The chasm of technology innovation in digital transformation: a study from the perspective of transformation informatics

Chapter

The Chasm of Technology Innovation in Digital Transformation: A Study from the Perspective of Transformation Informatics

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Abstract

Technological innovation plays a pivotal role in driving digital transformation. Successful entrepreneurs and business leaders recognise the potential benefits of adopting new technologies in a timely and strategic manner; because they understand this can help them gain a competitive advantage and position their organisations for long-term success in the dynamic digital marketplace. This chapter examines several cutting-edge technologies and their applications, including the Metaverse, Blockchain, and ChatGPT, from the perspective of transformation informatics. Specifically, the study aims to identify possible reasons why some technological innovations struggle to gain wide adoption and fall into what is commonly referred to as "the chasm". To assess the significance of a technical breakthrough, the research considers various factors such as the height of technical barriers, its ecological breadth, its evolutionary potential, and its potential economic value and cultural impact on business applications. The findings of this research can help entrepreneurs to make informed decisions when selecting a technical track and enable executive leaders to manage creative technologies effectively while aligning them with their corporate strategies. By understanding the significance of emerging technologies and their potential impact on their organisation, leaders can make informed decisions and stay ahead of the curve in the rapidly changing digital landscape.

Keywords: technology innovation, digital transformation, technology adoption, technology commercialisation, informatics

1. Introduction

The widespread adoption of digital technology has brought about significant transformations across all industries, particularly in the realm of business operations. Given the constantly evolving digital landscape, digital transformation has become an ongoing, iterative process for businesses, continually shaping and influencing

their operations. To remain competitive and relevant in this rapidly changing digital environment, it is essential for businesses to commit to continuous digital transformation efforts. The success of digital transformation is highly dependent on the firm's digital strategy [1], which reflects the dynamic capabilities and strategic management [2] of the organisation in the constantly evolving and complex business and technology environment. The digital strategy, in contrast to the traditional view of IT as a "functional level strategy that must be aligned with the firm's business strategy" [3], is a comprehensive plan of action that outlines how an organisation can leverage digital technologies to achieve its goals and objectives. It includes a roadmap for digital transformation, outlining how digital technologies will be integrated into the organisation's operations, processes, and culture, as well as how they will be used to create value for stakeholders [4]. Therefore, rather than being perceived as a purely technical implementation, digital technology possesses the potential to fundamentally transform the ways in which businesses operate, the underlying structures of their business models, and even their overarching business strategies.

In general, the journey towards digital transformation consists of three iterative phases: digitisation, servitisation, and the development of a digital ecosystem [5–7], which we call as the transformation trilogy. As illustrated in **Figure 1**, digitalisation and servitisation follow different evolution paths, which can sometimes occur simultaneously and iteratively. These different paths are all aimed towards the creation of a digital ecological platform. Once the ecological platform is established, it can further evolve into a digital business ecosystem with upstream and downstream partners in various value chains. This evolution towards a digital ecosystem can occur through a variety of pathways, including mergers and acquisitions, partnerships, and organic growth. Ultimately, the goal is to create a collaborative digital ecosystem that enables businesses to leverage the strengths and capabilities of all ecosystem partners to create new value for customers and drive business success.

The initial phase of digitisation refers to the conversion of analogue information into digital data, which can then be utilised in various business processes

