	2
			Cultivating a digital-first organizational culture (TC82)	52.02%	1
Development of teamwork at the inter-functional level (TC9)	5.85%	10	Establishing mechanisms for cross-departmental coordination (TC91)	46.99%	2
			Building a digital project team (TC92)	53.01%	1
Redesigning internal structures (TC10)	8.40%	6	Defining digital functions and roles (TC101)	32.15%	2
			Restructuring organizations to support digitalization (TC102)	36.26%	1
			Establishing a Chief Information Officer (CIO) role (TC103)	31.59%	3
Renew the firm continuously (TC11)	6.45%	8	Iteratively optimizing digital products and services (TC111)	46.09%	2
			Integrating emerging technologies for intelligent evolution (TC112)	53.91%	1

Lower-weight transforming capabilities include TC11 (6.45%), TC6 (6.09%), TC9 (5.85%), and TC3 (4.58%), which primarily support long-term strategic initiatives. Within TC11, iteratively optimizing digital products and services (TC111, 46.09%) and integrating emerging technologies (TC112, 53.91%) indicate that improving existing systems—such as resident portals or repair reporting—offers immediate operational gains, while technologies like AI and IoT serve as long-term enablers (Nazara et al., 2024).

In TC6, building digital service ecosystem platforms (TC61, 38.66%) is the most critical sub-capability, facilitating collaboration with external

providers and supporting the transition from single-service operations to ecosystem orchestration. For TC9, establishing digital project teams (TC92, 53.01%) ensures that cross-departmental initiatives are effectively executed (Guinan et al., 2019). In TC3, creating digital touchpoints (TC31, 67.20%) is prioritized over public opinion monitoring (TC32, 32.80%), reflecting a focus on engaging residents and enhancing service experience (Merrilees, 2016), while the latter mainly serves as a supplementary control mechanism.

Overall, these findings suggest that in the property management sector, digital transformation is fundamentally driven by infrastructure development, project-level execution, and business model innovation, whereas organizational culture, team development, and brand management are secondary, reflecting a phased, capability-driven approach to digital transformation.

The aggregated results across the three categories of dynamic capabilities indicate that high-weight sub-capabilities are primarily concentrated in areas that directly influence decision-making efficiency, resource allocation, and organizational execution. This suggests that digital transformation in property management companies is not driven by isolated technological capabilities but rather emerges from the coordinated evolution of multiple dynamic capabilities.

5. Conclusions

This study applied the AHP to systematically prioritize dynamic capabilities in the digital transformation of property management companies. The results reveal substantial differences in the relative importance of capabilities across dimensions and hierarchical levels, confirming the heterogeneous and structured nature of dynamic capabilities in practical digital transformation settings. At the sub-capability level, opportunity recognition is guided by identifying business process pain points and leveraging data-driven insights (sensing), implementation depends on dynamic resource allocation and rapid prototyping (seizing), while long-term transformation relies on developing data middle platforms, project decomposition, and business model innovation (transforming).

From a practical perspective, the findings provide a structured decision-support framework for property management companies. Companies can use the prioritized capability hierarchy to allocate resources efficiently, sequence digital initiatives, and monitor progress in a systematic manner. By quantifying the relative importance of capabilities, the study offers actionable guidance for staged digital transformation, enabling organizations to focus on high-priority capabilities first and gradually address supporting elements.

Overall, this study demonstrates how multi-criteria decision-making methods such as AHP can translate conceptual dynamic capabilities into measurable evaluation criteria, providing a reproducible and transparent approach for evidence-based decision-making in service-intensive industries. Future research may extend this approach by incorporating larger expert panels, applying the framework to other service sectors, or integrating additional decision-support techniques to enhance applicability and robustness.

List of abbreviations

AHP	Analytic hierarchy process
AI	Artificial intelligence
CIO	Chief information officer
CR	Consistency ratio
ID	Identification
IoT	Internet of Things
MVP	Minimum viable product
SC	Sensing capability
SZC	Seizing capability
TC	Transforming capability

Funding

This work was supported by the 2025 Zhejiang Provincial Civil Affairs Policy Theory Research Project under Grant [number ZMKT2025105] and the 2025 Wenzhou Philosophy and Social Science Planning Project under Grant [number 25WSK178YBM].

