ORIGINAL RESEARCH **Open access**

A Taxonomy of Digital Business Capabilities: Customer Intelligence, Operational Agility, Platform Coordination, and Strategic Learning

George Wilson[1*], Chloe Bennett[2], Jack Turner[1]

Abstract

Digital business research has generated a wide range of capability concepts to explain how firms compete, innovate, adapt, and learn in technology-intensive environments. Yet these concepts often appear under overlapping labels, including digital capabilities, analytics capabilities, platform capabilities, operational capabilities, and dynamic capabilities. This proliferation has enriched the field but has also made it difficult to compare findings across studies. The central problem addressed in this article is the absence of a coherent taxonomy for digital business capabilities. Without clear classification rules, researchers may treat different capabilities as equivalent, while managers may invest in digital resources without understanding which capability category they are actually developing. This ambiguity weakens conceptual precision, measurement design, and strategic capability development. The objective of the article is to develop an original taxonomy that classifies digital business capabilities into four distinct categories. These categories are Customer Intelligence, Operational Agility, Platform Coordination, and Strategic Learning. Each category is defined by a distinct value-creation logic, resource orientation, temporal focus, and managerial purpose. The resulting taxonomy identifies four mutually exclusive and collectively exhaustive categories of digital business capabilities. It defines the sub-dimensions of each category, explains how the categories differ, and provides tables that support classification, comparison, and managerial application. The taxonomy offers a shared language for scholars and practitioners seeking to analyse, measure, and develop digital business capabilities with greater precision.

Keywords Digital business capabilities, Taxonomy, Customer intelligence, Operational agility, Platform coordination, Strategic learning

*Correspondence:
George Wilson
g.wilson@leeds.ac.uk
[1] Department of Digital Strategy and Management, Faculty of Business, University of Leeds, Leeds, United Kingdom
[2] Department of Management Innovation, Faculty of Business, University of Sheffield, Sheffield, United Kingdom

Introduction

Digital business research increasingly explains firm competitiveness through capability-based concepts rather than through technology adoption alone. Nambisan, Lyytinen, Majchrzak and Song argue that digital innovation changes the locus and logic of innovation management, requiring firms to combine technological possibilities with organisational capabilities [1]. Svahn, Mathiassen and Lindgren similarly show that incumbent firms must manage competing concerns when digital innovation disrupts established products, routines, and strategic priorities [2].

The capability vocabulary has expanded because digital transformation is multidimensional. Vial conceptualises digital transformation as a process in which digital technologies trigger strategic responses, organisational changes, and value-creation outcomes [3]. Verhoef,

Broekhuizen, Bart, Bhattacharya, Qi Dong, Fabian and Haenlein extend this view by showing that digital transformation involves changes in customer interaction, business models, organisational structures, and strategic positioning [4].

This expansion creates a classification problem. Some studies focus on analytics and customer insight, others on operational flexibility, others on platform ecosystems, and still others on strategic renewal through dynamic capabilities [5-7]. Because these constructs are often treated as adjacent or interchangeable, the literature lacks a stable organising framework for distinguishing what different digital capabilities actually do.

This article proposes a taxonomy of digital business capabilities that classifies them into four categories: Customer Intelligence, Operational Agility, Platform Coordination, and Strategic Learning. The taxonomy builds on capability theory, digital transformation research, analytics capability research, platform studies, and taxonomy design principles [8-11]. The article proceeds by explaining the need for classification, developing criteria for category distinction, defining each capability category, and showing how the taxonomy can guide research and managerial decision-making.

Need for a Digital Business Capability Taxonomy

A taxonomy is needed because digital capability research is fragmented across several intellectual traditions. Teece's dynamic capabilities perspective emphasises sensing, seizing, and transforming as higher-order managerial processes that enable adaptation [8]. Warner and Wäger translate this logic into digital transformation by showing that firms build dynamic capabilities through strategic renewal, digital scouting, agile implementation, and organisational redesign [5].

Fragmentation also arises because digital transformation studies often combine multiple capability types under broad umbrella constructs. Kraus, Durst, Ferreira, Veiga, Kailer and Weinmann describe digital transformation research as spanning strategy, technology, innovation, entrepreneurship, and organisational change [12]. Plekhanov, Franke and Netland similarly show that digital transformation research has grown rapidly but still requires clearer conceptual integration and research agendas [13].

