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The Impact of Technological Advances on Organisational Structures and Management Roles:
A Critical Analysis of Amazon in the 21st Century

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1. Introduction

Technological advancement in the 21st century has fundamentally reshaped organisational life, challenging longstanding assumptions about organisational structure, managerial authority, and the nature of work. Digital transformation driven by cloud computing, artificial intelligence (AI), e-commerce, data analytics, and platform ecosystems has accelerated organisational change at a pace unmatched by previous industrial eras. Scholars argue that these developments have triggered a shift from industrial-age organisational logics based on hierarchy, standardisation, and administrative control towards digital logics emphasising agility, decentralisation, data-driven decision-making, and platform-based value creation (Nambisan, Wright and Feldman, 2019; Verhoef et al., 2021).

Within this evolving landscape, Amazon provides a particularly compelling case in the platform-based e-commerce sector. As the world's largest online retailer and a global leader in cloud computing, logistics automation, and digital platform ecosystems, Amazon demonstrates how technological innovation reshapes organisational design, managerial roles, and competitive strategy. Its evolution from an online bookstore into a complex, multi-sided platform spanning e-commerce, cloud services, media, AI, and smart devices illustrates the structural and managerial implications of digital transformation at scale (Stone, 2013; Stone, 2022; Srnicek, 2017).

This study critically evaluates the claim that technological advances, particularly in e-commerce and e-business, have rendered traditional organisational structures and theories of management roles obsolete. Using Amazon as an in-depth case study, the report examines how digital technologies reshape coordination mechanisms, organisational boundaries, leadership expectations, and managerial competencies. Here, "obsolete" refers to a loss of explanatory and practical usefulness across key organisational domains rather than complete irrelevance. Through engagement with contemporary scholarship, alongside selective use of seminal works for conceptual grounding, the study assesses the extent to which organisations like Amazon are developing structural logics that extend beyond established management thought.

1.1 Background

The rise of e-business and the rapid expansion of e-commerce have altered the foundational conditions under which organisations operate. Industrial-era organisations relied on physical production, manual labour, linear supply chains, and hierarchical control. By contrast, 21st-century corporations increasingly function within digital ecosystems characterised by global connectivity, continuous technological disruption, real-time information flows, and algorithmically optimised processes (Verhoef et al., 2021).

Digital technologies have shifted from supportive tools to core organisational infrastructure, shaping strategy, decision-making, coordination, and value creation. Verhoef et al. (2021) distinguish between digitisation (converting analogue to digital), digitalisation (using digital technologies to improve processes), and digital transformation, which involves more fundamental changes to business models and organisational capabilities. Recent reviews similarly suggest that digital transformation is ongoing and pervasive, embedding firms in platform ecosystems with increasingly blurred boundaries and intensified competitive pressures (Plekhanov, Franke and Netland, 2023).

Amazon sits at the centre of this transformation. Its business model integrates e-commerce, cloud computing, AI-enabled logistics, digital advertising, and platform governance. Organisationally, Amazon relies on small autonomous teams, API-enabled coordination, microservices architectures, and data-intensive decision systems that differ markedly from classical hierarchical designs (Stone, 2013; Stone, 2022). Its innovation mechanisms such as the “Working Backwards” method and narrative decision documents further illustrate a departure from traditional managerial practices (Ates and Suppayah, 2024).

At the same time, traditional organisational theories retain explanatory value in specific domains. Classical frameworks including Weber’s bureaucracy, Fayol’s administrative principles, Taylor’s scientific management, and Mintzberg’s structural typologies continue to illuminate aspects of Amazon’s operations. Standardisation and control remain central in fulfilment centres; administrative coordination persists in compliance and finance; and performance measurement reflects scientific management logics (Fayol, 1916; Mintzberg, 1979; Taylor, 1911; Weber, 1947). Taken together, this indicates that any “obsolescence” is likely to be partial, situational, and context dependent rather than absolute.

1.2 Purpose of the Study

This study undertakes a critical and theoretically grounded examination of whether technological advances, particularly in e-commerce and e-business, have rendered traditional organisational structures and theories of management roles obsolete, using Amazon as the primary case study. To evaluate the claim, the study pursues six interconnected aims:

1. **To analyse Amazon's organisational evolution and structural design**, examining how digital technologies, AI systems, automation, and platform architectures shape internal coordination and external relationships (Stone, 2013; Stone, 2022; Srnicek, 2017).
2. **To evaluate the applicability and limitations of traditional organisational theories**, assessing whether classical frameworks remain useful analytical tools or fail to capture the complexity of digital ecosystems exemplified by Amazon (Fayol, 1916; Mintzberg, 1979; Taylor, 1911; Weber, 1947).
3. **To assess the impact of digital transformation on managerial roles**, focusing on how managers operate in data-rich environments, lead hybrid human-AI teams, facilitate innovation, and navigate algorithmically mediated decision-making (AlNuaimi et al., 2022; López-Figueroa et al., 2025).
4. **To examine the relationship between technology, structure, and leadership**, analysing digital-era leadership expectations, technological literacy, and the managerial demands that arise within e-business ecosystems (Tagscherer and Carbon, 2023; Verhoef et al., 2021).
5. **To identify the challenges and opportunities associated with digital transformation**, including resistance to change, data governance, cybersecurity, and the competitive advantages generated through digital capabilities (Cieslak and Valor, 2024; Plekhanov, Franke and Netland, 2023; Van Hoang et al., 2025).
6. **To contribute to contemporary academic debate**, synthesising foundational theories with contemporary digital scholarship to develop a nuanced perspective on whether traditional management concepts should be replaced or integrated into hybrid, digitally informed models.

The central objective is to determine whether Amazon's organisational model reflects a genuinely new paradigm that supersedes traditional management thought, or whether classical theories continue to offer meaningful insight when appropriately interpreted and integrated.

2. Literature Review

This literature review critically examines how technology, e-commerce and e-business have reshaped organisational structures and management roles, with a view to assessing whether traditional models have become obsolete in the context of Amazon. It focuses on six themes: the evolution of technology in business, the rise of e-commerce, the emergence of e-business, contemporary understandings of organisational structure, theories of management roles, and implications for traditional models.

