Original Article

Innovation - But with Risk: The Strategic Role of IT in Business Risk Management

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(Received 23 March 2023; accepted 22 April 2023)

Abstract
Information technology is a pivotal tool in mitigating diverse risks within business environments, ranging from operational inefficiencies to cybersecurity threats. By automating processes, enhancing decision-making through data analytics, and improving communication channels, IT enables businesses to proactively address vulnerabilities and seize market opportunities. However, the adoption of advanced IT systems is not without its challenges. Implementing new technologies can inadvertently introduce novel risks, such as cybersecurity vulnerabilities, data privacy concerns, and system integration failures. Moreover, a lack of strategic planning in IT adoption can lead to misaligned investments and operational disruptions, while lagging behind in IT modernization may result in missed opportunities and competitive disadvantages. This dual-edged nature of IT reveals the importance of a balanced approach to its integration. Businesses must carefully evaluate the potential benefits and risks of IT solutions, adopt comprehensive risk management frameworks, and prioritize continuous employee training to optimize the benefits of IT adoption while minimizing unintended consequences.

Key words: business technology adoption, cybersecurity, innovation risks, IT risk management, strategic IT planning.

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Introduction

Quibi, a short-form streaming platform, was launched in 2020 by industry veterans Jeffrey Katzenberg and Meg Whitman. Quibi adopted cutting-edge mobile streaming technology, aiming to revolutionize how people consume entertainment. Its key innovation was "Turnstyle" technology, which allowed seamless switching between vertical and horizontal video formats. Quibi invested heavily in this proprietary tech, believing it would attract millions of mobile-first viewers seeking premium content on the go. However, adopting this advanced technology backfired for several reasons (Watt, 2024). First, Quibi bet on mobile streaming in a world suddenly upended by the COVID-19 pandemic, where home-based viewing on larger screens became the norm. Second, the platform's reliance on proprietary tech locked its content behind a paywall, making it inaccessible on standard streaming devices at launch. This decision alienated potential subscribers accustomed to multi-device compatibility. Moreover, Quibi's tech-heavy approach overlooked the importance of compelling content. While the platform boasted high-budget productions, its shows failed to resonate with audiences. After burning through nearly $2 billion in investments and attracting far fewer subscribers than projected, Quibi shut down just six months after its launch. In this case, adopting cutting-edge technology without aligning it with market needs, consumer behavior, and platform flexibility directly contributed to the company's rapid demise (McAfee, 2023).

Technological adoption is often framed as a necessity rather than a choice. Businesses must embrace cutting-edge solutions to stay relevant in a world where digital transformation drives market dynamics. Companies leveraging artificial intelligence, cloud computing, and big data analytics have redefined productivity and service delivery standards. For instance, AI-powered systems automate customer service through chatbots, providing instant responses to customer inquiries, thus enhancing customer satisfaction and loyalty. Similarly, cloud platforms enable businesses to scale operations seamlessly, promoting flexibility and cost efficiency. However, the same technologies introduce new challenges, such as data breaches, service outages, and compliance risks, complicating the business landscape.

The adoption of new technologies inherently comes with the risk of cyber threats. As businesses digitalize operations, they become attractive targets for cybercriminals. Cybersecurity breaches can compromise sensitive customer information, disrupt business continuity, and damage corporate reputations. For example, major corporations such as Equifax and Target have experienced massive data breaches, resulting in significant financial losses and a decline in

customer trust. These incidents illustrate how the rush to adopt new technologies without robust security frameworks can backfire, highlighting the importance of a proactive cybersecurity strategy (Ulsch, 2014). Beyond security vulnerabilities, rapid technological adoption can also have profound psychological and social consequences. Studies suggest that algorithm-driven platforms, particularly social media, can significantly impact users' mental well-being by fostering excessive social comparison, cognitive overload, and anxiety (Nosraty et al., 2021). As businesses increasingly rely on data-driven engagement strategies, they must balance innovation with ethical responsibility, ensuring that digital platforms enhance user experience without compromising well-being and trust.

Data privacy has emerged as a central concern in technological adoption. Businesses handle enormous volumes of data generated through online transactions, social media interactions, and customer management systems. The implementation of data-driven technologies, while beneficial, raises questions about consent, data ownership, and regulatory compliance. However, ethical decision-making remains a significant challenge, as individuals and businesses alike may not fully understand regulatory obligations. Research has shown that even highly educated professionals often struggle with ethical knowledge, preferring to provide incorrect answers rather than admit uncertainty (Sabbar et al., 2019). This highlights the need for stronger compliance training in corporate environments, where ethical missteps in data handling and AI-driven decision-making can lead to severe legal and reputational risks. Strict data protection regulations, such as the General Data Protection Regulation (GDPR), impose heavy penalties on businesses that mishandle personal information. Thus, while data analytics offers a competitive edge, failure to ensure data privacy compliance can lead to legal entanglements and reputational harm (Hoofnagle et al., 2019).

Another challenge associated with technological adoption is system integration complexity. Businesses often struggle to merge new technological systems with existing infrastructures. Incompatibility issues, data silos, and workflow disruptions frequently arise, resulting in operational setbacks and increased costs. For example, enterprise resource planning (ERP) systems, despite their promise of integrating various business processes, often encounter deployment failures due to inadequate preparation or a lack of organizational alignment. These failures illustrate how technology adoption can create crises when businesses underestimate the complexities of system integration. As Mohammadi and Kharazmi (2021) note, infrastructure poses a significant obstacle to utilizing online platforms; even well-funded institutions have struggled with the transition to digital platforms,

highlighting the tensions between technological capabilities and organizational readiness.