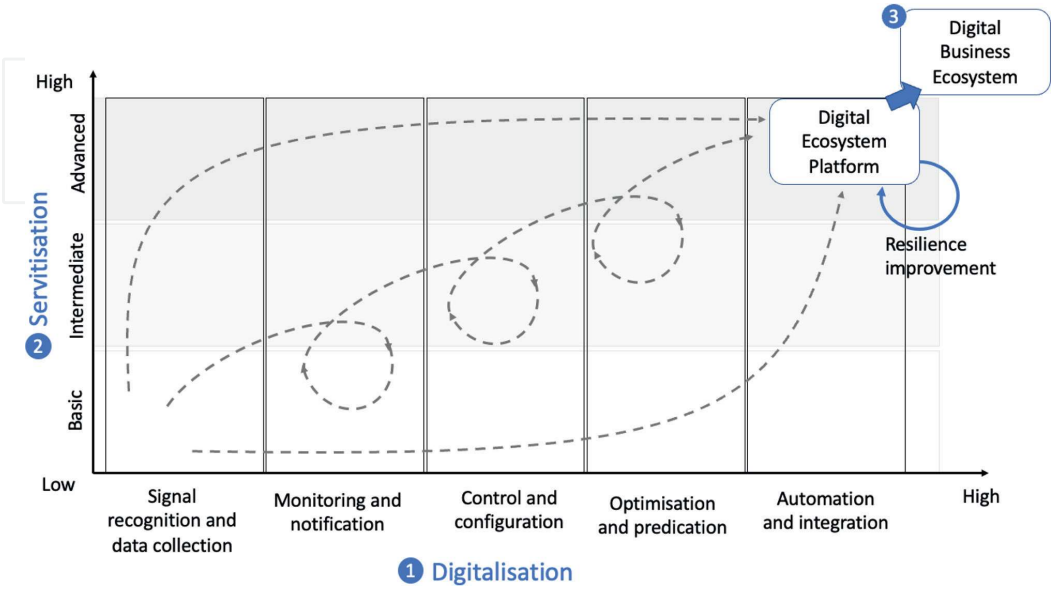

Figure 1.
Digital transformation trilogy (modified on servitisation paths [8]).

and operations. This phase aims to increase operational efficiency by automating repetitive tasks, enabling quicker data processing, and improving data accuracy [9]. Digitisation lays the groundwork for subsequent phases of servitisation and the development of a digital ecosystem. Even though nearly all businesses today are data-related, digitalisation is taking place across a wide range of industries to increase the scope and depth of data in people's everyday lives.

During the early phases of digital technology adoption, digitisation was limited to the conversion of paper-based records to electronic formats. However, digitisation has since evolved to encompass much more. With the rapid advancement of sensor and AI technology, digitisation is expanding the dimensions of data sources, enhancing our ability to perceive and interact with the world around us. Sensors can detect and measure things that are beyond the range of human perception, such as radiation or air quality, and convert that data into a digital format that can be analysed and used in a wide range of contexts. The various types of sensors, such as proximity sensor, pressure sensor, motion sensor, magnetic sensor, chemical sensor, etc., extend the ability of humans to perceive their surroundings [10]. Furthermore, AI-enabled non-invasive sensing technology, such as Radio Frequency-capture [11], can detect and track human motion and behaviour in places where humans cannot capture information directly via line of sight. Synthetic biology sensors [7] use genetically engineered cells to detect the changes in their environment and produce a measurable output, which can be used in environmental monitoring, disease diagnosis and food safety. These multidisciplinary cutting-edge technologies used to collect information or monitor environments are referred to collectively as sensors and digitalisation techniques. Therefore, the digitalisation process is not yet complete, and there is ample room for development. Businesses can adopt the new technology to increase their data sources capacity and foster the development of more innovative applications.

The second phase of digital transformation is servitisation, which is a broad and transformative process that can have a significant impact on every aspect of an organisation's operation. Adopting servitisation requires a long journey for organisations, as they must shift their focus from selling products to offering value-added services that enhance the customer experience and generate ongoing revenue [12]. Servitisation involves a comprehensive rethinking of how an organisation delivers value to its customers, with a focus on creating a seamless and integrated experience that combines products and services which highly depend on the technology infrastructure. In addition to external customers, servitisation also encompasses internal users, such as employees and stakeholders within an organisation. For internal users, servitisation involves optimising workflows and IT tools to enhance efficiency and support decision-making. Examples of servitisation for internal users may include introducing advanced material management systems to streamline operations, implementing big data dashboards to support data-driven decision-making, and offering training and development opportunities to improve employee skills and capabilities. By embracing servitisation for internal users, organisations can improve overall efficiency, reduce costs, and enhance the quality of service delivery. This, in turn, can create a more engaged and motivated workforce, leading to improved productivity and performance. Therefore, servitisation is not only relevant for external customers but also for internal users. By optimising workflows and IT tools and providing training and development opportunities, organisations can create a more efficient and effective workplace that delivers value to both external and internal users. In summary, given the scope and complexity of servitisation, this phase is a lengthy and iterative process. Executives must consider the suitability of technologies for their businesses and assess

the potential impacts of technologies on organisations while closely monitoring the advancement of science and technology. The dynamic environments of firm-specific assets [2], which are comprised of both constantly evolving technologies and businesses, is forever challenging for the second phase of digital transformation.