2.1 Evolution of Technology in Business

Digital technologies have shifted from peripheral support tools to the core organising logic of many firms. Verhoef et al. (2021) outline a progression from digitisation to digitalisation and finally to digital transformation, the latter involving fundamental changes to business models, customer engagement and internal processes. They argue that merely digitising existing activities is insufficient; true transformation reconfigures organisational capabilities and value creation mechanisms.

More recent reviews confirm this systemic impact. Plekhanov, Franke and Netland (2023) highlight that digital transformation research now spans strategy, operations, information systems and organisational behaviour, reflecting how technology affects both structure and culture. Digital infrastructures, including cloud computing, data platforms and AI, enable real-time analytics, automation and coordination across geographies and units, favouring organisations that can exploit continuous data flows and modular architectures.

In innovation and entrepreneurship, Nambisan, Wright and Feldman (2019) show that digital technologies dissolve traditional firm boundaries by enabling distributed innovation and ecosystem collaboration. These developments underpin the platform business models seen at Amazon, where technological capabilities such as AWS, recommendation engines and automated logistics are deeply intertwined with strategic positioning and structure.

2.2 The Rise of E-Commerce

E-commerce has transformed how organisations interact with customers and structure their value chains. Digital channels enable continuous customer interaction, advanced personalisation and multi-channel integration, shifting competition towards experience and data-based differentiation (Verhoef et al., 2021). E-commerce is now a central organising principle rather than a peripheral channel.

Nambisan, Wright and Feldman (2019) argue that e-commerce must be understood within broader digital business ecosystems, where firms compete as platforms rather than as isolated entities. Amazon's marketplace illustrates this shift: it connects millions of buyers and sellers, generating network effects and reinforcing platform dominance. Srnicek (2017) describes such firms as "platform capitalists", leveraging data extraction, cross-subsidisation and ecosystem lock-in.

E-commerce also reshapes operations and supply chains. Online transaction data feeds into forecasting systems, inventory optimisation and logistics algorithms. Amazon's model-dynamic pricing, hyper-personalised recommendations and highly automated fulfilment-enacts this logic, showing that e-commerce structures depend on integrated analytics and digital coordination rather than physical store networks (Stone, 2022).

Beyond reshaping consumer interfaces and supply chains, the rise of e-commerce has also transformed the informational architecture of markets. Traditional retail models relied on aggregate, lagged data such as monthly sales reports or periodic customer surveys. In contrast, e-commerce generates rich, real-time behavioural data: clickstreams, search queries, conversion rates, basket abandonments, and post-purchase reviews. This data becomes a strategic asset, enabling continuous experimentation with website layouts, recommendation algorithms and pricing strategies (Nambisan, Wright and Feldman 2019; Verhoef et al., 2021). In Amazon's case, this granular data is not merely descriptive but is fed into machine learning models that forecast demand, personalise interfaces and shape logistics decisions, blurring the distinction between "marketing", "operations" and "technology" as discrete domains (Stone, 2022).

Importantly, the scale and scope of Amazon's e-commerce data create feedback loops that reinforce its competitive advantage. The more customers use Amazon, the more data its systems gather about preferences, responsiveness to promotions and product performance.

This data improves recommendation quality and demand forecasting, which in turn enhance customer experience and operational efficiency, attracting yet more customers and sellers (Srnicek, 2017). This dynamic aligns with platform and ecosystem theories that highlight network effects and data-driven learning as core drivers of market power (Jacobides, Cennamo and Gawer, 2018; Kretschmer et al., 2022). Traditional theories of retail structure, which assume limited, delayed information and relatively stable consumer segments, struggle to account for these rapidly evolving, data-intensive dynamics.

Furthermore, e-commerce has altered the geography of competition. In physical retail, competition is often local or regional, constrained by store locations and catchment areas. By contrast, e-commerce platforms like Amazon enable “competition on a global stage” for both established brands and small sellers. This shift intensifies competitive pressure but simultaneously lowers entry barriers for micro-entrepreneurs and niche producers who can access global markets via Amazon’s marketplace (Nambisan, Wright and Feldman, 2019; Srnicek, 2017). From an organisational perspective, this creates new managerial challenges around managing third-party sellers, policing quality, and handling reputational risks associated with products over which Amazon has only indirect control. Such issues are largely absent from classical models focused on vertically integrated firms and highlight the need for updated frameworks that explicitly address platform-mediated e-commerce environments.

2.3 The Emergence of E-Business

E-business extends beyond online sales to encompass the digital integration of all organisational functions. Verhoef et al. (2021) stress that digital transformation requires changes in customer experience, operational processes and business models, while Plekhanov, Franke and Netland (2023) note that digitalisation now affects HR, finance, supply chain and innovation. E-business involves enterprise platforms, process automation and data-driven decision-making across the organisation.

Systematic reviews show that strong e-business capabilities are associated with organisational agility and improved performance (Nguyen et al., 2024). These capabilities include integrated systems, cloud-based infrastructures and cross-functional data sharing. In Amazon’s case, e-business is visible in its end-to-end digital operating system: AWS provides scalable infrastructure; internal tools and microservices connect teams; and the Working Backwards

process structures product innovation around customer-centric narratives (Ates and Suppayah, 2024).

Thus, e-business demands organisational designs where technology is embedded within structure and routine, rather than being layered onto pre-digital management models.

A key feature of e-business is the horizontal integration of information flows across functions that were historically siloed. Enterprise systems and cloud platforms allow data from marketing, operations, finance and HR to be combined and analysed in near real time, enabling integrated decision-making and cross-functional optimisation (Plekhanov, Franke and Netland, 2023; Verhoef et al., 2021). At Amazon, for instance, decisions about inventory placement, delivery promise times, and promotional campaigns are tightly coupled through shared data infrastructures and algorithmic decision tools (Stone, 2022). This level of integration challenges traditional organisational charts that separate functions into distinct verticals overseen by managers who serve as informational bottlenecks.