Strategic IT planning plays a pivotal role in mitigating risks associated with technological adoption. A well-crafted IT strategy aligns technological initiatives with business goals, ensuring that investments in technology yield desired outcomes. Businesses must assess the feasibility, scalability, and security of proposed IT solutions before deployment. This includes conducting thorough risk assessments, scenario planning, and engaging in continuous monitoring of IT implementations. Trust in systems and organizations is built on the foundation of consistent and accountable practices. When these principles are compromised—through inconsistent enforcement or lack of accountability—it can lead to systemic inefficiencies and undermine organizational effectiveness (Moein et al., 2023). For example, companies like Amazon and Google excel due to their forward-looking IT strategies, enabling them to innovate while mitigating potential technological disruptions. In light of these strategic considerations, artificial intelligence has emerged as a critical component of IT strategies, offering increased efficiency and predictive capabilities. However, studies reveal that while AI adoption enhances decision-making and streamlines workflows, concerns regarding algorithmic biases, data privacy, and over-reliance on automation remain significant obstacles (Tomraee et al., 2022). As industries integrate AI-driven solutions, ensuring transparency, regulatory compliance, and human oversight will be crucial in maintaining both trust and effectiveness.

Employee preparedness and organizational culture also influence the success of technological adoption. Businesses often overlook the human factor when deploying new technologies, resulting in resistance, reduced productivity, and implementation failures. Continuous employee training, change management programs, and fostering a culture of innovation are essential to ensuring technology adoption is smooth and effective. Institutional trust, which relies on the interplay of legality, oversight, and the public sphere within civil society, is essential for fostering a culture of innovation and accountability in organizations. Research highlights that building such trust requires effective structures, such as the separation of powers and the promotion of individual liberties, which strengthen legal protections and create a secure environment for professional growth (Kodabakhshi et al., 2021). However, effective adoption of new technologies is not solely dependent on technical proficiency; it also requires digital and media literacy skills that enable employees to critically assess and engage with evolving digital tools. Research highlights that media literacy fosters critical thinking, resilience, and ethical awareness, equipping individuals to navigate complex digital landscapes while mitigating risks such as

misinformation and manipulation (Sakhaei et al., 2023). In corporate environments, this ability is crucial for making informed decisions in cybersecurity, data management, and AI-driven processes. Employees equipped with the necessary skills and a growth mindset can adapt to technological changes, contributing positively to the organization's long-term success (Ślusarczyk et al., 2021).

Lagging in technology adoption can be equally detrimental, as businesses risk falling behind competitors. Companies slow to embrace emerging technologies may lose market share, struggle with customer retention, and experience decreased profitability. In addition to its economic implications, digital globalization influences how individuals and nations view themselves in the context of technological advancement. Research indicates that sustained exposure to prevailing global narratives can cause individuals to adopt external perceptions of their societies (Sabbar et al., 2023). This underscores that digital transformation extends beyond mere economic survival; it plays a crucial role in shaping cultural identity and positioning in the international business landscape. Technological inertia—resistance to change due to cost concerns or organizational conservatism—can hinder growth and limit a company's potential. Historical examples, such as Kodak's failure to adapt to digital photography, demonstrate how technological complacency can lead to business obsolescence. Research has shown that increased access to global communication resources significantly enhances public awareness and fosters stronger engagement in environmental protection efforts. A case study on Tehran citizens found a positive correlation between media exposure and pro-environmental behaviors, highlighting that global media plays a critical role in shaping public attitudes towards sustainability (Mousavi & Dariush, 2019).

The dynamic nature of technology demands continuous investment in innovation, coupled with resilient risk management frameworks. Businesses must adopt a balanced approach that weighs the advantages of technological progress against potential downsides. A comprehensive risk management framework should incorporate proactive threat detection, incident response planning, and regular audits to ensure system integrity. This approach minimizes disruptions while allowing businesses to capitalize on technological advancements.

Technological advancement also involves the ability to work with evolving regulatory landscapes. Governments worldwide are enacting laws to regulate data protection, AI ethics, and digital commerce. Businesses must remain vigilant about regulatory compliance to avoid legal repercussions and preserve their market standing. Policies and regulations play a pivotal role in this process, as their long-term impact depends on how effectively they are designed and implemented.

Research shows that even in broader societal contexts, comprehensive legislative frameworks and preventive strategies are essential to address widespread challenges, as fragmented policies often lead to inefficiency and ambiguity (Taheri et al., 2022). For example, tech companies operating globally must navigate diverse regulatory frameworks such as the GDPR in Europe, the California Consumer Privacy Act (CCPA), and emerging AI regulations. Adapting to these legal environments requires businesses to invest in legal expertise and compliance systems, ensuring they remain ahead of regulatory changes (Shatz & Lysobey, 2022).

Our argument in this paper, therefore, is that the adoption of new technologies is both a business imperative and a strategic challenge. While technology offers unparalleled opportunities for growth, efficiency, and market leadership, it also introduces a spectrum of risks that businesses must manage proactively. From cybersecurity vulnerabilities and data privacy concerns to system integration failures and compliance complexities, the potential downsides are significant. Therefore, businesses must approach technological adoption with a balanced perspective, integrating robust risk management strategies, fostering a culture of innovation, and ensuring continuous employee development. By doing so, they can navigate the complexities of technological transformation, achieving sustainable growth while mitigating potential crises.

Methodology

This study employs a qualitative research design focusing on case study analysis to explore the dual role of information technology (IT) as both a driver of business innovation and a source of strategic risk. The transformative potential of IT extends beyond business operations; research suggests that virtual education serves as a complementary element in digital transformation, equipping individuals with the knowledge and tools to adapt to evolving technological landscapes (Dastyar et al., 2023). The methodology involves a comprehensive review of historical business cases where IT adoption led to significant corporate success or failure. By analyzing diverse industry examples, such as Webvan's premature technological expansion and Nokia's delayed smartphone adoption, the study seeks to identify patterns, critical decision points, and management strategies that influence IT-driven business outcomes. Secondary data from academic journals, industry reports, and credible business archives provide the empirical foundation for this analysis.

Data collection involves sourcing case-specific details on corporate IT strategies, implementation processes, and resulting market performances. A thematic content analysis is conducted to categorize IT

adoption outcomes into three primary themes: innovation-driven success, risk-induced failure, and adaptive recovery. This analytical approach helps to draw meaningful insights into how corporations navigate the complex IT adoption process, balancing technological potential with strategic caution.