The third phase of the digital transformation process aims to increase competitive advantage and expand business territory by building a digital business ecosystem. A digital business ecosystem is a network of organisations, individuals, and digital technologies that work together to create, deliver, and capture value via digital channels [13]. Value co-creation activities between the participants of a digital business ecosystem can give rise to a multitude of new opportunities or business models based on collaboration within or across industries. The rapid exchange of data, information, and knowledge among its participants enabled by technical infrastructures fosters the development of innovative applications that can quickly adapt to the market's dynamic conditions. Therefore, digital business ecosystems are highly dynamic and constantly evolving, with new applications, participants and collaboration models emerging all the time. Since each ecosystem is developed from a unique digital service that caters to a specific set of requirements and goals, every ecosystem is unique and customised to the specific needs and objectives of the organisations and individuals that participate in it. For instance, the Google Android business ecosystem is founded on the open-source operating system, the Amazon business ecosystem is centred around the e-commerce business model, and the Facebook business ecosystem is driven by social needs, with each ecosystem being distinct and defined by its unique characteristics and objectives. The transition from digital services provider to digital ecosystem is a dynamic and iterative process. Some successful collaboration models create shared value and are retained within the ecosystem, even growing and expanding over time. However, applications that do not create shared value will be eliminated after a period of time, as seen with Google Hangouts, which was based on Google search. Therefore, during this stage, business strategy and technological innovation become interdependent.

The digital transformation trilogy consists of three distinct but interconnected stages, which are intertwined and iterative processes. The first phase, digitalisation, could occur in the second phase or the third phase in the form of a new data source or a new service; and the servitisation could occur in the third phase to increase the diversity of the ecosystem. However, regardless of its stage or form, new technology is the primary driver for digital transformation. Therefore, the eternal challenge of an organisation is to adopt the appropriate technologies to catch up with the optimal digital strategy for business growth. From an organisation's perspective, the primary concerns of technology management are determining which technologies are suitable and how to evaluate alternatives for organisation and business growth. It is not a purely technical issue but rather a complex decision process intricately intertwined with incumbent infrastructure, existing business processes, business goals, and even a company's value proposition and corporate culture.

2. Transformation informatics

Business informatics, as defined by the Informatics Research Centre that the authors belong to, is the study of the creation, management and utilisation of information in scientific and economic activities (https://www.henley.ac.uk/research/centres/informatics-research-centre). Furthermore, transformation informatics is the

study of the utilisation and effect of information in digital transformation in a socio-technical setting [14]. This term includes a broad field of study that encompasses everything from the use of information in digital transformation to the investigation of the interaction between user actors and information systems, as well as business management and organisational subjects.

Business information systems are typical socio-technical systems, which means they involve both technical and social aspects because a successful business involves much more than just implementing the latest technologies. Effective business information systems must take into account the organisational and social factors that play a crucial role in driving the success of the business. In order to be effective, business information systems must consider the needs and behaviours of the people who use them. Collaboration across different divisions of the organisation is also important to ensure that the information system aligns with the overall goals and values of the business. Additionally, value co-creation, motivated by the same business values, is a key factor in creating successful business information systems.

The organisational onion (**Figure 2**) provides a visual representation of the relationships between technologies, business processes, and corporate values that revolve around people. The inner circle represents the technical infrastructure and applications that support business operations and is referred to as the technical norm. The middle circle is referred to as formal norms and encompasses a range of factors such as industry or country regulations, applied protocols, and business processes. These formal norms are necessary to ensure that the business operates in a structured and efficient manner while adhering to regulations and protocols. The outer circle is the informal norms, which is a wide-ranging concept that includes corporate culture, values, and motivation. These informal norms play a crucial role in shaping the overall behaviour and attitudes of employees within the organisation. They influence the decision-making process and can impact the overall success of the business.

All three layers of the organisational onion are essential for business success. However, when we examine the data used in the digital transformation process from the transformation informatics perspective, we find that each phase of the digital transformation trilogy has its own focus. The first phase of focused digitisation, which converts analogue signals to digital data, can be considered new data sources for information systems. This phase is purely technology-driven and focuses on

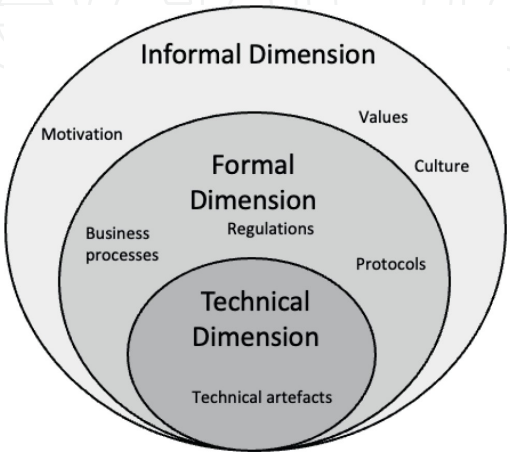

Figure 2.
Organisational onion [15].