The absence of classification makes both research and management more difficult. Researchers need category boundaries to build valid measures, compare findings, and avoid construct redundancy. Managers need the same boundaries to determine whether a capability gap concerns customer understanding, operational responsiveness, platform orchestration, or organisational learning, rather than simply labelling all gaps as digital immaturity [3, 4].

Classification Criteria

The taxonomy is built on two primary classification dimensions. The first dimension is value-creation focus, which distinguishes capabilities aimed mainly at external market and ecosystem value from those aimed mainly at internal operational and organisational value. This distinction reflects the way digital transformation reshapes customer-facing activities, process architectures, ecosystem relationships, and strategic renewal mechanisms [3, 4, 7].

The second dimension is primary mechanism. Customer Intelligence works through insight generation and personalisation, Operational Agility works through rapid adaptation and process reconfiguration, Platform Coordination works through ecosystem orchestration, and Strategic Learning works through feedback-based renewal. This mechanism-based logic follows the view that capabilities should be classified by what they enable firms to do, not only by the technologies they use [5, 8].

These two dimensions produce four distinct capability categories. Customer Intelligence is externally oriented and intelligence-based, Operational Agility is internally oriented and adaptation-based, Platform Coordination is externally oriented and coordination-based, and Strategic Learning is internally oriented and learning-based. This structure is intended to make the taxonomy mutually exclusive while still acknowledging that firms often combine categories in practice [9, 14].

Table 1 defines the classification criteria used to distinguish the four capability categories. The table formalises the criteria by linking each category to value-creation focus, dominant mechanism, resource orientation, temporal focus, and typical managerial question, thereby translating the conceptual distinction into a usable classification scheme [11, 15].

Table 1. Classification Criteria for Digital Business Capabilities: Dimensions of Value Creation, Resource Orientation, and Temporal Focus

Capability category	Value-creation focus	Primary mechanism	Resource orientation
Customer Intelligence	External customer value	Insight, prediction, and personalisation	Customer data, analytics models, engagemen interfaces, experience knowledge
Operational Agility	Internal operational value	Process adaptation, automation, and responsiveness	Digital processes, supply chai data, automation tools, operational routines
Platform Coordination	External ecosystem value	Governance, integration, and orchestration	Platform architecture APIs, complement relationship ecosystem rules
Strategic Learning	Internal strategic value	Experimentation, absorption, and renewal	Digital feedback, organisation knowledge learning routines, decision forums

Figure 1 presents the overall taxonomy architecture that classifies digital business capabilities into four distinct categories based on value-creation focus and primary capability mechanism.

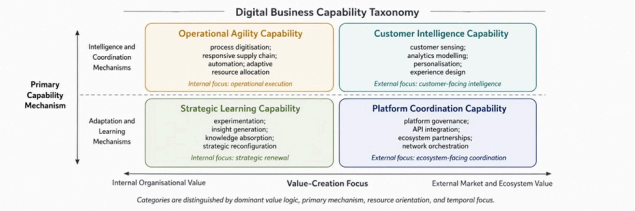

Figure 1. Taxonomy Architecture of Digital Business Capabilities across Value-Creation Focus and Primary Capability Mechanism

Customer Intelligence Capability

Customer Intelligence Capability refers to the firm's capacity to collect, interpret, and use customer-related digital data to understand needs, predict behaviour, personalise interactions, and improve experience design. Homburg, Jozić and Kuehnl position customer experience management as an evolving marketing concept that requires firms to coordinate customer touchpoints and organisational responses [16]. In a digital business context, this capability transforms dispersed customer signals into actionable market understanding.

The first sub-dimension is customer sensing, which concerns the systematic capture of behavioural, transactional, and experiential signals across digital channels. Bleier, Harmeling and Palmatier show that effective online customer experiences depend on how firms design and manage digital interactions that shape customer perceptions and responses [17]. Customer sensing therefore differs from generic data collection because it is directed toward interpreting customer meaning, expectations, and engagement conditions.

The second and third sub-dimensions are analytics modelling and personalisation. Kumar, Rajan, Venkatesan and Lecinski argue that artificial intelligence can support personalised engagement marketing by enabling firms to tailor interactions at scale [18]. Davenport, Guha, Grewal and Bressgott further show that artificial intelligence reshapes marketing activities by changing how firms analyse customers, automate interactions, and support decision-making [19].