Get aboard

The business environment is violently become more dangerous to less agile entities and therefore, the corporations face relentless competition, rapidly evolving consumer demands, and complex operational challenges. To thrive in this dynamic landscape, businesses must embrace cutting-edge information technology (IT) solutions. Similar patterns can be observed in urban development, where modernization and technological advancements have transformed traditional residential spaces into highly optimized, efficiency-driven apartments, reflecting broader societal shifts in lifestyle and consumer expectations (Darvish et al., 2019). IT has become the backbone of corporate strategy, driving efficiency, innovation, and market responsiveness. The adoption of advanced IT technologies is not merely an operational choice but a strategic necessity that determines a corporation's survival and growth in the digital era.

One of the primary drivers of IT adoption in corporations is the pursuit of enhanced operational efficiency and productivity. Advanced IT systems automate routine tasks, reducing manual intervention and minimizing human error. Automation technologies such as robotic process automation (RPA) streamline back-office functions like payroll processing, invoice management, and data entry, allowing employees to focus on higher-value tasks. For instance, companies like Amazon rely on automated warehouse management systems to ensure rapid order fulfillment and inventory tracking. By eliminating redundant processes, corporations can optimize resource allocation and improve overall productivity.

Enterprise resource planning (ERP) systems further exemplify how IT integration boosts efficiency. These systems provide centralized platforms for managing core business processes, including finance, human resources, supply chain management, and customer relationship management. Corporations such as SAP and Oracle have pioneered ERP solutions that enable real-time data sharing across departments, facilitating seamless collaboration and more effective decision-making. In this context, cutting-edge IT becomes essential for sustaining operational agility and competitiveness (Hoque et al., 2015).

Innovation is a key differentiator in today's competitive business environment, and cutting-edge IT technologies are central to fostering a culture of continuous innovation. Technologies such as artificial intelligence, machine learning (ML), and blockchain enable

corporations to develop new products, improve services, and optimize customer experiences. AI-powered recommendation engines, for example, help e-commerce platforms like Netflix and Amazon provide personalized product suggestions, driving customer engagement and revenue growth.

Moreover, IT-powered innovation extends to research and development (R&D) processes. Pharmaceutical corporations like Pfizer and Moderna have leveraged big data analytics and cloud computing to accelerate drug discovery and clinical trials. By processing vast amounts of genomic data in real-time, these companies reduced vaccine development timelines, demonstrating how IT-enabled innovation can solve global challenges and create market leadership opportunities.

Business agility—the ability to rapidly adapt to market changes—is another crucial outcome of IT adoption. Cloud computing platforms such as Microsoft Azure and Amazon Web Services (AWS) allow corporations to scale their IT infrastructure on demand, ensuring uninterrupted service during peak periods. This elasticity empowers businesses to respond swiftly to new market opportunities, shifting consumer preferences, and emerging industry trends.

Corporations must prioritize customer-centric strategies to remain competitive, and IT technologies play a pivotal role in achieving this objective. Customer relationship management (CRM) systems such as Salesforce provide businesses with comprehensive customer data, enabling personalized marketing campaigns, responsive customer service, and tailored product recommendations. By analyzing purchase histories, browsing behavior, and social media interactions, corporations can deliver customized experiences that drive customer loyalty and retention (Kumar & Reinartz, 2018).

Additionally, advanced IT tools facilitate omnichannel customer engagement, ensuring seamless interactions across various platforms—web, mobile, social media, and in-store experiences. The psychological impact of these integrated platforms runs deeper than mere convenience; research shows that digital platforms like Instagram can shape even deeply personal decisions such as partner selection, demonstrating how thoroughly technology now influences human behavior (Nosrati et al., 2023). Retail giants like Walmart and Starbucks have embraced IT-driven customer engagement models that integrate online and offline shopping experiences. These models provide convenience, personalized offers, and real-time support, enhancing customer satisfaction and brand loyalty. Importantly, as Kharazmi and Mohammadi (2020) explain, media framing can significantly influence people's perceptions of their circumstances, making them susceptible to accepting even false narratives shaped by media coverage. Their study highlights that during critical situations, individuals become

particularly vulnerable to media framing, which can profoundly impact their perceptions and decision-making processes. Furthermore, businesses are increasingly integrating gamification into their digital platforms to enhance user engagement. Research on gamification mechanics has shown that elements like rewards and badges significantly influence user motivation, though different approaches yield varying levels of effectiveness (Bagheri et al., 2022).

The use of chatbots and virtual assistants powered by AI has further transformed customer service. Banks and telecommunications companies frequently deploy chatbots to handle routine customer inquiries, reducing response times and operational costs. IT-powered customer service platforms also offer predictive analytics that anticipate customer needs, enabling proactive problem resolution. In this way, cutting-edge IT technologies have redefined customer relationship management and engagement strategies (Misischia et al., 2022).

Data is one of the most valuable assets in the digital economy, and cutting-edge IT technologies enable corporations to harness this asset effectively. Advanced data analytics tools allow businesses to collect, analyze, and interpret vast amounts of structured and unstructured data, deriving actionable insights for strategic decision-making. Business intelligence platforms such as Tableau and Power BI transform raw data into interactive visualizations, aiding executives in identifying trends, forecasting market demands, and optimizing business strategies.

Predictive analytics powered by ML algorithms has become indispensable for businesses in various sectors, from finance and healthcare to retail and logistics. Financial institutions use predictive models to assess credit risk, detect fraudulent activities, and optimize investment portfolios. Similarly, logistics companies leverage data-driven forecasting to streamline supply chains, reduce delivery times, and cut operational costs. By making data-driven decisions, corporations can enhance efficiency, mitigate risks, and capture new market opportunities.

Global competition has intensified due to technological advancements and the proliferation of digital commerce. Corporations must adopt cutting-edge IT technologies to remain competitive in an increasingly interconnected world. Digital transformation initiatives enable businesses to expand into new markets, establish international supply chains, and offer globally accessible products and services.

The rise of e-commerce giants such as Alibaba and Shopify illustrate the transformative impact of IT on global competitiveness. These platforms empower businesses of all sizes to reach international customers through robust digital storefronts, secure payment systems,

and global logistics networks. Corporations that fail to invest in IT risk losing market share to more technologically advanced competitors, underscoring the critical role of IT in sustaining competitiveness (Monjur et al., 2023).