technical norms. The second phase of digital transformation, servitisation, is a process of consolidating core business data from multiple dimensions in order to better serve their customers. In this phase, the emphasis is placed on process reengineering that removes data silos in various fields to ensure that users always receive timely services. User profiles are provided by the multiple dimensions of data, making it easier to identify specific requirements. To that end, the servitisation process targets the middle circle of the organisational onion. The final phase is to establish digital business ecosystems, in which all stakeholders, from both upstream and downstream of industrial chains, can participate. In order to successfully bring together so many different businesses, they must all share a common set of business values and a motivation to collaborate to increase business value for all parties. Consequently, the third phase of digital transformation emphasises the establishment of informal norms.

The preceding analysis demonstrates that the requirements for technological innovation vary between the three phases. Technology is not the only variable in digital transformation; business operations and business values are also intertwined. The discussion of the role played by technology can help us comprehend how technologies are required for business operations. The subsequent section will examine the impact factors that influence the commercialisation of technological innovations from these three perspectives.

3. The impact factors of technology commercialisation

Technology innovations hold great potential to transform businesses and digital ecosystems. However, many such innovations struggle to cross the chasm [16] of large-scale commercialisation because of technological discontinuities [17] in the development of technologies. Therefore, it is crucial to understand the key characteristics that enable a new technology to successfully commercialise and become a widely adopted phenomenon-level application. Entrepreneurs and CTOs are perpetually faced with the difficulty of determining which technologies will assist them in gaining or retaining their leadership position and competitive advantage. In this section, the organisational onion model will be applied to examine the potential causes for the failure of technology commercialisation from the technical, formal, and informal dimensions. By examining these factors, this study provides insights that can be used to predict whether a disruptive innovation has the potential for successful commercialisation and becoming a phenomenon.

To specify the impact factors, this section will conduct a case study of three technological innovations [18], Blockchain, Metaverse, and ChatGPT, that have attracted significant attention from both academia and industry in recent years. By examining these case studies, we can gain a deeper comprehension of the impact factors and identify commonalities.

Blockchain, Metaverse, and ChatGPT are three technological innovations that are currently generating significant buzz in the industry. In chronological order, blockchain emerged first with the launch of Bitcoin in 2009, followed by the Metaverse concept which gained momentum in the mid-2010s, and ChatGPT which was developed more recently and is a product of OpenAI's advanced language models. All three of these disruptive innovations utilise cutting-edge technological advancements, but their commercial viability varies considerably.

Most research in the field of information systems evaluates the adoption of new technologies from a comprehensive perspective. For instance, the alignment between

information technology and business strategy [19, 20] examines how organisations respond to the challenges of a dynamic environment and digital innovations to develop an appropriate digital strategy. This strategy is highly dependent on the firm's specific resources, including IT systems, business processes, business goals, and the capacity of its staff. The importance of actions over time to align business strategy with resources is emphasised in some studies [21]. Using a dynamic approach to develop a digital strategy [20] takes into account multiple aspects of business operations [3]. Adopting an all-encompassing strategy for digital transformation in all departments at the same time can pose several challenges for organisations. One of the main challenges is the implementation of digital transformation on organisational reform and enterprise culture redefinition, which can take considerable time and effort. This is because digital transformation is not just a matter of technology implementation, but also involves the transformation of the entire organisation, including business processes, customer relationships, and employee skills and roles. Additionally, digital transformation can be a risky process due to the uncertainty associated with its implementation. There may be a lack of clarity on how digital technologies can be integrated into existing business processes and how they can impact the organisation's bottom line. Moreover, digital transformation can require significant investment in terms of time, money, and resources, and organisations may face resistance from employees who are hesitant to change their working practices. Implementing such a large-scale change can be as traumatic as re-inventing a company, and as a result, the failure rate of startups is alarmingly high. Therefore, digital transformation should be a long-term, lifelong strategy that accompanies the growth of the organisation and consists of multiple stages of small objectives. So that digital transformation can be maintained as a long-term objective, each subgoal should have the key benefit of profit enhancement.