Table 2 describes the Customer Intelligence capability category with its sub-dimensions and exemplar capabilities. The fourth sub-dimension, experience design, links

customer intelligence to the design of coherent digital journeys, while Huang and Rust's strategic framework for artificial intelligence in marketing clarifies how analytics, automation, and customer-facing intelligence can be connected to strategic marketing objectives [20].

Table 2. Customer Intelligence Capability: Definition, Sub-Dimensions, and Representative Digital Capabilities

Taxonomic element	Description	Representative digital capabilities	Illu o
Category definition	The capability to understand, predict, personalise, and improve customer interactions through digital data, analytics, and experience design	Customer data integration, behavioural analytics, predictive modelling, personalisation engines, journey design	C i ta eng in ex qua p pro
Customer sensing	Capturing and interpreting customer signals from digital touchpoints, transactions, service encounters, and engagement channels	Omnichannel data capture, social listening, customer journey tracking, sentiment interpretation	det cu ne po bel
Analytics modelling	Transforming customer data into predictive, diagnostic, or prescriptive insight	Segmentation models, churn prediction, recommendation models, lifetime value analytics	Pr cu se pr bel ac m int
Personalisation	Tailoring offerings, communications, and interactions to customer profiles and contexts	Personalised recommendation, dynamic content, adaptive pricing support, targeted engagement automation	r cu int and eng ou
Experience design	Designing coherent digital journeys based on customer insight and behavioural feedback	Journey orchestration, touchpoint redesign, experience testing, service interface refinement	In cu ex cor and e rel (

Operational Agility Capability

Operational Agility Capability refers to the firm's capacity to adapt processes, resources, supply chains, and execution routines quickly through digital technologies. Tallon, Queiroz, Coltman and Sharma show that information technology contributes to organisational agility by enabling faster sensing, decision-making, and response across organisational processes [21]. In this taxonomy, Operational Agility is therefore classified as an internally oriented capability because its primary value-creation logic is the rapid reconfiguration of operational activity.

The first sub-dimension is process digitisation, which converts analogue, fragmented, or manually coordinated activities into digitally traceable and reconfigurable processes. Khin and Ho demonstrate that digital technology and digital capability contribute to organisational performance through digital innovation, indicating that operational value depends on the ability to embed technology into organisational routines [22]. Process digitisation is not merely automation; it creates the informational visibility required for rapid process adjustment.

The second and third sub-dimensions are responsive supply chain and automation. Dubey, Gunasekaran, Childe, Blome and Papadopoulos show that big data and predictive analytics contribute to manufacturing performance when combined with resource-based and institutional conditions [23]. Dubey, Gunasekaran, Childe, Bryde, Giannakis, Foropon, Roubaud and Hazen further link big data analytics and artificial intelligence to operational performance under entrepreneurial orientation and environmental dynamism [24].

Table 3 describes the Operational Agility capability category with its sub-dimensions and exemplar capabilities.

Adaptive resource allocation completes this category by explaining how firms use digital information to redirect capacity, labour, inventory, and process attention when conditions change, while Nasiri, Ukko, Saunila and Rantala show that smart technologies play an important role in managing digital supply chains [25].

Table 3. Operational Agility Capability: Definition, Sub-Dimensions, and Representative Digital Capabilities

Taxonomic element	Description	Representative digital capabilities	Illustrativ outputs
Category definition	The capability to adapt operations, processes, resources, and supply chains rapidly through digital technologies and data-enabled coordination	Process digitisation, workflow analytics, automation, supply chain visibility, dynamic resource planning	Faster execution shorter response cycles, reduced operationa rigidity, improved process resilience
Process digitisation	Converting operational activities into digitally visible, measurable, and reconfigurable workflows	Digital workflow mapping, process monitoring, enterprise system integration, real-time operational data capture	Greater process transparen and improved capacity t redesign workflows
Responsive supply chain	Detecting and responding to changes in demand, supply, logistics, and production conditions	Demand sensing, predictive inventory analytics, supplier visibility systems, logistics coordination tools	More responsiv procuremer productior and distributio decisions
Automation	Using digital technologies to reduce manual intervention and accelerate repeatable operational tasks	Robotic process automation, intelligent scheduling, automated quality checks, algorithmic workflow routing	Faster tas completior fewer routi delays, improved operationa consistenc
Adaptive resource allocation	Reassigning resources dynamically in response to operational signals and shifting priorities	Capacity analytics, dynamic workforce allocation, real-time production planning, scenario-based resource deployment	Better matching resources changing operationa requiremer