Moreover, competitive advantage in the global market often hinges on leveraging emerging technologies such as blockchain for secure transactions, the Internet of Things (IoT) for smart manufacturing, and edge computing for real-time data processing. Early adopters of these technologies can capitalize on first-mover advantages, shaping industry standards and creating long-term competitive moats.

IT adoption is not solely about seizing market opportunities—it is also about managing risks and ensuring regulatory compliance. Governments worldwide have established stringent regulations concerning data privacy, cybersecurity, and consumer protection. Corporations must adopt advanced IT security solutions to safeguard sensitive information, detect potential breaches, and comply with industry-specific regulations. Cybersecurity technologies such as firewalls, intrusion detection systems, and encryption protocols form the first line of defense against cyberattacks. However, corporations must also adopt proactive risk management frameworks that include regular security audits, vulnerability assessments, and incident response planning. Compliance management software helps businesses stay updated with evolving legal requirements and avoid costly penalties for regulatory violations.

Industries such as healthcare, finance, and telecommunications are particularly sensitive to compliance issues due to the highly confidential nature of the data they handle. IT-enabled compliance solutions, including automated audit trails and real-time monitoring systems, ensure that corporations meet regulatory standards while maintaining operational transparency and accountability.

Get (un?)lucky

We are sure, therefore, that new communication and information technologies are essential for corporations' success and even survival. There is no question about that. But, should corporations adopt new information technologies whenever a new one is launched? In this section we will explore fatal or bad consequences corporations experienced when adopted new technologies (mainly, but not limited to) without much care.

A compelling case is Webvan, an online grocery delivery service that collapsed due to overambitious adoption of technology. Founded during the dot-com boom of the late 1990s, Webvan aimed to revolutionize grocery shopping by using cutting-edge logistics and automated warehouses. The company invested heavily in state-of-the-art fulfillment centers, robotic systems, and a complex delivery network,

betting that its technology-driven model would dominate the grocery industry (Chernev, 2017). However, Webvan's downfall came from adopting this advanced infrastructure prematurely, without validating its market viability. Its high-tech warehouses cost hundreds of millions of dollars to build and maintain, creating massive operational expenses. The company also expanded rapidly into multiple cities, assuming that demand would scale as fast as its technology-driven capacity. Webvan overestimated consumer readiness for online grocery shopping at the time. Many customers were still wary of buying perishable goods online, and broadband internet was not yet widespread. Additionally, Webvan's technology-driven model left little room for adapting to local market conditions, creating logistical bottlenecks and inconsistent service quality. By 2001, just three years after its IPO, Webvan declared bankruptcy after burning through more than $1 billion in investor capital. Its aggressive adoption of new technology, combined with premature expansion and lack of customer adoption, turned what could have been a groundbreaking business model into one of the most infamous failures in tech history. Interestingly, the online grocery delivery model eventually succeeded years later with companies like Instacart and Amazon Fresh, but Webvan's case underscores the danger of adopting technology too soon without aligning it with market readiness and sustainable business strategies.

Another notable case is Iridium Communications, a satellite phone company that suffered a near-collapse due to its aggressive adoption of advanced satellite technology in the 1990s. Iridium aimed to create a global satellite-based phone network by deploying a constellation of 66 low-Earth orbit satellites, enabling worldwide mobile communication—even in remote areas without cellular coverage. While the technology behind Iridium was groundbreaking, its adoption strategy proved disastrous. The company spent approximately $5 billion on building and launching the satellite network, believing its cutting-edge tech would create an insurmountable competitive advantage. However, Iridium failed to anticipate major market and technological shifts. By the time its satellites became operational in 1998, terrestrial cellular networks had expanded rapidly, providing cheaper and more convenient mobile phone service in most populated areas. Iridium's satellite phones were bulky, expensive, and required direct line-of-sight to the sky, making them impractical for everyday use. Additionally, the service plans were prohibitively costly, limiting adoption to niche users such as military personnel and adventurers. Iridium's inability to scale its technology for broader consumer use, combined with its massive initial investment, led the company to file for bankruptcy in 1999—just a year after launching its service. While Iridium eventually re-emerged after being bought out and repositioned as a provider of specialized satellite communication

for military and government clients, its initial collapse is a classic example of how adopting cutting-edge technology without aligning it with consumer needs, cost management, and market conditions can lead to corporate failure (Schieffer & Chen, 2017).

Another relevant case is Royal Bank of Scotland (RBS) and its disastrous IT system upgrade in 2012. RBS, one of the largest banks in the UK, attempted to modernize its outdated banking software by adopting a new, highly complex IT platform. The upgrade aimed to streamline banking operations, reduce costs, and improve service efficiency across its brands, including NatWest and Ulster Bank. However, the implementation of this new technology turned into a catastrophic failure. During a routine software update, a critical error occurred due to flawed code deployment and insufficient testing procedures. The new system's complexity overwhelmed the bank's IT infrastructure, causing widespread outages that prevented millions of customers from accessing their bank accounts for several weeks. The bank's adoption of cutting-edge IT automation was intended to reduce reliance on manual intervention, but inadequate oversight and poor project management amplified the crisis. Moreover, RBS had previously outsourced much of its IT work to cost-saving offshore teams, reducing its in-house technical expertise, which worsened its ability to resolve the issue swiftly. The fallout from the IT disaster was severe. RBS faced massive regulatory fines, a significant loss of customer trust, and long-term reputational damage. The bank had to set aside hundreds of millions of pounds in compensation for affected customers (Fraser, 2015).

Another classic case is Borders Group, the American bookstore chain that collapsed due to its misguided adoption of e-commerce technology. In the early 2000s, when online book sales began surging, Borders chose to outsource its entire online business to Amazon rather than developing its own e-commerce platform. This decision seemed cost-effective at the time, as it allowed Borders to avoid the complexities and expenses of building an online infrastructure.