Compliance with ethical standards

Ethical considerations

This study involved interviews and expert evaluations conducted with industry professionals. Participation was voluntary, and informed consent was obtained from all participants before data collection. No personal or sensitive information was collected, and all responses were anonymized and treated confidentially. The study complied with the ethical principles for research involving human participants.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Adenle YA, Chan EH, Sun Y, and Chau CK (2021). Assessing the relative importance of sustainability indicators for smart campuses: A case of higher education institutions in Nigeria. Environmental and Sustainability Indicators, 9: 100092. https://doi.org/10.1016/j.indic.2020.100092

Ahmad T, Aakula A, Ottori M, and Saini V (2022). Developing a strategic roadmap for digital transformation. Journal of Computational Intelligence and Robotics, 2(2): 28-68.

Ajayi-Nifise AO, Odeyemi O, Mhlongo NZ, Ibeh CV, Elufioye OA, and Falaiye T (2024). Digital transformation in banking: The HR perspective on managing change and cultivating digital talent. International Journal of Science and Research Archive, 11(1): 1452-1459. https://doi.org/10.30574/ijsra.2024.11.1.0237

Baiyere A, Salmela H, and Tapanainen T (2020). Digital transformation and the new logics of business process management. European Journal of Information Systems, 29(3): 238-259. https://doi.org/10.1080/0960085X.2020.1718007

Chen Y, Vanhaverbeke W, and Du J (2016). The interaction between internal R&D and different types of external knowledge sourcing: An empirical study of Chinese innovative firms. R&D Management, 46(S3), 1006-1023. https://doi.org/10.1111/radm.12162

Ellström D, Holtström J, Berg E, and Josefsson C (2022). Dynamic capabilities for digital transformation. Journal of Strategy and Management, 15(2): 272-286. https://doi.org/10.1108/JSMA-04-2021-0089

Ghosh S, Hughes M, Hodgkinson I, and Hughes P (2022). Digital transformation of industrial businesses: A dynamic capability approach. Technovation, 113: 102414. https://doi.org/10.1016/j.technovation.2021.102414 **PMCid:PMC10997068**

Gong C and Ribiere V (2021). Developing a unified definition of digital transformation. Technovation, 102: 102217. https://doi.org/10.1016/j.technovation.2020.102217

Guinan PJ, Parise S, and Langowitz N (2019). Creating an innovative digital project team: Levers to enable digital transformation. Business Horizons, 62(6): 717-727. https://doi.org/10.1016/j.bushor.2019.07.005

Imran F, Shahzad K, Butt A, and Kantola J (2021). Digital transformation of industrial organizations: Toward an integrated framework. Journal of Change Management, 21(4): 451-479. https://doi.org/10.1080/14697017.2021.1929406

Jie H, Gooi LM, and Lou Y (2025). Digital maturity, dynamic capabilities and innovation performance in high-tech SMEs. International Review of Economics & Finance, 99: 103971. https://doi.org/10.1016/j.iref.2025.103971

Khurana I, Dutta DK, and Ghura AS (2022). SMEs and digital transformation during a crisis: The emergence of resilience as a second-order dynamic capability in an entrepreneurial ecosystem. Journal of Business Research, 150: 623-641. https://doi.org/10.1016/j.jbusres.2022.06.048

Leso BH, Cortimiglia MN, Ghezzi A, and Minatogawa V (2024). Exploring digital transformation capability via a blended perspective of dynamic capabilities and digital maturity: A pattern matching approach. Review of Managerial Science, 18: 1149-1187. https://doi.org/10.1007/s11846-023-00692-3

Li J, Qiu JJ, Zhou Y, Wen S, Dou KQ, and Li Q (2020). Study on the reference architecture and assessment framework of industrial internet platform. IEEE Access, 8: 164950-164971. https://doi.org/10.1109/ACCESS.2020.3021719

Marcinkowski B and Gawin B (2019). A study on the adaptive approach to technology-driven enhancement of multi-scenario business processes. Information Technology & People, 32(1): 118-146. https://doi.org/10.1108/ITP-03-2018-0142

Marinova D, de Ruyter K, Huang MH, Meuter ML, and Challagalla G (2017). Getting smart: Learning from technology-empowered frontline interactions. Journal of Service Research, 20(1): 29-42. https://doi.org/10.1177/1094670516679273

Merrilees B (2016). Interactive brand experience pathways to customer-brand engagement and value co-creation. Journal of Product & Brand Management, 25(5): 402-408. https://doi.org/10.1108/JPBM-04-2016-1151

Mladenova I (2024). SMEs in a digital era: The role of management. Administrative Sciences, 14(11): 296. https://doi.org/10.3390/admsci14110296

Nazara DS, Sutrisno A, Nersiwad N, and Muslimin M (2024). Digital transformation in operations management: Leveraging technology to improve business efficiency. Journal of Operations Management, 1(5): 77-84. https://doi.org/10.62872/89zxt284

Neeley T and Leonardi P (2022). Developing a digital mindset. Harvard Business Review, 100(5-6): 50-55.

