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Revitalising Competitiveness: How Digital Technologies and Data Management Drive Business Renewal?

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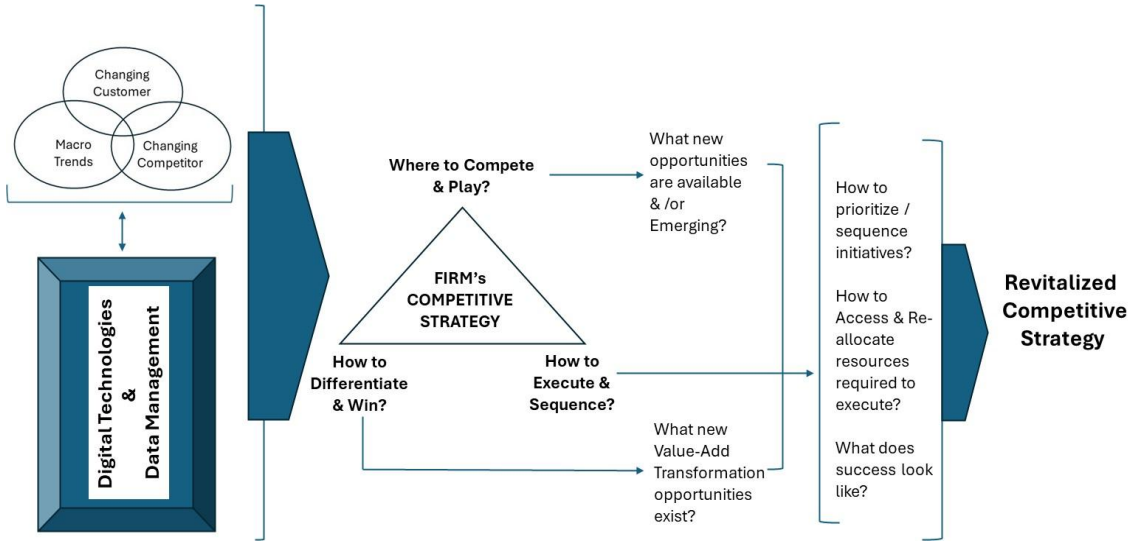
Firms confront a rapidly evolving business landscape and must continually reinvent themselves to maintain a competitive edge. Digital technologies and data management have emerged as critical enablers of this renewal, transforming traditional business models, optimising operations, and unlocking new growth opportunities. The success formula for businesses has evolved.

Figure 1
Revitalising Competitiveness in a Digital Era



Developed for this paper

In the past the strength of the largest industrial companies relied on economies of scale and benefits from horizontal and vertical integration. Digital technologies are helping organisations realise new levels of performance from AI-driven insights to cloud-based scalability. Leveraging digital tools can enhance efficiency, customer engagement, and innovate changing the traditional basis of competition and rules of engagement. This article explores how digital technologies and data management should be embraced with a strategic perspective to revitalise competitiveness. 1The digital age has redefined competition by breaking industrial boundaries and rendering traditional sources of advantage obsolete. Firms that are unwilling to adapt, not providing the required level of attention to leverage digital technologies or building their data management capabilities will continue to see their competitiveness decline. Digital natives such as Netflix, Spotify, Uber, Amazon, Alibaba, WeChat have disrupted entire industries by harnessing digital

technologies, data and platforms. Digital transformation is no longer an option but a necessity for sustained competitiveness and growth. As of 2023, global spending on digital transformation initiatives reached USD 1.85 trillion, a 16% increase from the previous year (Revankar 2024).

Adopting a strategic approach, the framework presented in Figure 1 outlines how digital technologies and data management filtered through a competitive strategy lens can help organisations revitalise.

Beginning from the left of the framework, it is important to appreciate how digital technologies have impacted on the customer, macro environment and competitive dynamics. For example, customers who have experienced the benefits and challenges of digital technologies in various aspects of their life are likely to transfer these perceptions and expectations onto other products and services. Similarly, as competitors embrace digital technologies and build data management capabilities, the benefits experienced by the customer will redefine expectations.

Digital technologies impact every aspect of the macro environment. Government services have gone digital and there are new laws relating to data privacy and social media influencing social norms. Firms need to decide which of these macro factors are most relevant to their business. Digital technologies and data management solutions continue to evolve and need to be monitored and tracked to understand the potential impact on internal and external operations making, revitalisation efforts a continuous process that adapts as technologies emerge and mature.

Moving to the centre of the framework is the competitive strategy triangle. Competitive strategy may be simplified by addressing three strategic questions:

Table 1 – Strategic Questions / Choices for Competitive Strategy

Strategic Question / choice	Relates to …	Influenced by …
Where to play	Markets and segments that the firm targets	Cutting-edge technologies which the firm chooses to adopt
How to differentiate and win	How the company differentiates itself versus the competition and in the minds of target customer.	New digital technologies that help the organisation innovate and streamline operations. Implementing robust data management initiatives can help the firm gain actionable insights, improve decision-making and deliver personalised experiences at scale that differentiate it versus the competition.
How to execute and sequence initiatives	Relates to how effectively and efficiently the organisation can implement its strategy, manage change and the prioritisation sequencing of the various initiatives and projects.	Transformational leadership that defines priorities, allocates resources and manages the change to deliver expected results.