E-business also reconfigures external relationships. Rather than operating as isolated entities, organisations increasingly embed themselves in digital value networks, relying on APIs, shared platforms and data-sharing agreements to coordinate with suppliers, logistics providers, payment processors and customers (Nambisan, Wright and Feldman, 2019). Amazon's extensive use of APIs and self-service portals for sellers and developers exemplifies this; external actors plug into Amazon's e-business infrastructure to manage inventory, pricing and advertising, while Amazon's systems continuously monitor performance and compliance (Osman, 2023). This model resonates more with ecosystem and meta-organisation theories than with traditional supply chain models focused on dyadic buyer–supplier relationships.

Crucially, the pervasiveness of e-business means that technology decisions are simultaneously structural decisions. Choices about which platforms to adopt, which processes to automate and how to structure data architectures have long-term implications for how information flows, who has decision rights and how quickly the organisation can reconfigure itself (Nguyen et al., 2024; Plekhanov, Franke and Netland, 2023). In Amazon's case, the decision to expose internal services via APIs and to separate functions into independently deployable microservices directly shapes the company's structural flexibility and team design (Stone, 2022). This interdependence between e-business infrastructure and organisational structure suggests that traditional theories that treat technology as an exogenous contingency may be

inadequate; instead, technology must be treated as a constitutive element of the modern organisation.

2.4 Organisational Structure in the Digital Era

Classical perspectives define organisational structure as the formal arrangement of roles, responsibilities, reporting relationships and coordination mechanisms (Mintzberg, 1979; Weber, 1947). Common structures functional, divisional and matrix were designed for relatively stable environments and rely on hierarchical authority and standardised procedures.

Newer work uses system and ecosystem metaphors. Kretschmer et al. (2022) conceptualise platform ecosystems as meta-organisations in which a central platform orchestrates multiple semi-autonomous participants through technical interfaces, data standards and governance rules rather than direct hierarchical control. Jacobides, Cennamo and Gawer (2018) similarly stress complementarities, modularity and ecosystem governance.

This perspective describes Amazon's reality more accurately than classical typologies. Internally, Amazon retains hierarchies but also operates cross-functional "two-pizza" teams with significant autonomy, coordinated via APIs, data platforms and shared metrics. Externally, it orchestrates sellers, developers and logistics partners through marketplace rules, AWS APIs and service-level standards (Stone, 2022). These hybrid patterns challenge simple classifications and call for theories recognising multi-layered, digital-embedded structures.

One consequence of these developments is that formal structure and "lived structure" may diverge. On paper, Amazon still exhibits hierarchical reporting lines, functional groupings and senior executive oversight consistent with classical models (Lunenburg, 2012; Stone, 2022). However, the day-to-day experience of many employees is shaped more by team-level agile practices, platform interfaces and digital coordination tools than by the formal organisation chart. Fioretti and Neumann's (2022) analysis of organisational forms suggests that such hybrid patterns where elements of hierarchy, network and platform coexist are increasingly common as firms attempt to combine the stability of bureaucracy with the flexibility of more organic forms. This hybridity complicates simple "old vs new" debates by showing that digital organisations may layer new structures onto existing ones rather than replacing them outright.

From a theoretical standpoint, this raises questions about the unit of analysis in organisational structure research. Classical work often focused on the firm as a bounded entity and treated its structure as relatively stable over time (Mintzberg, 1979). In Amazon's case, structure is dynamic and multi-level: small teams, internal platforms and external ecosystems all act as structural layers with their own governance mechanisms. Platform and ecosystem theories begin to address this complexity but typically emphasise inter-firm relationships; there is room for further work integrating these perspectives with internal organisational design theory (Jacobides, Cennamo and Gawer, 2018; Kretschmer et al., 2022). Taken together, this suggests that Weberian bureaucracy and Mintzberg's classical forms still illuminate specific parts of Amazon's operations such as compliance and large-scale logistics but are clearly inadequate as an organisation-wide template for a digitally native, platform-based corporation (Mintzberg, 1979; Stone, 2022; Weber, 1947). For the purposes of this study, Amazon is therefore understood as a multi-layered socio-technical system rather than a simple hierarchical bureaucracy, which has important implications for judging the alleged "obsolescence" of traditional models.

2.5 Theories of Management Roles

Classical management theory, such as Fayol (1916) and Taylor (1911), framed managers as planners, organisers, coordinators and controllers. Mintzberg (1979) elaborated interpersonal, informational and decisional roles, assuming managers as central information processors and decision-makers. These frameworks presupposed human managers at the centre of relatively bounded and stable organisations.

Digital transformation has challenged these assumptions. AlNuaimi et al. (2022) show that digital transformational leadership, organisational agility and digital strategy jointly shape digital transformation outcomes, requiring leaders to champion digital visions, enable experimentation and redesign structures. Tagscherer and Carbon (2023) identify themes of "leadership for successful digitalisation", including customer centricity, openness to change, digital savviness, empowerment and partnering. López-Figueroa et al. (2025) emphasise that digital leaders must combine technological understanding, change leadership and relational skills.

Managers in digital contexts must interpret dashboards and algorithmic outputs, work closely with engineers and data scientists, and orchestrate cross-functional and ecosystem

collaboration. In Amazon, managers are expected to embody Leadership Principles such as *Customer Obsession*, *Dive Deep* and *Learn and Be Curious*, reflecting roles as data interpreters, innovators and stewards of complex socio-technical systems (Amazon, 2025; Stone, 2013; Stone 2022). This suggests that classical role models still capture some core managerial functions such as planning and coordination however, when applied to Amazon's digitally intensive context, they are clearly incomplete and must be extended by digital-transformational and technologically literate conceptions of management rather than being viewed as entirely obsolete.

2.6 Implications for Traditional Models

The literature suggests that technological advances do not simply eliminate traditional organisational and management theories but expose their limits and necessitate their reinterpretation. Weberian bureaucracy and Mintzberg's mechanistic forms remain useful in explaining needs for stability, accountability and standardisation particularly in Amazon's large-scale logistics, finance and compliance (Mintzberg, 1979; Weber, 1947). Hitherto research on agility and platform ecosystems shows these forms are ill-suited as organisation-wide templates in dynamic digital environments (Kretschmer et al., 2022; Nguyen et al., 2025).

Similarly, classical managerial roles based on control and task optimisation appear misaligned with contexts where algorithms handle routine optimisation and where managers must instead facilitate innovation, manage change, and govern digital systems (AlNuaimi et al., 2022; Tagscherer and Carbon, 2023).