Platform Coordination Capability

Platform Coordination Capability refers to the firm's capacity to govern digital platforms, integrate participants, manage interfaces, and coordinate ecosystem value creation. Constantinides, Henfridsson and Parker argue that platforms and infrastructures reshape information systems research by making digital innovation dependent on architectures that connect multiple actors [7]. This capability is externally oriented because its primary value logic is not internal efficiency but the coordination of interdependent actors around a shared digital architecture.

The first sub-dimension is platform governance, which involves defining rules, access conditions, participation rights, and control mechanisms for platform actors. Jacobides, Cennamo and Gawer explain that ecosystems depend on complementarities among actors whose activities must be aligned without full hierarchical control [10]. Platform governance therefore differs from ordinary partnership management because it requires the design of coordination rules for distributed and interdependent value creation.

The second and third sub-dimensions are API-based integration and ecosystem partnership management.

Cenamor, Parida and Wincent show that small and medium-sized firms can compete through digital platforms by developing digital platform capability, network capability, and ambidexterity [26]. Gawer further clarifies that digital platform boundaries are shaped by firm scope, platform sides, and digital interfaces, making interface management central to platform coordination [27].

Table 4 describes the Platform Coordination capability category with its sub-dimensions and exemplar capabilities. Network orchestration completes the category because platform value often depends on attracting, aligning, and sustaining complementors, while Cennamo's platform-based view of competition highlights how digital markets require firms to manage network effects, platform positioning, and competitive interdependence [28].

Table 4. Platform Coordination Capability: Definition, Sub-Dimensions, and Representative Digital Capabilities

Taxonomic element	Description	Representative digital capabilities	Illustra outp
Category definition	The capability to coordinate actors, interfaces, governance rules, and value co-creation processes across digital platforms and ecosystems	Platform governance, API integration, ecosystem management, complementor coordination, network orchestration	Stron platfo particip scala ecosy relation impro network creat
Platform governance	Designing and enforcing rules for participation, access, control, quality, and value appropriation	Governance rule design, access management, quality control systems, participation standards	Clearer roles, re coordin ambig impro platform
API-based integration	Enabling technical and organisational connectivity among platform actors through digital interfaces	API architecture, interface standardisation, integration protocols, modular service access	Eas compler integra and m scala digit interac
Ecosystem partnership management	Managing relationships with complementors, partners, developers, service providers, and users	Partner onboarding, complementor support, ecosystem performance monitoring, co-creation routines	Stron ecosy engage and m relial partn contrib
Network orchestration	Stimulating and balancing network effects across platform sides and actor groups	Incentive design, cross-side matching, network growth analytics, platform participation analytics	Increa platfo valu stronge alignm and m dura ecosy coordin

Strategic Learning Capability

Strategic Learning Capability refers to the firm's capacity to learn from digital data, experiments, external signals, and organisational feedback, and then convert that learning into strategic renewal. Warner and Wäger position digital transformation as an ongoing process of strategic renewal rather than a one-time technology implementation [5]. Volberda, Khanagha, Baden-Fuller, Mihalache and Birkinshaw similarly argue that strategising in a digital world requires overcoming cognitive barriers, reconfiguring routines, and introducing new organisational forms [29].

The first sub-dimension is experimentation, which involves using digital environments to test assumptions, compare alternatives, and learn from behavioural or operational feedback. Trantopoulos, von Krogh, Wallin and Woerter show that external knowledge and information technology can improve process innovation performance when firms are able to absorb and apply knowledge effectively [30]. In this taxonomy, experimentation is treated as a strategic learning mechanism because it allows firms to generate evidence for future decisions rather than merely optimise current operations.

The second and third sub-dimensions are data-driven insight generation and knowledge absorption. Wamba,

Gunasekaran, Akter, Ren, Dubey and Childe show that big data analytics influences firm performance through dynamic capabilities, indicating that analytics creates value when firms can translate data into adaptive capability [6]. Mikalef, Boura, Lekakos and Krogstie similarly link big data analytics capabilities to innovation through dynamic capabilities, which supports the classification of learning as a higher-order capability rather than a purely technical resource [9].