Competitive advantage comes through organisational capabilities to make better and timely strategic decisions, allocate resources effectively, and capitalise on emerging opportunities before competitors. Adopting cutting edge digital technologies such as generative AI, quantum computing, immersive technologies, blockchain, 6G networks, edge computing, etc. enables, and will continue to enable organisations to extend their capabilities. It will make it easier to engage, personalise at scale, customise and progress analytics from simple descriptive and diagnostic capabilities toward predictive, and prescriptive roles and decisions.

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As an example with the introduction of wearable devices, such as continuous glucose monitors, smart scales, blood pressure monitors and sleep/fitness trackers, firms can now collect data in real time every day. This can help in spotting problems before they start and identifying health patterns or trends,. This can, in turn, enable healthcare teams and patients themselves to leverage insights for personalised treatment plans and lifestyle adjustments (Clement 2024).

Further up the data analytics hierarchy is Artificial Intelligence (AI) and Machine Learning (ML) for predictive analytics. These can analyse historical data to identify patterns and make accurate predictions. Examples include predicting future trends, customer behaviour, and market dynamics to develop solutions that help the firm stay ahead of the competition. Forecasting demand, optimising pricing strategies, and anticipating customer needs help improve responsiveness, value perceptions, and create new demand and markets.

A second key component of every firm's competitive strategy is its cost reduction and factor productivity improvement initiatives. Digital technologies such as process automation, e.g. Robotic Process Automation (RPA), have been known to deliver multiple benefits such as faster processing, 24/7 operations, analytics collection and improved accuracy. Importantly, an automated process is scalable and can be any size you want it to be (Mancini 2025).

Leveraging digital solutions empowers teams with the tools they need to get the job done, driving effective productivity and reducing frustration. Digital technologies that improve communication, productivity and flexibility allow teams to work smarter and produce better results. Other digital technologies driving productivity, such as cloud computing platforms enable agility and cost efficiency. Internet of Things (IoT) technology connects devices to optimise operations. As an example smart manufacturing transformation initiatives use IoT sensors to monitor equipment health, reduce downtime and provide real time data that supports process optimisation efforts. Blockchain and secure transactions enhance transparency, build trust and cut the time required through automated contracts. These are just some examples of how digital technologies and data management capabilities are facilitating strategic transformation and revitalised competitiveness.

Data management and competitiveness – Data is a critical component to digital transformation, but its value depends on effective management. This requires efforts to:

- Break down data silos where legacy systems often trap data in departmental silos and hinder collaboration. Firms need to migrate to integrated platforms where Master Data Management (MDM) creates a single source of truth for customers and internal users. Cloud-based tools such as "Salesforce" integrates with Enterprise Resource Planning (ERP) systems like Systems Applications and Products (SAP) to ensure seamless data flow.
- Ensure data quality and governance is managed because poor data quality leads to flawed insights. Mismanagement of data can result in significant fines and legal actions against the firm.
- Leverage advanced analytics enabling data-informed decision-making that unlocks competitive advantages from customer insights through Customer Data Platforms (CDP) that analyse behaviour, create behavioural segments and enable customised marketing content and campaigns.

Revitalising Competitiveness

Markets, industries and products are all subject to competitive life cycles. A three-stage classification may be:

Emergent phase: the proposition is new and there are few alternatives

Growth phase: similar value propositions begin to compete and choices expand

Mature phase: value propositions to some extent converge and competition is around operational efficiency, pricing and branding.

Table 2
Revitalisation Strategies

Competitiveness Revitalisation	**Digital Technology** *Some examples*	**Data Management** *Some examples*
Efficiency Improvement e.g. financial organisational restructuring to reduce cost, improve productivity and profitability.	• Robotic Process Automation (RPA) • Industrial Internet of Things (IIoT) • Global Positioning System (GPS) and Radio Frequency Identification (RFID) in smart supply chain • Cloud based ERP and Customer Relationship Management (CRM). • Process mining	• Eliminate data silos and boost visibility • Automate manual processes • Reduce rework and errors through automated controls • Enable predictive optimisation
Customer Centricity & Scope e.g. adapting their go-to-market models, offerings (i.e. product, services / solutions) and revenue portfolio mix, to align with market value migration and adjacency opportunities.	• Customer Relationship Management (CRM) • Artificial Intelligence (AI) and machine learning • Marketing automation • Conversational AI • Augmented / virtual reality	• Develop 360-degree unified view of customers • Predictive personalisation and loyalty building • Proactive service and retention
Innovation e.g. increased focus on multi-level and dimensional innovation to reinvent the core and expand into new emerging opportunities.	• Predictive analytics • 5G and edge computing • Cloud and big data • Spatial computing • Polyfunctional robots	• Opportunity identification and trend spotting • Data driven ideation and concept validation / rapid experiment testing • Improve commercialisation and scaling – launch precision and feedback loops
Collaboration e.g. exploring possible partnerships, alliances and network relationships with private and/or public organisations to develop new offerings and business opportunities.	• Unified communication platforms • Cloud-based document collaboration • Project management systems	• Integrated analytics and secure data sharing for joint insights and innovation • Optimising shared value chains • Mitigating shared risk and costs
		Developed for this paper