Overall, contemporary literature supports viewing organisations like Amazon as hybrid entities: traditional structures and roles persist but are embedded within a broader digital, platform-based and agile architecture. This hybrid framing provides the conceptual basis for evaluating Amazon's organisational reality against both classical and contemporary theories.

3. Changing Nature of 21st-Century Corporations

21st-century corporations operate in environments characterised by digital connectivity, global interdependence, platform competition and continuous technological disruption.

Traditional views of firms as bounded, hierarchical and nationally anchored are challenged by digital technologies that compress time and space, enable real-time coordination and facilitate platform-based interactions across borders (Verhoef et al., 2021). Amazon exemplifies a digitally native, platform-centric, globally integrated corporation whose structure and strategy are inseparable from its technological infrastructure (Stone, 2022; Srnicek, 2017).

3.1 Increased Connectivity and Globalisation

Digital connectivity has transformed internationalisation and cross-border coordination. Luo (2022) argues that “new connectivity” in digital form comprising platforms, data networks and communication infrastructures has become critical to international business resilience in a fragmented world. It allows firms to manage dispersed operations and integrate global value chains in real time, even amid shocks and disruptions.

Amazon fits emerging descriptions of platform-based multinational corporations (PMNCs), whose expansion and operations are mediated by digital platforms rather than solely by physical subsidiaries (García-Canal and Guillén, 2025; Kang et al., 2025). The Amazon marketplace, AWS, Prime Video and Kindle ecosystem constitute a global digital infrastructure through which value is created and captured across regions.

This redefines organisational “presence” and “scale”. Rather than relying on conventional subsidiaries, Amazon can enter new markets through localised front-ends layered on a common global platform, integrate third-party sellers and content creators with limited physical investment, and orchestrate cross-border flows of goods, data and services through unified systems (Stone, 2022). Traditional multinational enterprise theories, built around tangible assets and hierarchical control of foreign subsidiaries, thus struggle to fully capture Amazon’s digitally mediated global structure (Jacobides, Cennamo and Gawer, 2018).

3.2 Shift Towards Digital Transformation

Digital transformation has become a strategic imperative rather than a peripheral IT concern. Verhoef et al. (2021) conceptualise it as an integrated process reconfiguring customer experience, operations and business models. Plekhanov, Franke and Netland (2023)

emphasise that digital transformation affects organisational design, culture, leadership and capabilities.

AlNuaimi et al. (2022) find that transformation outcomes depend on the interplay between digital transformational leadership, organisational agility and digital strategy. Leaders must articulate digital visions, redesign structures for agility and invest in technologies that enable continuous change. Nguyen et al. (2025) similarly show that agile organisations those able to rapidly sense and respond to change are better positioned to translate digital investments into performance.

Amazon's model illustrates digital transformation as a permanent operating philosophy. AI-driven systems inform forecasting, pricing, recommendations and fraud detection; robotics automate fulfilment; AWS provides scalable infrastructure for both internal and external use; and the Working Backwards method institutionalises iterative, customer-centric innovation (Ates and Suppayah, 2024; Stone, 2022). Truong and Ngo (2025) describes such developments as "platformisation": integrating digital platforms into core processes, which drives performance but also creates uneven gains and dependencies.

These dynamics blur distinctions between strategy, structure and technology. Technology is not simply a contingency but a structural backbone. Classical theories that treat technology as a background variable thus require re-examination.

3.3 Importance of Adaptability and Agility

Adaptability and agility are widely framed as core capabilities in the digital age. Nguyen et al. (2025) define agility as the capacity to rapidly reconfigure resources and processes in response to change. This focus on speed is useful, although it can overstate agility as a universal solution and underplay how decision rights, incentives, and power shape whether reconfiguration produces innovation, efficiency, or tighter control.

Agility is often presented as mutually reinforcing with digital transformation: digital tools increase real-time visibility, and agile structures enable faster responses (AlNuaimi et al., 2022; Nguyen et al., 2025). The relationship is contingent. The same data infrastructures that support local adaptation can also intensify monitoring and standardisation, limiting discretion.

Yamin and Murwaningsari (2023) similarly suggest that performance gains depend on agile mindsets and structures rather than technology adoption alone.

Amazon illustrates these tensions. Its “Day 1” philosophy institutionalises rapid experimentation through small teams and accelerated decisions (Stone, 2013; Stone, 2022), while extensive data capture and algorithmic management may increase pressure and reduce autonomy (Wiggin, 2025). Overall, digital-era competition elevates agility as a strategic capability, while raising questions about the trade-offs through which flexibility is achieved (Luo, 2022; Plekhanov, Franke and Netland, 2023; Verhoef et al., 2021).

4. Obsolescence of Traditional Organisational Structures

Traditional organisational structures particularly hierarchical and matrix forms were designed for industrial-era conditions of relative stability, slower information flows and clear task specialisation (Mintzberg, 1979; Weber, 1947). In such contexts, structures ensured control and efficiency through formal authority and standardisation. Digital transformation has significantly altered these conditions, favouring modular, networked and platform-based structures that enable rapid reconfiguration and distributed coordination (Kretschmer et al., 2022; Verhoef et al., 2021). Amazon is an archetypal case of this evolution, combining hierarchical elements with autonomous teams, microservices and platform governance (Srnicek, 2017; Stone, 2022).

4.1 Hierarchical Structures vs Flat Organisations

Hierarchy is the archetypal organisational form, characterised by clear chains of command and vertical differentiation (Mintzberg, 1979; Weber, 1947). Fioretti and Neumann (2022) notes that typologies of organisational forms still place mechanistic, hierarchical structures at the centre of traditional design, especially for large, efficiency-driven organisations. Mechanistic structures excel in stable contexts but inhibit flexibility and innovation in turbulent environments (Kessler, Nixon and Nord, 2017, cited in Sabljic, 2024).

Digital transformation tends to flatten hierarchies and redistribute decision-making. Sabljic (2024) finds that digital tools facilitate direct communication and real-time information

sharing, reducing the need for intermediate managerial layers. Verhoef et al. (2021) similarly observe that digital transformation is associated with more agile, networked arrangements.