However, this move backfired spectacularly. By outsourcing its online operations, Borders lost direct contact with its online customers, handing valuable customer data, purchasing behavior insights, and brand control to Amazon. While Amazon rapidly expanded its market dominance, Borders remained focused on its traditional brick-and-mortar stores, underestimating the growing consumer preference for online shopping. As digital reading technology evolved, Borders also failed to adopt its own e-reader platform, unlike its competitor Barnes & Noble, which launched the Nook. Instead, Borders partnered with Kobo, a lesser-known e-reader brand, further diminishing its competitive edge in the digital reading space. By the late 2000s, Borders

was unable to keep up with changing consumer habits driven by digital technology and online retail. Its lack of technological independence and slow response to industry shifts led to declining sales, mounting debt, and eventual bankruptcy in 2011. The Borders case highlights how outsourcing critical technological functions, rather than developing them in-house, can result in a loss of competitive advantage and ultimately lead to corporate failure (Tatum, 2023).

Another notable case is Nokia, once the world's leading mobile phone manufacturer, whose downfall was linked to its flawed adoption of smartphone technology. During the early 2000s, Nokia dominated the global mobile phone market with its reliable feature phones. However, its failure to adopt the right smartphone operating system (OS) and respond to the rise of touch-based smartphones ultimately led to its collapse. When Apple launched the iPhone in 2007, followed by Google's Android platform, the mobile industry underwent a seismic shift toward app-driven, touch-screen smartphones. While Nokia had the technological capability to compete, it chose to stick with its outdated Symbian OS, which was cumbersome for developers and ill-suited for modern smartphones. Despite internal recognition that Symbian was becoming obsolete, Nokia continued investing heavily in it due to sunk-cost bias and corporate inertia. In a last-ditch attempt to modernize, Nokia adopted Microsoft's Windows Phone OS in 2011. This decision was controversial because Windows Phone was a fledgling platform with minimal market share compared to Android and iOS. Developers were reluctant to build apps for it, further limiting the appeal of Nokia's new smartphones. Additionally, Windows Phone's interface, while innovative, failed to resonate with consumers. Nokia's miscalculated adoption of Windows Phone, combined with its delayed response to industry changes, caused its smartphone market share to plummet. By 2014, Microsoft acquired Nokia's mobile phone division, but even that failed to revive the brand. This case highlights how adopting the wrong technology, driven by strategic misjudgment and slow market adaptation, can accelerate a corporation's decline—even one that was once an industry giant (Alibage & Weber, 2018).

Another striking case is BlackBerry, a former leader in the smartphone industry whose downfall was directly tied to its flawed adoption of new technology. In the early 2000s, BlackBerry revolutionized mobile communication with its iconic phones featuring physical keyboards and secure email services. Its devices were beloved by business professionals and government agencies for their security and reliability. However, when Apple introduced the iPhone in 2007, BlackBerry failed to adapt quickly to the touch-screen revolution. The company dismissed the iPhone as a niche consumer product, believing that business users would always prefer physical keyboards and secure

enterprise features. This complacency caused BlackBerry to delay adopting touch-screen technology and modern app ecosystems. By the time BlackBerry released its first touch-screen phone, the BlackBerry Storm, it was riddled with technical issues and received poor reviews. Meanwhile, competitors like Apple and Android manufacturers continued refining their devices, offering better user experiences and robust app stores. BlackBerry attempted to recover by launching a new operating system, BlackBerry 10, in 2013, but it was too late. Developers had already committed to iOS and Android, leaving BlackBerry with a weak app ecosystem. The company's technological missteps—clinging to outdated hardware design and being slow to embrace touch screens and app-driven software—caused its market share to collapse. By the mid-2010s, BlackBerry had exited the consumer smartphone market altogether, transitioning into enterprise software and cybersecurity. BlackBerry's downfall illustrates how adopting new technology too late—or choosing the wrong technology—can result in losing market leadership, even for a once-dominant player (Trivedi, 2017).

Another notable case is MySpace, a pioneering social media platform that lost its dominance due to poor technological decisions and flawed adoption of new innovations. Launched in 2003, MySpace was one of the first social networking sites to achieve global popularity, allowing users to create personalized profiles, share music, and connect with friends. However, as social media technology evolved, MySpace struggled to keep up. The platform's key downfall stemmed from its overly customizable user interface, which allowed users to modify their profiles with music, videos, and custom HTML code. While this feature initially attracted creative users, it eventually led to cluttered, slow-loading pages that degraded the overall user experience. MySpace failed to streamline its technology to keep its platform visually appealing and user-friendly. Meanwhile, Facebook emerged with a cleaner, more standardized design that prioritized functionality and social networking features like a central news feed and third-party app integration. MySpace tried to adapt by launching redesigns, but its platform's underlying technical infrastructure was outdated, making large-scale improvements difficult. It also missed critical technology trends such as mobile optimization and third-party app ecosystems, areas where Facebook excelled. Moreover, MySpace's parent company, News Corp., focused heavily on monetization through aggressive advertising rather than improving its platform's core technology. This led to an increasingly ad-cluttered interface, driving users away. By the early 2010s, MySpace had lost nearly all its user base to Facebook and other emerging social platforms. The case of MySpace highlights how adopting the wrong technological strategies—or failing to adapt effectively—can result in a rapid decline, even for a once-dominant digital platform. Its

inability to evolve with changing technological trends and user preferences remains one of the most cited examples of missed opportunities in tech history (Jeffers, 2015).

Another well-known case is Yahoo!, a once-dominant internet giant whose downfall was closely linked to poor technological decisions and missed adoption of critical innovations. Founded in the 1990s, Yahoo! was an early leader in web services, offering search, email, news, and digital advertising. However, its technological missteps, particularly in search engine technology and digital platforms, ultimately led to its decline. One of Yahoo!'s biggest technological failures was its decision to outsource its search engine capabilities to competitors like Google in the early 2000s. At a time when search engines were becoming the backbone of the internet economy, Yahoo! failed to invest in its search technology, effectively ceding the market to Google. By the time Yahoo! tried to revive its search business, Google was already the dominant player.