The fourth sub-dimension is strategic reconfiguration, which concerns the transformation of learning into changes in priorities, resource commitments, business models, and organisational routines. Mikalef, Krogstie, Pappas and Pavlou show that big data analytics capability affects competitive performance through dynamic and operational capabilities, reinforcing the idea that learning connects insight with organisational change [14]. Ellström, Holtström, Berg and Josefsson also emphasise that digital transformation depends on dynamic capabilities that allow firms to renew and adjust their strategic direction [31].

Figure 2 illustrates how the four digital business capability categories differ in their dominant mechanisms while remaining complementary within a firm-level capability portfolio.

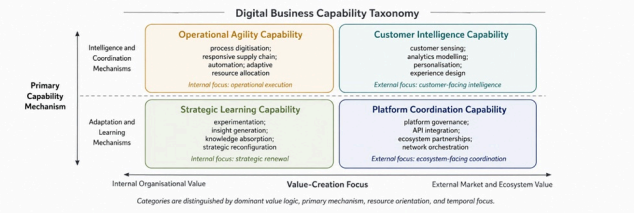

Figure 2. Capability Portfolio Logic Linking Customer Intelligence, Operational Agility, Platform Coordination, and Strategic Learning

Comparative Taxonomy Matrix

The comparative taxonomy matrix places the four capability categories side by side to clarify their differences and complementarities. Customer Intelligence is externally oriented toward customers, Operational Agility is internally oriented toward processes, Platform Coordination is externally oriented toward ecosystems, and Strategic Learning is internally oriented toward renewal. This comparative logic follows taxonomy design principles that emphasise clear dimensions, category distinction, and conceptual usefulness [11, 15].

The matrix also shows that the categories differ in temporal focus. Customer Intelligence often operates through near-term sensing and personalisation, Operational Agility through short-cycle operational adjustment, Platform Coordination through medium-term ecosystem scaling, and Strategic Learning through long-term strategic renewal. This temporal differentiation is important because digital transformation involves both immediate execution and longer-term reconfiguration [3, 29].

Table 5 presents the comparative taxonomy matrix across all four capability categories. The table compares the categories by value-creation logic, dominant resource base, primary mechanism, temporal orientation, and indicative performance measures, thereby making the taxonomy usable for research design, measurement development, and managerial diagnosis [12, 13].

Table 5. Comparative Taxonomy Matrix of Digital Business Capabilities: Comparison across Customer Intelligence, Operational Agility, Platform Coordination, and Strategic Learning

Comparison dimension	Customer Intelligence Capability	Operational Agility Capability	Platfo Coordir Capab
Core definition	Capability to understand, predict, personalise, and improve customer interactions through digital data and analytics	Capability to adapt operations, processes, resources, and supply chains rapidly through digital technologies	Capabi coordi acto interfa govern rules, ecosys value cr across platfo
Value-creation logic	Customer insight and market responsiveness	Operational responsiveness and process adaptability	Ecosys orchest and net value cr
Primary orientation	External customer environment	Internal operating system	Exter platfo ecosys

Dominant resource base	Customer data, analytics models, engagement interfaces, experience knowledge	Process data, automation systems, supply chain visibility, operational routines	Platfo architec APIs complen relations govern mechar
Main mechanism	Intelligence and personalisation	Agility and reconfiguration	Coordin and orchestr
Temporal focus	Near-term sensing and continuous customer adaptation	Short-cycle adjustment and rapid execution	Medium scaling ecosys develop
Indicative performance measures	Customer insight quality, personalisation effectiveness, customer experience consistency, engagement improvement	Process speed, operational flexibility, supply chain responsiveness, automation effectiveness	Platfo particip complen growth integra quali network- stren
Boundary condition	Becomes weak when customer data are fragmented or disconnected from experience design	Becomes weak when digital processes remain rigid or isolated from resource decisions	Becor weak v govern rule interfac incentiv to align

The four categories are mutually exclusive in their primary logic but complementary in their strategic use. For example, customer data may reveal changing preferences, Operational Agility may adapt fulfilment processes, Platform Coordination may mobilise partners, and Strategic Learning may convert outcomes into revised strategic assumptions. This complementarity explains why firms often need capability portfolios rather than isolated digital investments [4, 22].