Amazon retains hierarchy at senior levels and in critical functions such as compliance and finance, but much day-to-day decision-making occurs within small, cross-functional “two-pizza” teams that own specific services or products and rely heavily on shared data platforms. Kretschmer et al. (2022) describe platform ecosystems as “meta-organisations” that are less formal and less hierarchical, coordinating participants through architecture and governance rather than command. Amazon increasingly resembles such a meta-organisation in its marketplace and AWS operations.

Nevertheless, hierarchy has not disappeared. It persists where standardisation and control are essential, suggesting that hierarchy is weakened rather than obsolete and now coexists with more organic and platform-based forms (Fioretti and Neumann, 2022). In relation to the coursework question, this indicates that traditional hierarchical structures at Amazon have lost their status as the dominant, organisation-wide model, but they remain indispensable in specific domains; they are therefore partially displaced and reconfigured by digital and platform logics, rather than rendered completely obsolete.

4.2 Matrix Organisations and Cross-Functional Teams

Matrix structures were introduced to combine functional expertise with project or product focus through dual reporting lines (Galbraith, 1973). However, they have long been associated with confusion, conflict and coordination costs. Practitioner analyses highlight persistent problems: unclear authority, slow decision-making and role conflict (Arnold, 2025; Getguru, 2025; Hughes and Hetrick, 2021; Sokolova, 2025).

In digitally intensive environments, these issues can be exacerbated as complexity and interdependence increase. Instead of formal matrix structures, many digital-native organisations rely on:

- Cross-functional product teams with clear ownership.
- Agile methods that coordinate work through iterative planning, reviews and backlogs.
- Shared platforms and data that enable collaboration without dual reporting (Nguyen et al., 2025).

Platform ecosystem research indicates that coordination often occurs via system architecture and governance, not through complex reporting lines (Kretschmer et al., 2022). Amazon's structure reflects this: cross-functional collaboration is built into small product teams, with coordination across teams mediated by APIs, internal platforms, shared metrics and narrative documents such as six-page memos and PR/FAQ (Ates and Suppayah, 2024; Stone, 2022).

In such contexts, the traditional matrix appears largely redundant. While some organisations without mature digital infrastructures may still rely on matrix structures, Amazon's practice and the broader literature suggest that matrix designs are close to obsolescence in digitally mature firms.

4.3 Decentralisation and Empowerment

Decentralisation, delegating decision-making closer to operational levels, has long been associated with organic structures. Digital technologies enhance its feasibility by providing local units with real-time information and tools (Sabljic, 2024; Verhoef et al., 2021). Research on agility and digital transformation shows that empowered front-line teams can respond more rapidly to changes, experiment and adapt processes (AlNuaimi et al., 2022; Nguyen et al., 2025).

Amazon's approach operationalises decentralisation through small autonomous teams that own specific services, metrics and outcomes. These teams are empowered to make decisions about features, technical designs and priorities within strategic guardrails and leadership principles (Ates and Suppayah, 2024; Stone, 2013).

However, decentralisation is accompanied by algorithmic centralisation. Work on algorithmic management shows that intelligent systems increasingly monitor performance, allocate tasks and shape workflows (Keegan and Meijerink, 2025). In Amazon's fulfilment centres, algorithms track productivity and set performance thresholds, with limited worker input. Wiggin (2025) argues that such systems were also used strategically in anti-union campaigns.

This creates a paradox: teams and managers may be structurally decentralised and empowered, while workers experience tight algorithmic control. Traditional concepts of centralisation/decentralisation remain relevant but must now account for digital governance mechanisms and "control by code" (Nabben, 2021). In this sense, traditional centralised

structures lose their dominance but are transformed rather than eliminated, supporting views of contemporary organisations as hybrid, digitally mediated systems (Fioretti and Neumann, 2022; Kretschmer et al., 2022; Sabljic, 2024).

5. Redefining Management Roles

Digital transformation has reshaped not only structures but also the nature of managerial work. Classical management models conceived managers as planners, organisers, coordinators and controllers in relatively stable, human-centric systems (Fayol, 1916; Mintzberg, 1979). In contrast, managers in companies like Amazon operate within data-rich, platform-based, AI-mediated environments that require new capabilities. Contemporary literature highlights digital-transformational leadership and technological literacy as central to modern management.

5.1 Transformational Leadership

Traditional transformational leadership focuses on articulating vision, inspiring followers and fostering change (Bass, 1985; Burns, 1978). In the digital era, these principles remain important but must be adapted. Sacavém et al. (2025) argues that leaders in digital transformation must combine vision with an understanding of how technologies reshape processes, culture and capabilities. Tagscherer and Carbon (2023) identify themes of leadership for successful digitalisation, including customer orientation, change openness, digital savviness and empowerment. Ly (2023) show that digital transformational leadership enhances agility and transformation outcomes when leaders encourage experimentation and collaboration. López-Figueroa et al. (2025) emphasise that digital leaders must integrate technological, relational and ethical competencies.

Amazon offers a concrete example of digital-transformational leadership institutionalised at scale. Its Leadership Principles such as *Customer Obsession*, *Ownership*, *Invent and Simplify*, *Learn and Be Curious*, *Bias for Action* and *Dive Deep* encode expectations for how managers think and act (Amazon, 2025; Belcher, 2023; Peña, 2024). Leaders are expected to work backwards from customer needs, make high-velocity decisions, own outcomes beyond their immediate remit and continuously learn. The Working Backwards process, centred on future

press-release narratives and FAQs, embeds customer-centric innovation into managerial practice (Ates and Suppayah, 2024).

At the same time, Amazon illustrates tensions within digital-transformational leadership. Algorithmic management in fulfilment operations can create high pressure and limit autonomy (Wiggin, 2025), conflicting with ideals of empowerment and trust. This suggests that digital-transformational leadership may be more fully realised for knowledge workers and leaders than for frontline employees, raising questions about equity and power.