Oyetunji TS, Erinjogunola FL, Ajirotutu RO, Adeyemi AB, Ohakawa TC, and Adio SA (2025). Digital solutions for streamlining property management operations in affordable housing communities. Engineering and Technology Journal, 10(2): 4350-4358. https://doi.org/10.47191/etj/v10i03.40

Piprani AZ, Jaafar NI, and Mohezar Ali S (2020). Prioritizing resilient capability factors of dealing with supply chain disruptions: An analytical hierarchy process (AHP) application in the textile industry. Benchmarking: An International Journal, 27(9): 2537-2563. https://doi.org/10.1108/BIJ-03-2019-0111

Ratsimandresey A and Miemczyk J (2023). Conceptualising collaborations beyond industrial boundaries: A literature review and a theoretical proposition to understand cross-industrial collaborations in the circular supply network. Sustainability, 15(11): 8850. https://doi.org/10.3390/su15118850

Ruirui L and Hashim HA (2025). Exploring dynamic capabilities in digital transformation: A bibliometric and content analysis. International Journal of Advanced and Applied Sciences, 12(6): 141-153. https://doi.org/10.21833/ijaas.2025.06.014

Saaty TL (2008). Decision making with the analytic hierarchy process. International Journal of Services Sciences, 1(1): 83-98. https://doi.org/10.1504/IJSSCI.2008.017590

Seppänen S, Ukko J, and Saunila M (2025). Understanding determinants of digital transformation and digitizing management functions in incumbent SMEs. Digital Business, 5(1): 100106. https://doi.org/10.1016/j.digbus.2025.100106

Shen L, Zhang X, and Liu H (2022). Digital technology adoption, digital dynamic capability, and digital transformation performance of textile industry: Moderating role of digital innovation orientation. Managerial and Decision Economics, 43(6): 2038-2054. https://doi.org/10.1002/mde.3507

Smit W (2021). Insight in cultural change during organizational transformation: A case study. Journal of Organizational Change Management, 34(5): 1047-1062. https://doi.org/10.1108/JOCM-08-2020-0255

Soluk J and Kammerlander N (2021). Digital transformation in family-owned Mittelstand firms: A dynamic capabilities perspective. European Journal of Information Systems, 30(6): 676-711. https://doi.org/10.1080/0960085X.2020.1857666

Sousa-Zomer TT, Neely A, and Martinez V (2020). Digital transforming capability and performance: A microfoundational perspective. International Journal of Operations & Production Management, 40(7-8): 1095-1128. https://doi.org/10.1108/IJOPM-06-2019-0444

Teece DJ (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. Strategic Management Journal, 28(13): 1319-1350. https://doi.org/10.1002/smj.640 PMCid:PMC10997068

Teece DJ (2018). Managing the university: Why "organized anarchy" is unacceptable in the age of massive open online courses. Strategic Organization, 16(1): 92-102. https://doi.org/10.1177/1476127017732760

Teece DJ (2023). The evolution of the dynamic capabilities framework. In: Adams R, Grichnik D, Pundziene A, and Volkmann C (Eds.), Artificiality and sustainability in entrepreneurship: Exploring the unforeseen, and paving the way to a sustainable future: 113–129. Springer, Cham, Switzerland. https://doi.org/10.1007/978-3-031-11371-0_6

Teece DJ, Pisano G, and Shuen A (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7): 509-533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Trischler J and Westman Trischler J (2022). Design for experience – A public service design approach in the age of digitalization.

Public Management Review, 24(8): 1251-1270. https://doi.org/10.1080/14719037.2021.1899272

Warner KS and Wäger M (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. Long Range Planning, 52(3): 326-349. https://doi.org/10.1016/j.lrp.2018.12.001

Wohlleber AJ, Bock M, Birkel H, and Hartmann E (2022). Implementing vital dynamic capabilities to succeed in digital transformation: A multiple-case study in maritime container shipping. IEEE Transactions on Engineering Management, 71: 13627-13645. https://doi.org/10.1109/TEM.2022.3201770

Yang G, Nie Y, Li H, and Wang H (2023). Digital transformation and low-carbon technology innovation in manufacturing firms: The mediating role of dynamic capabilities. International Journal of Production Economics, 263: 108969. https://doi.org/10.1016/j.ijpe.2023.108969

Yeow A, Soh C, and Hansen R (2018). Aligning with new digital strategy: A dynamic capabilities approach. The Journal of Strategic Information Systems, 27(1): 43-58. https://doi.org/10.1016/j.jsis.2017.09.001