Managerial Use Cases

The first managerial use case is capability audit and gap analysis. Managers can use the taxonomy to diagnose whether weaknesses lie in Customer Intelligence, Operational Agility, Platform Coordination, or Strategic Learning, instead of treating all digital weaknesses as a single transformation problem. This is consistent with digital transformation research showing that firms must address multiple organisational dimensions rather than relying on technology implementation alone [3, 4].

The second use case is strategic investment prioritisation. If a firm competes primarily through personalised experiences, investment may need to prioritise analytics modelling and experience design, whereas a firm facing volatile supply conditions may need to prioritise process digitisation and adaptive resource allocation. This distinction reflects evidence that analytics, digital technologies, and operational capabilities affect performance through different capability pathways [6, 14, 24].

The third use case is organisational design for digital transformation. Platform-dependent firms may require governance teams, ecosystem managers, and API coordination roles, while firms pursuing strategic renewal may need routines for experimentation, knowledge absorption, and executive learning forums. Such design choices align with research showing that digital transformation requires new organisational forms, ecosystem coordination, and dynamic capabilities for strategic renewal [7, 29, 32-34].

Conclusion

This article has developed an original taxonomy of digital business capabilities to reduce conceptual fragmentation and provide a clearer classification structure for research and practice. The taxonomy classifies digital business capabilities into four categories: Customer Intelligence, Operational Agility, Platform Coordination, and Strategic Learning. Each category is defined by a distinct value-creation logic, resource orientation, primary mechanism, and temporal focus.

The taxonomy contributes by clarifying that digital business capability is not a single undifferentiated construct. Customer Intelligence explains how firms understand and personalise customer value, Operational Agility explains how firms adapt internal processes, Platform Coordination explains how firms orchestrate ecosystem value, and Strategic Learning explains how firms renew strategy

through digital feedback. Together, the four categories provide a structured language for capability analysis, measurement, and development.

Future research should empirically validate the taxonomy, develop measurement scales for each capability category, and examine how the categories interact across industries and transformation stages. Managers can use the taxonomy to audit capability portfolios, prioritise digital investments, and design organisational structures that match strategic needs. The broader value of the taxonomy lies in helping scholars and practitioners move from fragmented capability labels toward a more precise and actionable understanding of digital business capability development

None

Conflict of interest

None

Financial support

None

Ethics statement

None

Acknowledgements

Received: 15 May 2024 Revised: 25 Jun 2024 Accepted: 05 Aug 2024
Published online: 18 September 2024

References

Nambisan S, Lyytinen K, Majchrzak A, Song M. Digital innovation management: Reinventing innovation management research in a digital world. MIS Q. 2017;41(1):223-38.

Svahn F, Mathiassen L, Lindgren R. Embracing digital innovation in incumbent firms: how volvo cars managed competing concerns1. MIS Q. 2017;41(1):239-53.

Vial G. Understanding digital transformation: A review and a research agenda. Managing digital transformation. London: Routledege; 2021. p. 13-66.

Verhoef PC, Broekhuizen T, Bart Y, Bhattacharya A, Dong JQ, Fabian N, et al. Digital transformation: A multidisciplinary reflection and research agenda. J Bus Res. 2021;122:889-901.

Warner KS, Wäger M. Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. Long Range Plann. 2019;52(3):326-49.

Wamba SF, Gunasekaran A, Akter S, Ren SJ, Dubey R, Childe SJ. Big data analytics and firm performance: Effects of dynamic capabilities. J Bus Res. 2017;70:356-65.

Constantinides P, Henfridsson O, Parker GG. Introduction—platforms and infrastructures in the digital age. Inf Syst Res. 2018;29(2):381-400.

Teece DJ. Business models and dynamic capabilities. Long range plann. 2018;51(1):40-9.

Mikalef P, Boura M, Lekakos G, Krogstie J. Big data analytics capabilities and innovation: the mediating role of dynamic capabilities and moderating effect of the environment. Br J Manag. 2019;30(2):272-98.

Jacobides MG, Cennamo C, Gawer A. Towards a theory of ecosystems. Strateg Manag J. 2018;39(8):2255-76.