It is also important to note that Amazon's leadership model is highly codified and operationalised, which differentiates it from more generic accounts of transformational leadership. The Leadership Principles are embedded into recruitment processes, performance appraisals and promotion decisions, meaning that aspiring managers are assessed not only on outcomes but on how they achieve them (Amazon, 2025; Peña, 2024). This institutionalisation of leadership expectations arguably creates a distributed form of transformational leadership, where thousands of mid-level managers are tasked with driving local change in alignment with a shared set of values and behaviours. In theory, this could help reconcile the scale and complexity of Amazon's operations with the need for adaptability and innovation.

However, critics contend that such codified leadership frameworks can also become mechanisms of cultural control, exerting normative pressure on employees to conform to demanding behavioural standards (Stone, 2013; Stone, 2022). When combined with high performance expectations and continuous data monitoring, the rhetoric of customer obsession and bias for action may translate into long working hours, high stress and limited tolerance for dissent. Empirical studies of digital leadership caution that transformational narratives can obscure unequal power relations and the uneven distribution of risks and rewards in digital transformation (López-Figueroa et al., 2025; Sacavém et al., 2025). In Amazon's case, the coexistence of aspirational leadership principles and tough working conditions reported in some units suggests that digital-transformational leadership is contested terrain, whose effects vary across occupational groups.

For management theory, this implies that digital-transformational leadership should not be viewed solely through a functionalist lens (i.e. as a tool for enhancing performance), but also through a critical lens that considers whose interests are served by particular leadership discourses and practices. The Amazon case supports calls for more nuanced, context-sensitive

research that explores how digital leadership is enacted, resisted and negotiated in different parts of large platform organisations (Ly, 2023; Yamin and Murwaningsari, 2023). In relation to the coursework question, Amazon's experience indicates that traditional transformational leadership theory remains relevant as a foundation but is clearly insufficient on its own; it must be expanded into a digital-transformational, technologically literate and critically informed conception of leadership rather than being regarded as obsolete.

5.2 Embracing Technological Literacy

In classical paradigms, managers could delegate technical understanding to specialists and focus on general administration. Modern digital contexts render this untenable. López-Figueroa et al. (2025) and Tagscherer and Carbon (2023) stress that effective digital leaders must possess technological knowledge and an ability to understand digital tools, data and AI systems sufficiently to make informed decisions and to challenge technical proposals. Marhraoui (2023) identifies digital skills for project managers, including data literacy, digital collaboration, cybersecurity awareness and platform understanding.

Practice-oriented analyses echo this. Ibarra and Jacobides (2025) argue that leaders in the age of AI must rethink how they learn, decide and develop others, acting as translators between organisational goals and AI capabilities.

At Amazon, technological literacy is explicitly expected. Leadership Principles such as *Learn and Be Curious* and *Dive Deep* require leaders to continuously update knowledge and engage with technical details (Amazon, 2025; Belcher, 2023). Managers rely on metrics, dashboards and A/B tests to guide decisions, demanding data literacy (Stone, 2013; Stone, 2022). The Working Backwards process requires managers to collaborate closely with engineers and data scientists to design feasible, customer-centric products (Ates and Suppayah, 2024). As AI and custom chips (e.g. Trainium) become core strategic assets at Amazon, CEO communications emphasise that leaders must understand AI's potential and constraints (Bitter, 2025).

However, the emphasis on technological literacy also raises challenges: potential exclusion of less technically trained managers; risks of over-reliance on quantifiable metrics; and ethical blind spots if technological understanding is not matched by reflection on bias, fairness and societal impact (López-Figueroa et al., 2025; Sacavém et al., 2025; Yamin and Murwaningsari, 2023).

Another dimension of technological literacy concerns managers' ability to bridge language and perspective gaps between technical and non-technical stakeholders. Digital initiatives at Amazon often involve cross-functional collaboration among software engineers, data scientists, UX designers, product managers and operations specialists. Each group brings its own jargon, priorities and mental models. Without managers who can understand the basics of cloud architectures, machine learning workflows or data pipelines, there is a risk of misalignment, unrealistic expectations and costly rework (Marhraoui, 2023). Technologically literate managers can facilitate mutual understanding, translate strategic goals into technical requirements and challenge both over-optimistic and overly conservative assessments of what technology can deliver.

Technological literacy also shapes ethical and governance choices. Managers who lack a basic understanding of how AI models are trained and deployed may struggle to recognise potential bias, privacy risks or unintended consequences embedded in algorithmic systems (OECD, 2024). By contrast, managers who are conversant with concepts such as training data quality, model drift and explainability are better positioned to ask critical questions and advocate for safeguards such as human-in-the-loop oversight, impact assessments or fairness audits. In this sense, technological literacy is not merely a technical competence but a prerequisite for responsible leadership in digital organisations (López-Figueroa et al., 2025; Sacavém et al., 2025).

In Amazon's context, where AI underpins recommendation systems, fraud detection, logistics optimisation and voice interfaces, the stakes of such literacy are particularly high. Decisions about how aggressively to automate, which metrics to optimise, or how to balance personalisation with privacy have far-reaching implications for customers, employees and society. Managers who can engage meaningfully with these issues are more likely to align technology use with Amazon's stated principle that "Success and Scale Bring Broad Responsibility" (Amazon, 2025), thereby integrating ethical considerations into core business decisions rather than treating them as an afterthought.

Overall, managerial roles at Amazon and similar organisations extend beyond classical planning and control to include digital orchestration, sense-making, ethical stewardship and boundary spanning. Traditional theories of managerial roles therefore retain some descriptive power, but in the face of Amazon's technologically intensive reality they are clearly inadequate on their own and must be substantially extended by the notion of technologically literate, digitally enabled management rather than being regarded as obsolete.

6. Challenges and Opportunities

Digital transformation, e-commerce and e-business create a dual reality: they generate new strategic opportunities while introducing complex organisational, cultural, ethical and regulatory challenges. Digital transformation is best understood as a deep organisational change process rather than a purely technological one (Plekhanov, Franke and Netland, 2023; Verhoef et al., 2021). This section examines resistance to change, data security and privacy, and leveraging technology for competitive advantage.

6.1 Overcoming Resistance to Change

Cieslak and Valor's (2024) integrative review of employee resistance to digital transformation identifies drivers such as fear of job loss, threats to identity, skill gaps, distrust of motives and concerns about intensified monitoring. Resistance is often rational from employees' perspectives, especially when change is technology-led rather than people-centred.