This section focuses on the adoption of new technologies, which is the cornerstone and launching point of digital transformation. Typically, the new technologies consist of sustaining technologies, which result in incremental improvements [18], and disruptive technologies, which result in value re-proposition through the acquisition of competitive advantages. For the majority of sustaining technologies, the objective is to enhance the performance of established products along dimensions of performance that mainstream consumers in major markets have historically valued. The key to successfully adopting these technologies is to integrate this type of technology into the existing business framework to aid in the accomplishment of the enterprise's overarching objective. Corresponding small-scale adjustments in workflow and organisational structure are required but will not fundamentally alter the enterprise's profit model. The disruptive technologies [22] are distinctly different from sustaining technologies, which may change the business ecology and affect the upstream and downstream of the industrial chain. In order to avoid the negative effects of technology bringing to a company's performance [23] and obtain a true competitive advantage from disruptive technologies, it is crucial to determine whether a technology is worth investing in. From the perspective of the startup, the question may be, "Is this new technology worth our time?". Blockchain, Metaverse, and ChatGPT are discussed as examples of disruptive technologies in the following paragraph.

In the field of transformation informatics, the emergence of disruptive technologies can be analysed from three different perspectives, as addressed by the organisational onion model [15]. Firstly, disruptive technology can arise from the breakthrough of technical problems, which bring about new products or services that have never existed before. Secondly, it can result from the introduction of a new

business model or framework that challenges the traditional industry structure and value chain. Finally, disruptive technology can lead to a completely new experience and culture, which dramatically change the industry chain and the way of value generation.

ChatGPT exemplifies how breakthroughs in technical problems can result in significant advances in conversational AI. It uses artificial intelligence and natural language processing to simulate human-like conversations, paving the way for a more engaging and interactive relationship between humans and machines. This large language model is distinguished by its capacity to process natural language and employ contextual information to generate coherent and pertinent responses. ChatGPT was trained on more than 40 GB of text data, including web pages, books, and articles, by OpenAI, a renowned artificial intelligence research laboratory. This extensive training has enabled ChatGPT to generate high-quality responses to a variety of conversational prompts. The predecessor to ChatGPT, GPT-3, has 175 billion parameters, but GPT-4 is anticipated to have even more. These developments in large language models have the potential to revolutionise numerous industries, such as customer service, education, and healthcare. Chat GPT is an excellent example of a disruptive technology that expands human capabilities beyond what is currently feasible with existing technologies. This type of innovation, which extends the essential needs of users, does not necessarily require extensive market cultivation. Rather, it has the potential to quickly spread among users like a virus, similar to how Google search rapidly gained popularity two decades ago.

Blockchain and Metaverse are two innovative technologies that have the potential to revolutionise the manner in which we interact with our environment. Some might argue that they are also powered by original technology. Blockchain, actually, is based on the concept of distributed ledger technology, which has existed since the early days of the Internet. Blockchain addresses the Byzantine Generals Problem [24], which refers to the challenge of coordinating distributed computing systems with multiple, unreliable nodes. Blockchain's innovation is that it eliminates the need for centralised entities like banks or other financial institutions by providing a decentralised and secure method through the creation of a tamper-proof and transparent network for storing and exchanging data. Therefore, Blockchain belongs to the second category of technological innovation. Unlike the first category of technological innovation that bring about entirely new products or services, blockchain technology revolutionises the way businesses interact with customers by providing a secure and transparent way to build trust and reduce the need for intermediaries, such as banks or other financial institutions, in a variety of industries. As a result, blockchain has the potential to transform various sectors, from finance and logistics to healthcare and beyond, by enabling new business models and more efficient operations. Evidently, the blockchain network requires a large number of participants to ensure the ledger's integrity and security in order to function effectively. Therefore, the success of a blockchain-based business model is contingent on the ability to attract and retain a large number of participants willing to contribute computational resources and expertise to the network. From the perspective of entrepreneurs, the cost of promoting blockchain technology is higher than that of ChatGPT due to the need to establish trust and credibility among potential users and stakeholders. Blockchain-based solutions often require a network effect, which means that the value of the technology increases as more participants join the network. Therefore, entrepreneurs need to invest significant resources and time to build a large user base to achieve the desired level of network effects. From the perspective of managers responsible for digital