Another major misstep was Yahoo!'s failure to adopt a clear strategy for monetizing its platform through search-based advertising, an area where Google excelled with its innovative AdWords model. Yahoo!'s fragmented focus on various internet services, combined with its reliance on outdated technology, left it unable to compete effectively. Additionally, Yahoo! passed up several critical acquisition opportunities that could have changed its fate. In the late 2000s, Yahoo! famously rejected a $44 billion acquisition offer from Microsoft, believing it was worth more. Even more striking, Yahoo! failed to acquire Google for $1 million in its early days and missed purchasing Facebook for $1 billion when it had the chance. Yahoo!'s last-ditch effort to reinvent itself involved acquiring Tumblr for $1.1 billion in 2013, hoping to tap into social media growth. However, poor integration, lack of clear strategy, and Tumblr's inability to compete with platforms like Instagram and Twitter rendered the acquisition a failure (Singh et al., 2022).

By 2017, Yahoo!'s internet business was sold to Verizon for a fraction of its former value. Its technological misjudgments—especially in search technology, platform monetization, and acquisitions—make Yahoo! one of the most cited examples of how failing to adopt the right technologies at the right time can destroy even the most established tech giants.

Another prominent case is Sears, the American retail giant whose downfall was partly due to the flawed adoption of e-commerce technology. Founded in the late 19th century, Sears was once the largest retailer in the United States, dominating the market with its iconic catalog and expansive chain of department stores. However, its failure to adapt effectively to the rise of online shopping played a central role in its decline. In the early 2000s, as e-commerce platforms like Amazon

and eBay rose to prominence, Sears struggled to build a competitive online presence. The company attempted to modernize by launching its own e-commerce platform, but its technology was outdated and poorly integrated with its massive network of physical stores. Sears lacked the seamless omnichannel shopping experience that successful competitors like Walmart developed through click-and-collect services and streamlined inventory management. One of Sears' most notable technological missteps was its investment in a complicated online marketplace model, "Shop Your Way", launched in 2009. This loyalty-driven e-commerce platform was intended to compete with Amazon but failed due to a clunky interface, confusing rewards system, and inconsistent product availability. Its technology was slow, unreliable, and difficult for customers to navigate, leading to frustration and lost sales.

Additionally, Sears failed to invest in the backend logistics and fulfillment technology necessary to support a large-scale e-commerce operation. While Amazon built cutting-edge warehouses and delivery networks, Sears relied on its aging store infrastructure, which was never modernized for efficient online order processing (Seeman, 2018).

By the mid-2010s, Sears was losing billions as customers migrated online. The company's inability to adopt and implement e-commerce technology effectively—despite its early retail dominance—led to its bankruptcy filing in 2018.

Another well-known case is Blockbuster, the video rental giant whose downfall was directly tied to its failure to adapt to streaming technology. Founded in 1985, Blockbuster dominated the home video rental industry with thousands of stores worldwide. However, its reluctance to adopt emerging streaming technology and shift its business model ultimately led to its collapse.

In the early 2000s, Netflix, then a mail-order DVD rental service, approached Blockbuster with an offer to sell its business for $50 million. Blockbuster rejected the deal, dismissing Netflix's subscription-based model as a niche service. Blockbuster continued relying on its traditional brick-and-mortar stores and revenue from late fees, believing its established brand and retail presence were enough to sustain its dominance. Meanwhile, Netflix embraced streaming technology early, recognizing the potential of digital content delivery. By 2007, Netflix launched its streaming service, offering subscribers instant access to movies and TV shows online. Blockbuster eventually tried to respond with its own streaming platform, Blockbuster On Demand, but by that time, Netflix had already captured a massive customer base and built strong partnerships with content providers.

Blockbuster's late entry into streaming was also hindered by internal mismanagement. Its parent company, Viacom, burdened the company

with heavy debt and prioritized short-term profitability over long-term innovation. Blockbuster's technological investments were insufficient, and its digital service lacked the scale, content library, and user experience that Netflix had mastered. By 2010, Blockbuster filed for bankruptcy after losing billions in market value. Its failure to adopt streaming technology early and pivot from a retail-based model to a digital-first approach sealed its fate. The Blockbuster case is a classic example of how resisting technological change, even when the future trajectory is clear, can cause the downfall of even the most dominant market leaders (Reggio & Astesiano, 2020).

Another notable case is Pan Am (Pan American World Airways), the iconic airline whose downfall was partly due to its premature adoption of cutting-edge aircraft technology. Founded in 1927, Pan Am was once the largest international air carrier in the United States and a symbol of luxury air travel. However, its decision to adopt the Boeing 747 "Jumbo Jet" in the late 1960s played a critical role in its collapse. In the 1960s, anticipating a travel boom driven by the Jet Age, Pan Am became the launch customer for the Boeing 747, the world's first wide-body, long-haul aircraft. The airline ordered 25 of the massive jets, betting that increased passenger capacity would lead to higher profits. The technological leap was remarkable—the 747 could carry more than twice the passengers of earlier jets, reducing per-passenger costs on long-haul routes.

However, Pan Am's adoption of the 747 turned out to be a fatal strategic misstep. The global travel boom it expected never materialized due to the 1973 oil crisis, which caused fuel prices to skyrocket. The 747's fuel-hungry engines became a financial burden. Additionally, a global recession led to reduced passenger demand, making it difficult for Pan Am to fill its enormous planes on many routes. Compounding the issue, Pan Am lacked a strong domestic flight network, unlike competitors such as American Airlines and United Airlines, which used domestic routes to feed international flights. The airline also over-invested in costly infrastructure, including the Pan Am Building in New York and expansive global airport terminals. As fuel prices continued to rise and passenger numbers stagnated, Pan Am found itself saddled with debt from its 747 orders and operational costs. Despite efforts to restructure, the airline filed for bankruptcy in 1991. Its downfall highlights how adopting new technology, even when it is groundbreaking, can destroy a company if external market conditions, cost structures, and operational strategies are not carefully aligned (Shonnard et al., 2015).