Plekhanov, Franke and Netland (2023) similarly stress that transformation disrupts routines, roles and power relations. O'Connor and Martinez (2024) finds that cultures characterised by adaptability, psychological safety and open communication facilitate digital transformation, whereas rigid, fearful cultures amplify resistance.

Amazon's culture, captured in its Leadership Principles and "Day 1" philosophy, is strongly pro-change and pro-innovation, which may mitigate resistance among knowledge workers (Amazon, 2025; Stone, 2013; Stone, 2022). However, algorithmic management in fulfilment centres creates conditions high monitoring, strict targets, limited autonomy likely to provoke resistance along classic lines (Wiggin, 2025). Traditional change models (e.g. Lewin) that assume episodic change may be inadequate for understanding such continuous, digitally mediated transformation (Burnes, 2004).

Overcoming resistance in digital contexts requires genuine employee involvement, investment in digital skills, transparent communication about monitoring and data use, and leadership that acknowledges legitimate concerns while modelling digital behaviours (O'Connor and Martinez, 2024; Sacavém et al., 2025).

From a practical standpoint, organisations such as Amazon can deploy several strategies to proactively address resistance in digital transformation. One approach is to invest in

structured digital upskilling programmes that not only teach employees how to use new tools but also explain the strategic rationale behind them, thereby reducing anxiety and perceived threat (Cieslak and Valor, 2024; O'Connor and Martinez, 2024). Another is to involve employees early in the design and pilot phases of new systems, using participatory design or co-creation workshops to capture frontline insights and build psychological ownership. In the context of Amazon's fulfilment operations, for example, engaging workers in discussions about how robotics and AI scheduling systems could improve ergonomics or safety might help reposition technology as an ally rather than an adversary.

More broadly, the literature suggests that transparent communication about the limits of automation and the organisation's plans for workforce transition is critical for maintaining trust (Plekhanov, Franke and Netland, 2023). If employees suspect that digital transformation is primarily a cost-cutting exercise that will lead to job losses or precarious work, resistance is likely to intensify. Conversely, when leaders articulate a credible narrative about new roles, reskilling opportunities and human-machine collaboration, and back it up with concrete investments, resistance may be mitigated. For Amazon, which faces public scrutiny over working conditions and automation, aligning its internal change management practices with its public commitments to innovation and responsibility is essential to sustaining both performance and legitimacy.

6.2 Ensuring Data Security and Privacy

Data is both a strategic asset and a major source of risk. As organisations intensify data use, they face increasingly complex regulatory regimes and heightened expectations regarding privacy and security. Millman (2023) highlights that digital transformation must integrate robust data protection by design. DataGuidance (2024) identifies evolving global privacy themes, including tighter enforcement and cross-border transfer restrictions. India's Digital Personal Data Protection Rules 2025, for example, impose strict requirements on digital personal data handling and cross-border transfers, directly impacting global platforms (Saini, 2025).

Recent enforcement cases underline the stakes: AT&T's \$13m fine over a 2023 data breach and Capita's £14m UK ICO penalty for data protection failures show that regulators are willing to sanction poor data governance (Booth, 2025; Rahman-Jones, 2025). The OECD

(2024) further notes that advanced AI amplifies privacy risks, calling for integrated AI and data governance.

For Amazon, data security and privacy are existential concerns. It processes extensive customer data, manages seller and partner information, and hosts sensitive client data through AWS. Ensuring security requires advanced technical safeguards, strong vendor management, compliance across jurisdictions and careful balancing of data exploitation with privacy and ethical commitments.

These developments imply that data governance is now a core managerial responsibility, not merely a technical function. Managers must understand privacy, security and AI governance basics and support cross-functional structures such as Chief Data Officer roles and AI ethics boards to oversee these issues.

In addition to regulatory and reputational concerns, operational resilience is a key consideration in data security and privacy strategies. Large-scale cloud and e-commerce infrastructures are attractive targets for cyber-attacks, ransomware campaigns and data exfiltration attempts. For a firm like Amazon, which not only processes its own data but also hosts customer workloads on AWS, security failures could trigger cascading impacts across multiple industries and public services. This interdependence reinforces arguments in the literature that data and AI governance must be treated as systemic risks, requiring board-level oversight, cross-functional coordination and continuous investment in security capabilities (OECD, 2024). It also suggests that managers at all levels not just security specialists need a baseline understanding of security principles and their role in safeguarding data, whether through access control practices, incident reporting or privacy-by-design decisions in their own projects.

6.3 Leveraging Technology for Competitive Advantage

Despite challenges, digital transformation can be a powerful source of competitive advantage when underpinned by appropriate capabilities. Rahman et al. (2025) and Van Hoang et al. (2025) show that digital capabilities and dynamic capabilities (sensing, seizing and transforming) positively influence sustainable advantage and performance. Involving users in digital value creation further amplifies performance benefits (Zhao et al., 2023).

Amazon demonstrates such capabilities. A 2025 study finds that digital transformation measured through digital disclosures, assets and cloud revenue is positively associated with supply chain efficiency (inventory turnover), indicating that digital investments translate into operational performance (“Amazon digital transformation and supply chain efficiency”, 2025). Analyses of Amazon’s logistics emphasise an AI “flywheel” in which data from operations continually improves algorithms; these in turn enhance performance and feed into AWS products like Amazon Forecast and AWS Supply Chain (Kitishian, 2025). Warehouse automation generates granular operational data that supports continuous improvement and new services (Amazon, 2025a; Yolga, 2023).

Strategically, Amazon’s platformisation across Marketplace, AWS, Prime and Alexa turns the firm into a multi-sided ecosystem with powerful network effects, economies of scale and data advantages (Osman, 2023; Srnicek, 2017). Traditional strategy frameworks based on stable industries and physical assets are insufficient to fully explain such positions; theories of platforms, ecosystems and digital capabilities are more appropriate (Jacobides, Cennamo and Gawer, 2018; Kretschmer et al., 2022).

This suggests that while classical ideas about resources and capabilities remain valid, the nature of key resources (data, algorithms, platforms) and capabilities (digital dynamic capabilities) has changed. Competitive advantage in digital organisations like Amazon thus rests on integrating technological, structural and managerial innovations.