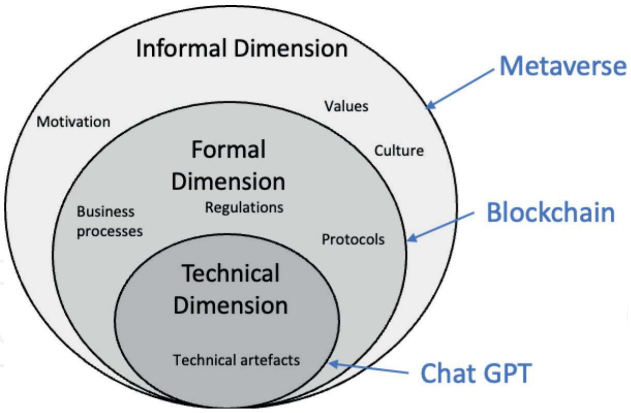

Figure 3.
The mapping relationships of disruptive innovation with organisational onion (after [15]).

transformation, the adoption of blockchain technology requires a longer period of industry maturity than ChatGPT. Blockchain is still in its infancy, and many industries have not yet established the necessary infrastructure and adoption standards. Therefore, the decision to adopt secondary technologies such as blockchain depends on the degree of industry maturity relative to the enterprise's current resources. If the industry is not mature enough to support blockchain-based solutions, the business may need to consider alternative options or wait until the industry matures before investing in blockchain technology.

Metaverse encompasses even more expansive and futuristic ideas than Blockchain, as it involves creating a virtual world that users can enter and interact with through advanced technologies such as virtual reality, augmented reality, and the Internet of Things. The key technologies have existed for decades. The innovation of Metaverse takes these technologies to the next level by creating a fully immersive and interactive virtual environment that can be accessed by anyone, anywhere, and at any time. It is a revolutionary way of interaction that disruptively changes the current behaviour and even culture, offering endless possibilities for entertainment, social interaction, and even commerce. However, commercialising Metaverse will require significant effort due to the need for infrastructure development, standardisation, and user adoption. Metaverse belongs to the third category of technological innovation, which redefines the use of technologies, the formal and informal norms in the virtual world, as shown in **Figure 3**. Metaverse can transform how we work, play, and socialise by creating new opportunities for collaboration, creativity, and innovation. It represents a significant technological advancement that has the potential to transform numerous industries, from entertainment and gaming to education and healthcare.

4. Conclusion and discussion

Selecting the appropriate technical track is crucial for both entrepreneurs and executives in their pursuit of technological innovation and commercial success. By staying up-to-date with the latest advancements in their respective fields, they can effectively compete with their rivals, and ensure the long-term growth and sustainability of their ventures or organisations. As shown in **Figure 3**, the challenges of crossing the chasm between different technologies vary depending on the type of

technology being developed. For instance, deep tech startups should focus on the inner circle as their starting point, as they do not necessarily need to wait for the industry to mature or for other industries to collaborate.

Chat GPT's approach starts from the inner layer to change the technical norms by targeting users, constrained abilities, which the current technologies have failed to liberate. The ease of commercialising such innovations depends on how close the liberated ability is to the fundamental needs of users. In the case of Chat GPT, it provides knowledgeable and human-like chatbot services to users, fulfilling their need for efficient communication. Similarly, other innovations such as Google search engine, Facebook, and TikTok have also succeeded in quickly spreading through word-of-mouth channels and becoming phenomenon-level applications.

However, the main challenge faced by such deeptech startups is crossing the chasm of regulatory measures and concerns regarding changes in the existing business ecosystem. The pace of regulations and concerns often lags far behind the majority of users who adopt these innovations, because issues can only surface after widespread adoption. Consequently, developers face the arduous task of grappling with unforeseen challenges that were difficult to predict and address from the outset. In other words, the gap that technical norms changers must overcome is related to both formal and informal norms. For example, as Chat GPT acquired its first 1 million users within just 5 days and continues to rapidly grow into a phenomenon-level application, concerns about potential risks and negative impacts are becoming a widespread topic of discussion. These concerns include the unethical use of AI, the privacy and security of personal data, the absence of accountability and transparency, biases and discrimination, and job displacement. This is particularly true with the release of OpenAI APIs for cross-disciplinary users, which may further exacerbate these concerns. In addition to these concerns, there are also worries about the potential impact of Chat GPT on our society and culture. As technology becomes more advanced and widely adopted, it has the potential to fundamentally alter how we communicate and even how we think. As a result, developers must carefully consider the potential impact of their innovations on society, culture, and the environment, as well as the ethical and legal implications of their technology. They must also engage in ongoing dialogue with policymakers, industry leaders, and the public to ensure that their innovations are safe, secure, socially responsible, and beneficial. By considering these factors and working collaboratively with other stakeholders, developers can help bridge the gap between emerging technologies and established norms and facilitate the responsible and sustainable deployment of innovative solutions.