Another striking example is Friendster, one of the earliest social networking platforms that collapsed due to its flawed adoption of new technology. Launched in 2002, Friendster was a pioneer in online social

networking, allowing users to connect, share content, and build virtual communities. At its peak, it had millions of users and was considered a precursor to platforms like Facebook. However, Friendster's downfall was rooted in its poor adoption of backend technology and its inability to scale its platform effectively. As its user base grew rapidly, Friendster's website suffered from severe performance issues. The company's early technical infrastructure, built on outdated and inflexible architecture, could not handle the sudden surge in traffic. Pages often took minutes to load, and users experienced frequent crashes, making the platform frustrating to use. Instead of rebuilding its platform with more scalable technology, Friendster tried patching its existing system—a decision that proved disastrous. Meanwhile, competitors like MySpace and Facebook emerged with better technological frameworks that could support millions of users without lag or downtime. Friendster's management also misunderstood how to leverage new technological trends like social app integration. It rejected third-party developers and failed to create an open platform, unlike Facebook, which encouraged developers to build apps and games. Additionally, Friendster's attempts to pivot toward becoming a gaming platform were poorly timed and technologically mismanaged.

By the late 2000s, Friendster's relevance had diminished, and the company eventually sold its patents and rebranded as a gaming site, only to shut down completely in 2011 (Seki & Nakamura, 2017).

Another significant case is Palm, Inc., a trailblazer in the mobile device industry that collapsed due to poor technology adoption and strategic missteps. In the late 1990s and early 2000s, Palm was a leader in the personal digital assistant (PDA) market with its iconic PalmPilot devices, which set the stage for modern smartphones. However, Palm's downfall began with its failure to adapt to the smartphone revolution sparked by Apple's iPhone and Google's Android platform. Despite having early technological advantages in mobile computing, Palm clung to its outdated Palm OS far too long. The operating system lacked the advanced multimedia features, app ecosystem, and touch-based interface that were becoming industry standards (Brown & Martin, 2015).

In a desperate attempt to regain relevance, Palm launched the webOS operating system in 2009 alongside the Palm Pre smartphone. Technologically, webOS was highly innovative, featuring touch gestures, multitasking, and a unique card-based interface. Industry experts praised it as one of the best mobile operating systems of its time. However, Palm's adoption of webOS was poorly executed. The company lacked the financial resources and marketing strength to compete with Apple and Google, which were rapidly expanding their ecosystems. Palm also failed to attract developers, resulting in a weak app store compared

to the iOS App Store and Google Play. Adding to its troubles, Palm released the Pre exclusively on Sprint, a smaller U.S. carrier, limiting its market reach. Meanwhile, competitors like Samsung, HTC, and Motorola aggressively adopted Android, leaving Palm behind. By 2010, Hewlett-Packard (HP) acquired Palm for $1.2 billion, hoping to revive webOS, but mismanagement and poor hardware integration caused the project to fail entirely.

Conclusion

This study has demonstrated that while IT adoption can drive innovation, improve operational efficiency, and enhance competitive advantage, it also exposes businesses to significant risks, including cybersecurity threats, system integration failures, and strategic misalignments. The cases of successful IT implementation underscore the necessity of aligning technological investments with clear business goals, strategic foresight, and comprehensive risk management frameworks. Conversely, the failures discussed illustrate the consequences of premature technology adoption, insufficient market analysis, and inadequate implementation planning.

Corporations must approach IT adoption with a balanced and strategic perspective. The rapidly evolving digital landscape demands that businesses remain agile, adaptive, and forward-thinking, continuously investing in technology while mitigating associated risks. Success depends not only on selecting the right technologies but also on ensuring robust IT governance, fostering an innovation-driven corporate culture, and enhancing workforce capabilities through continuous learning and development. By adopting a proactive and risk-aware approach, businesses can unlock the full potential of IT while minimizing disruptions and safeguarding long-term sustainability.

Ethical considerations

The authors have completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc.

Conflicts of interests

The authors declare that there is no conflict of interests.

Data availability

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

Reference

Alibage, A. & Weber, C. (2018). "Nokia phones: From a total success to a total fiasco: A study on why Nokia eventually failed to connect people, and an analysis of what the new home of Nokia phones must do to succeed". *2018 Portland International Conference on Management of Engineering and Technology (PICMET).* (pp. 1-15). IEEE.

Bagheri, M.; Saeedabadi, M.R. & Sabbar, S. (2022). "The effects of gasification mechanics on user engagement". *Management Studies in Development and Evolution.* 31(106): 135-https://doi.org/154. 10.22054/jmsd.2022.63446.4027.

Brown, T. & Martin, R. (2015). "Design for action". *Harvard Business Review.* 93(9): 57-64.

Chernev, A. (2017). *The Business Model: How to Develop New Products, Create Market Value and Make the Competition Irrelevant*. Cerebellum Press.

Darvish, A.; Dastyar, F. and Dariush, B. (2019). "The phenomenon of lifestyle and the architecture of apartments in Iran Case study: The apartments in district 9, Tehran". *Socio-Spatial Studies.* 3(5): 78-84. https://doi.org/10.22034/soc.2019.84455.

Dastyar, M.; Dariush, B. & Dastyar, F. (2023). "Virtual education, a complementary element of the puzzle of holistic education in the relationship between humans and environment or Iranian citizens". *Journal of Cyberspace Studies.* 7(2): 237-252. https://doi.org/10.22059/jcss.2023.356702.1088.

Fraser, I. (2015). *Shredded: Inside RBS, the Bank that Broke Britain*. Birlinn.

Hoofnagle, C.J.; van der Sloot, B. & Borgesius, F.Z. (2019). "The European Union general data protection regulation: what it is and what it means". *Information & Communications Technology Law.* 28(1): 65-98. https://doi.org/10.1080/13600834.2019.1573501.

Hoque, M.R.; Bahssas, D.M. & AlBar, A.M. (2015). "Enterprise resource planning (ERP) systems: Design, trends and deployment". *The International Technology Management Review.* 5(2): 72-81. http://dx.doi.org/10.2991/itmr.2015.5.2.2.

Jeffers, M.S. (2015). "Uses and effects of Myspace among Christian teens and young adult". *Journal of Media Critiques*. 1(1): 145-166.

Kharazmi, Z. & Mohammadi, S. (2020). "Persian-language media overseas as the Western tools of public diplomacy: Framing COVID-19 pandemics in Iran by VOA and BBC". *Journal of World Sociopolitical Studies.* 4(1): 1-36. https://doi.org/10.22059/wsps.2020.308749.1171.