Staying ahead of the mature phase that often leads to decline requires adopting a proactive and anticipatory approach to competitive revitalisation. Leaders need to consider how long each phase will be, and consider scenarios of how severe possible disruptions may be, and if the market will be dominated by just one or a few players. We have seen traditional sources of advantages and differentiation such as natural monopolies from location, scale, learning curves and vertical integration disappearing. Confronting such situations, firms have pursued revitalisation strategies that revolve around four broad areas:

Digital technologies and data management can and should be leveraged in all four of these renewal strategies.

Here are a few examples of how various industries are using digital and data management to improve their competitiveness and value proposition:

Healthcare: Digital-first patient care through Telemedicine: Platforms like Teladoc reduce costs and improve access. AI Diagnostics analyses medical images faster than human radiologists.

Retail and hyper-personalisation: AI-Powered recommendations drive personalised recommendations on Amazon. Omnichannel integration as found with Nike's app that connects online and in-store experiences, boosting loyalty.

Manufacturing and the development of Smart Factories: Use of digital twins to simulate production lines to cut design time. Predictive maintenance through IoT sensors that prevent equipment failures helping companies save millions.

Cosmetic companies: Using technology to gain a strong understanding of the customer. Using tools such as mobile applications that combine personalised assistance with a course-changing digital experience, leveraging an AI-powered assessment of the customer's unique skin care needs using a privacy-protected picture of the customer's face. Such tools can prompt customers to change their routine by simulating an in-person beauty advisor, leading customers to reflect on and explore skin improvement goals (Leachman & Scheibenreif, 2023).

Digital technologies: Such as cloud computing, unified communication platforms (e.g. Zoom) project management applications (e.g. Asana), Virtual Private Networks (VPN), document collaboration tools (e.g. Google docs), blockchains, Augmented Reality / Virtual Reality (AR/VR) for immersive collaboration, social collaboration platforms (e.g. Yammer), etc.

Strategic Leadership for Transformation

Today's leaders must possess a holistic view of technology, its potential, and its implications across all aspects of business. Leaders face various challenges confronting their digital transformation responsibilities. Resistance to change, balancing short-term and long-term objectives, adapting to rapidly evolving technologies and securing long-term resource commitments, just to mention a few. Those who embark on transformation initiatives encounter common pitfalls such as overlooking cybersecurity risks, failing to keep up with industry trends, and neglecting employee development in the digital skills required. This topic on leading strategic transformations is broad and complex, especially when dealing with people, culture and politics there are some basic actions that can be taken:

- Build a digital strategy. This is a critical aspect of modern leadership and involves crafting a plan that aligns the firm's goals with those of digital technology and data management, to have a single tightly aligned strategy.
- Personally embrace a commitment to data-driven decision-making. Commit to harnessing data analytics to gain insights, make informed choices, and continuously refine strategies.

- Spend time understanding customer needs, preferences, pain points and end-user requirements. Customer-centric leaders prioritise building strong relationships and creating exceptional experiences.
- Encourage innovation and creativity within teams to stimulate fresh ideas, problem-solving, and adaptability and to get multiple levels to embrace the digital era.
- Establish robust security protocols, educate teams about potential risks, and ensure that sensitive data remains protected.
- Balance short-term and long-term objectives and provide forums to understand and adapt to rapidly evolving technologies.
- Use key performance indicators (KPIs) to track the impact of digital technology and data management initiatives, allowing for course adjustment as needed and efforts to achieve target results.
- Spend time to understand digital trends and their impact on the organisation. Use this insight to formulate innovative strategies that enable the firm to remain competitive and relevant.
- Reimagine go-to-market models, processes, and customer interactions with a willingness to challenge the status quo. Explore emerging technologies, and how they can be harnessed to create differentiated value.
- Explore collaborations, partnerships, and alliances that can enhance the firm's digital capabilities and accelerate transformation initiatives.

Conclusion

Strategic leadership in the digital era is not just about embracing technology, it's about driving transformation, embracing change, and harnessing the power of innovation to create sustainable value. Leaders must cultivate a forward-thinking mindset, champion a culture of adaptability, and make data-driven decisions that align with the firm's strategy and values. By embracing customer-centricity, fostering agility, and staying vigilant about ethical considerations, strategic leaders can guide their firm through the complexities of the digital world, ensuring a prosperous and resilient future.

Digital transformation is more than technology, it's about reimagining how value is created, delivered, captured and defended. It is about creating networks and relationships and getting closer to the customer. The ability to integrate digital technologies and data management with competitive strategy is required for renewal and sustained profitable growth. This paper provides a quick overview and framework that hopefully will bring structure to a complex and evolving trend that cannot be ignored.

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