At the same time, the pursuit of competitive advantage through digital technologies raises questions about sustainability and imitation. Dynamic capabilities theory emphasises that advantages are sustained not simply by possessing digital tools but by continuously updating and reconfiguring them in response to environmental change (Rahman et al., 2025; Van Hoang et al., 2025). Competitors can adopt similar cloud platforms or machine learning techniques, but replicating Amazon’s organisational learning routines, data assets and ecosystem relationships is far more challenging. This perspective suggests that Amazon’s advantage stems not from technology per se, but from the co-evolution of technology, structure and managerial practice over time. For traditional management theories, this underscores that core concepts such as resources, capabilities, learning and path dependence remain highly relevant, yet they must now be reinterpreted through a digital, platform-based lens rather than being discarded as obsolete.

7. Conclusion

7.1 Summary of Findings

This study assessed whether technological advances particularly in e-commerce and e-business have rendered traditional organisational structures and theories of management roles obsolete, using Amazon as the focal case. The analysis indicates that digital transformation has shifted technology from a support function to a structural core, reshaping coordination, organisational boundaries, and managerial work (Plekhanov, Franke and Netland, 2023; Verhoef et al., 2021). In this context, Amazon increasingly operates as a platform-based ecosystem that orchestrates multiple internal units and external actors rather than functioning solely as a conventional retailer (Jacobides, Cennamo and Gawer, 2018; Kretschmer et al., 2022; Nambisan, Wright and Feldman, 2019; Stone, 2022).

Traditional hierarchical and matrix structures have weakened as dominant templates. Hierarchy remains salient in domains requiring standardisation, accountability, and risk control such as compliance, finance, and high-volume fulfilment operations where bureaucratic coordination and performance control retain functional value (Fioretti and Neumann, 2022). Across other areas, however, Amazon relies more heavily on autonomous teams, digitally mediated coordination, and platform governance, consistent with hybrid and meta-organisational forms (Srnicsek, 2017). Matrix structures appear particularly limited in digitally mature organisations: at Amazon, cross-functional integration is increasingly achieved through agile, product-centred teams and shared digital infrastructures rather than dual reporting lines (Ates and Suppayah, 2024; Nguyen et al., 2025).

Management roles have also been reconfigured. Classical role categories of planning, organising, and controlling remain visible, although they are no longer sufficient on their own to explain managerial work in data-rich and AI-mediated environments. Contemporary research, supported by Amazon's practices, suggests that managers increasingly operate as orchestrators and sense-makers who require technological literacy and ethical stewardship alongside delivery expectations (AlNuaimi et al., 2022; Amazon, 2025b; López-Figueroa et al., 2025; Tagscherer and Carbon, 2023). Digital transformation also generates tensions, including resistance to change, cybersecurity and privacy risks, and the expansion of algorithmic control pressures that are particularly pronounced for frontline workers in Amazon's fulfilment system (Cieslak and Valor, 2024; OECD, 2024; Wiggin, 2025).

Overall evaluative judgement: The claim that technological advances have rendered traditional organisational structures and theories of management roles obsolete is **only partially justified** in the case of Amazon. The findings indicate that:

- Hierarchical and matrix structures have lost their status as universal templates, with matrix forms approaching obsolescence in digital-native configurations.
- Elements of hierarchy, bureaucracy, and classical managerial roles continue to perform important functions in high-risk, regulated, and scale-intensive operational domains.
- Amazon is best understood as a layered hybrid in which platform and data logics overlay, constrain, and partially transform classical structures and roles rather than eliminating them outright.

Traditional theories therefore remain useful as conceptual foundations, although they require integration with digitally informed perspectives to explain contemporary organising at scale.

7.2 Implications for Future Research

First, research should develop hybrid structural theories that integrate hierarchy, agile teams, and platform ecosystems into coherent explanatory models. Platform and ecosystem research has advanced understanding of inter-organisational coordination (Jacobides, Cennamo and Gawer, 2018; Kretschmer et al., 2022), whereas internal structural design and governance within large platform corporations remains less settled.

Second, the expansion of AI and algorithmic management requires deeper investigation of human–AI collaboration and governance. Questions of authority, trust, accountability, and fairness in AI-assisted decision-making remain under-specified, particularly where outcomes are contested or opaque (Keegan and Meijerink, 2025; Wiggin, 2025). Future studies could examine how managerial judgement interacts with algorithmic recommendations, and how responsibility is allocated across organisational layers.

Third, digital leadership research should attend more directly to stratification and inequality within organisations. Amazon suggests that autonomy and “digital-transformational” practices may be experienced unevenly: knowledge workers may benefit from empowerment

and experimentation, whereas operational staff may experience intensified monitoring and reduced discretion (López-Figueroa et al., 2025; Sacavém et al., 2025; Wiggin, 2025). Research should therefore explore whether digital leadership reproduces or mitigates occupational inequalities.

Fourth, evolving data and AI regulation will increasingly shape organisational design and management roles. As frameworks such as GDPR, India's DPDP regime, and emerging AI regulation develop (DataGuidance, 2024; OECD, 2024; Saini, 2025), firms will need governance arrangements that balance compliance, agility, innovation, and ethical outcomes. Research could evaluate which cross-functional models of data/AI governance are most effective, and under what conditions.

Finally, the rise of AI and platform ecosystems invites renewed attention to the philosophical foundations of management. Traditional theories assume human-centred agency and judgement, whereas algorithms increasingly participate in sensing, evaluating, and acting (Ibarra and Jacobides, 2025; Sacavém et al., 2025). This raises foundational questions about managerial responsibility and legitimacy: how accountability should be conceptualised when decisions are co-produced by humans and machines, and what ethical standards are required for AI-mediated organising.

In conclusion, Amazon illustrates that digital transformation has reduced the sufficiency of traditional organisational and management theories without rendering them wholly obsolete. Progress therefore lies in reconstructing classical insights through the lens of digital transformation, platform ecosystems, and AI-mediated work to produce hybrid frameworks capable of explaining contemporary socio-technical organisations (Kretschmer et al., 2022; Srnicek, 2017; Verhoef et al., 2021).

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