Kodabakhshi, A.A.; Salehi, K. & Dehshiri, M. (2021). "Sociological

analysis of lawyer's defense immunity in Iranian law". *Social Science Quarterly*. 14(4): 175-137.

Kumar, V. & Reinartz, W. (2018). *Customer Relationship Management*. Springer-Verlag GmbH Germany, part of Springer Nature 2006, 2012, 2018.

McAfee, A. (2023). *The Geek Way: The Radical Mindset that Drives Extraordinary Results*. Pan Macmillan.

Misischia, C.V.; Poecze, F. & Strauss, C. (2022). "Chatbots in customer service: Their relevance and impact on service quality". *Procedia Computer Science*. 201: 421-428. https://doi.org/10.1016/j.procs.2022.03.055.

Moein, S.; Ghadiri, R. & Salehi, K. (2023). "Social pathology, preliminary research based on the principle of certainty and certainty". *Political Sociology of Iran.* 5(11): 6797-6814. DOI: 10.30510/PSI.2022.359582.3899. [in Persian]

Mohammadi, S. & Kharazmi, Z. (2021). "The remote higher education over COVID-19 pandemic: The case study of provisions and priorities of the University of Tehran's official website." *Journal of World Sociopolitical Studies.* 5(2): 255-294. https://doi.org/10.22059/wsps.2022.335432.1253.

Monjur, M.E.I.; Rifat, A.H.; Islam, M.R. & Bhuiyan, M.R. (2023). "The impact of artificial intelligence on international trade: Evidence from B2C giant e-commerce (Amazon, Alibaba, Shopify, eBay)". *Open Journal of Business and Management*. 11(5): 2389-2401. https://doi.org/10.4236/ojbm.2023.115132.

Mousavi, S.Y. & Dariush, B. (2019). "The effect of communication globalization on citizen's tendencies towards environment protection: Case study of Tehran citizens". *Socio-Spatial Studies.* 3(5): 66-77. https://doi.org/10.22034/soc.2019.84454.

Nosrati, S.; Sabzali, M.; Arsalani, A.; Darvishi, M. & Aris, S. (2023). "Partner choices in the age of social media: are there significant relationships between following influencers on Instagram and partner choice criteria?". *Revista De Gestão E Secretariado*. 14(10): 19191–19210. https://doi.org/10.7769/gesec.v14i10.3022.

Nosraty, N.; Sakhaei, S. & Rezaei, R. (2021). "The impact of social media on mental health: A critical examination". *Socio-Spatial Studies.* 5(1): 101-11. https://doi.org/10.22034/soc.2021.212042.

Reggio, G. & Astesiano, E. (2020). "Big-data/analytics projects failure: A literature review". *46th Euromicro Conference on Software Engineering and Advanced Applications (SEAA)* (pp. 246-255). IEEE.

Sabbar, S.; Mohammadi, S. & Ghasemi Tari, Z. (2023). "Beyond territorial colonization: A study of orientalist self-perceptions among

Iranians". *Journal of World Sociopolitical Studies.* 7(4): 609-644.

Sabbar, S.; Masoomifar, A. & Mohammadi, S. (2019). "Where we don't know how to be ethical; A research on understanding plagiarism". *Journal of Iranian Cultural Research.* 12(3): 1-27. https://doi.org/10.22035/jicr.2019.2243.2747. [in Persian]

Sakhaei, S.; Arsalani, A. & Nosraty, N. (2023)." Media literacy for children: A systematic review". *Journal of Cyberspace Studies.* 7(2). https://doi.org/10.22059/wsps.2024.371527.141.

Schieffer, R. & Chen, M. (2017). "Iridium global satellite phone system: Lost in space?". *Kellogg School of Management Cases.* 1-16.

Seeman, C. (2018). "Squirreling away: Managing information resources & libraries—The writing on the wall. *Against the Grain*. 30(6): 37. http://dx.doi.org/10.29085/9781856047869.008.

Seki, K. & Nakamura, M. (2017). "The mechanism of collapse of the Friendster network: what can we learn from the core structure of Friendster?". *Social Network Analysis and Mining.* 7: 1-21. https://link.springer.com/article/10.1007/s13278-017-0429-2.

Shatz, S.P. & Lysobey, P.J. (2022). "Update on the california consumer privacy act and other states' actions". *Bus. LAw.* 77: 539-540.

Shonnard, D.R.; Klemetsrud, B.; Sacramento-Rivero, J.; Navarro-Pineda, F.; Hilbert, J.; Handler, R.; ... & Donovan, R.P. (2015). "A review of environmental life cycle assessments of liquid transportation biofuels in the Pan American region". *Environmental Management.* 56: 1356-1376.

Singh, A.P.; Narayanamurthy, G. & Bhutiani, D. (2022). "Yahoo! Egregious driving on the information superhighway". *The CASE Journal*. 18(1): 34-54. http://dx.doi.org/10.1108/TCJ-01-2021-0007.

Ślusarczyk, B.; Nathan, R. J. & Pypłacz, P. (2021). "Employee preparedness for industry 4.0 in logistic sector: A cross-national study between Poland and Malaysia". *Social Sciences.* 10(7): 258. https://doi.org/10.3390/socsci10070258.

Taheri, M.; Milani, A.R. & Salehi, K. (2022). "Studying the legal criminal policy of Iran and England regarding economic crimes". *Medical Law Journal*. 16: 1022-1035. [in Persian]

Tatum III, J.L. (2023). "A city disappeared". *The Journal of Government Financial Management.* 72(2): 18-22.

Tomraee, S.; Hosseini, S.H. & Toosi, R. (2022) "Doctors for AI? A Systematic Review". *Socio-Spatial Studies*. 6(1).

Trivedi, P.D. (2017). "Consumer dictates the market: Lesson from Blackberry". *Journal of Management Research and Analysis.* 4(4): 183.

Ulsch, M. (2014). *Cyber THREAT!: HOW to Manage the Growing Risk of*

Cyber Attacks. John Wiley & Sons.

Watt, G. (2024). "Why Innovation Fails in Established Organizations". *The Lean Entrepreneurship Playbook: A Practical Guide to Innovation in the Modern Enterprise* (pp. 21-51). Berkeley, CA: Apress.