Blockchain technology starts from the middle circle (as shown in **Figure 3**), disrupting traditional transactional norms by eliminating intermediaries, improving processing efficiency, and providing resistance to tampering and fraud. This innovation has the potential to greatly reduce transactional costs, increase security and transparency, and enable new business models that were previously impossible. However, innovations that change the formal norms of business face the challenges of large-scale adoption, as well as the challenges of the inner circle.

For example, some of the cryptographic algorithms used by blockchains could be broken by quantum computers. The security of blockchains relies on the computational difficulty of certain mathematical problems, such as factoring large numbers or solving the discrete logarithm problem. Quantum computers can solve these problems much faster than classical computers using algorithms like Shor's algorithm. Even though quantum computers are still in their infancy and currently only exist in the form of small-scale prototypes, the breakthrough of quantum computers will render

blockchain technology's formal norms obsolete. In addition, concerns over energy consumption and the environmental impact of blockchain have been raised, as well as issues around scalability, interoperability, and regulatory compliance. Additionally, the existence of well-established players and their vested interests can also pose a challenge to the adoption of blockchain technology.

For the innovations that disrupt informal norms, such as Metaverse, the challenges are significant. The maturity of software and hardware, the willingness of cross-industry collaboration, and the adaptability of users to change their behaviour are all significant hurdles that are difficult for startups to overcome, and even technical giants find them challenging to navigate. Despite Facebook's strong financial resources and technology accumulation, it still faces significant challenges in successfully commercialising the metaverse. There are numerous aspects that need to be perfectly coordinated and require significant resource investment. Additionally, rather than simply extending user capabilities to change user habits, a successful metaverse implementation requires a fundamental shift in user behaviour. These obstacles make it unlikely that the metaverse will succeed, even for a company as powerful as Facebook.

This framework (**Figure 3**) is not only applicable for entrepreneurs in selecting their entrepreneurial directions but also for executives to identify disruptive technologies for their digital transformation. In particular, it is important to add considerations of the challenges and risks faced by disruptive technologies as part of the screening criteria. By doing so, businesses can make informed decisions on which technologies to invest in and develop strategies to mitigate potential risks and challenges.

5. The implications of informatics in digital transformation

Digital transformation has become a necessary phase that almost all organisations must go through, enabling them to optimise value creation and enhance business competitiveness. However, this procedure is not devoid of obstacles. Understanding and managing the human factors that can make or break digital transformation initiatives is one of the greatest challenges. These factors include the organisation's culture and mindset, employees' adaptability to new technologies, and the impact of digital transformation on the consumer experience.

Transformation informatics is a discipline that focuses on studying the interaction between information systems and their users. This includes the entire process of data collection, data storage, data processing, and data dissemination. The goal of transformation informatics is to develop effective and efficient methods for managing, processing, and communicating information, while taking into account the needs and preferences of end-users. The process of digital transformation is a complex and iterative journey, heavily influenced by the constantly evolving technological and commercial landscape. The socio-technical perspective provided by informatics is particularly suitable for understanding the complex and dynamic interactions between IS&IT and their users. By employing informatics principles, organisations can better comprehend and address these human factors, resulting in more effective digital transformation initiatives. In addition, by employing a mixed-method research strategy that combines qualitative and quantitative methods, researchers can gain a deeper understanding of the complexities of digital transformation and identify effective strategies for overcoming obstacles.

The socio-technical context plays a crucial role in the success of high-tech entrepreneurs and companies in navigating the complex landscape of technological innovation. This chapter offers a socio-technical perspective by using the organisational onion model to explain why some technological innovations fail to cross the chasm and achieve widespread commercial success. The organisational onion model provides a comprehensive perspective on the factors that influence the success or failure of technological innovation. By examining the interplay between technological, organisational, and social factors in the adoption and diffusion of innovation, the socio-technical perspective can help high-tech entrepreneurs and managers make informed decisions about their innovation strategies' viability and potential impact. Additionally, the use of frameworks such as transformation informatics can provide a structured approach to understanding and managing the complexities of innovation adoption and digital transformation in high-tech organisations.

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