Kundisch D, Muntermann J, Oberländer AM, Rau D, Röglinger M, Schoormann T, et al. An update for taxonomy designers:

methodological guidance from information systems research. Bus Inf Syst Eng. 2022;64(4):421-39.

Kraus S, Durst S, Ferreira JJ, Veiga P, Kailer N, Weinmann A. Digital transformation in business and management research: An overview of the current status quo. Int J Inf Manag. 2022;63:102466.

Plekhanov D, Franke H, Netland TH. Digital transformation: A review and research agenda. Eur Manag J. 2023;41(6):821-44.

Mikalef P, Krogstie J, Pappas IO, Pavlou P. Exploring the relationship between big data analytics capability and competitive performance: The mediating roles of dynamic and operational capabilities. Inf Manag. 2020;57(2):103169.

Sangupamba Mwilu O, Prat N, Comyn-Wattiau I. A taxonomy development method to define the vocabulary for rule-based guidance in complex emerging technologies. Bus Inf Syst Eng. 2024;66:161–80.

Homburg C, Jozić D, Kuehnl C. Customer experience management: toward implementing an evolving marketing concept. J Acad Mark Sci. 2017;45(3):377-401.

Bleier A, Harmeling CM, Palmatier RW. Creating effective online customer experiences. J Mark. 2019;83(2):98-119.

Kumar V, Rajan B, Venkatesan R, Lecinski J. Understanding the role of artificial intelligence in personalized engagement marketing. Calif Manag Rev. 2019;61(4):135-55.

Davenport T, Guha A, Grewal D, Bressgott T. How artificial intelligence will change the future of marketing. J Acad Mark Sci. 2020;48(1):24-42.

Huang MH, Rust RT. A strategic framework for artificial intelligence in marketing. J Acad Mark Sci. 2021;49(1):30-50.

Tallon PP, Queiroz M, Coltman T, Sharma R. Information technology and the search for organizational agility: A systematic review with future research possibilities. J Strateg Inf Syst. 2019;28(2):218-37.

Khin S, Ho TC. Digital technology, digital capability and organizational performance: A mediating role of digital innovation. Int J Innov Sci. 2019;11(2):177-95.

Dubey R, Gunasekaran A, Childe SJ, Blome C, Papadopoulos T. Big data and predictive analytics and manufacturing performance: Integrating institutional theory, resource-based view and big data culture. Br J Manag. 2019;30(2):341-61.

Dubey R, Gunasekaran A, Childe SJ, Bryde DJ, Giannakis M, Foropon C, et al. Big data analytics and artificial intelligence pathway to operational performance under the effects of entrepreneurial orientation and environmental dynamism: A study of manufacturing organisations. Int j Prod Econ. 2020;226:107599.

Nasiri M, Ukko J, Saunila M, Rantala T. Managing the digital supply chain: The role of smart technologies. Technovation. 2020;96:102121.

Cenamor J, Parida V, Wincent J. How entrepreneurial SMEs compete through digital platforms: The roles of digital platform capability, network capability and ambidexterity. J Bus Res. 2019;100:196-206.

Gawer A. Digital platforms' boundaries: The interplay of firm scope, platform sides, and digital interfaces. Long Range Plann. 2021;54(5):102045.

Cennamo C. Competing in digital markets: A platform-based perspective. Acad Manag Perspect. 2021;35(2):265-91.

Volberda HW, Khanagha S, Baden-Fuller C, Mihalache OR, Birkinshaw J. Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. Long Range Plann. 2021;54(5):102110.

Trantopoulos K, von Krogh G, Wallin MW, Woerter M. External Knowledge and Information Technology: Implications for Process Innovation Performance1. MIS Q. 2017;41(1):287-300.

Ellström D, Holtström J, Berg E, Josefsson C. Dynamic capabilities for digital transformation. J Strategy Manag. 2022;15(2):272-86.

Bonina C, Koskinen K, Eaton B, Gawer A. Digital platforms for development: Foundations and research agenda. Inf Syst J. 2021;31(6):869-902.

Chen L, Tong TW, Tang S, Han N. Governance and design of digital platforms: a review and future research directions on a meta-organization. J Manag. 2022;48(1):147-84.

Addo A. Orchestrating a digital platform ecosystem to address societal challenges: A robust action perspective. Journal of information technology. 2022;37(4):359-86.