

DIGITAL PLATFORMS AND ECOSYSTEMS: REDEFINING BUSINESS MODELS IN THE AGE OF CONNECTIVITY

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Abstract

In today's hyper-connected world, digital platforms and ecosystems have emerged as powerful drivers of business innovation and transformation. This paper explores the profound impact of digital platforms and ecosystems on traditional business models, highlighting their role in reshaping industries, fostering innovation, and creating new avenues for value creation. In this research, we look into the dynamics of these ecosystems, emphasizing the interplay between technology, data, and network effects that drive their growth. Furthermore, the challenges and opportunities presented by the age of connectivity, emphasizing the need for strategic adaptation in the face of evolving consumer behaviors and emerging technologies. By examining real-world case studies and offering insights from various industries, this paper aims to provide a comprehensive understanding of the evolving landscape of business models in the digital era and offers valuable takeaways for practitioners and scholars seeking to thrive in this dynamic environment.

Keywords: Digital platforms, Ecosystems, Business Models, Connectivity age.

1.0 Introduction

In the ever-evolving landscape of the digital age, the convergence of technology, connectivity, and innovation has given rise to a transformative phenomenon - the emergence of digital platforms and ecosystems. These dynamic constructs are reshaping the fundamental paradigms of business models, disrupting traditional industries, and creating new opportunities for organizations worldwide (Gawer, 2022a).

A digital platform is said to be an online ecosystem that enables users to interact, create, share, and transact, typically through networked technologies. These platforms serve as intermediaries that connect multiple participants, facilitating various forms of engagement, including social interaction, content sharing, and commerce (Ahmad, 2018). Furthermore, the definition of digital platform can be conceptualized based on the angle which is being viewed, i.e. technical (e.g., software development and/or production) and non-technical (e.g., B2B and B2C). An ecosystem on the other hand is a complex network of interconnected entities—such as businesses, consumers, and technologies—that interact with one another to create and exchange value (Adner, 2016). These ecosystems facilitate collaboration, innovation, and resource sharing, often leading to the emergence of new opportunities and market dynamics.

Digital platforms and ecosystems have become integral components of the contemporary business spaces, reshaping traditional business models in the age of connectivity. As technology advances, organizations are leveraging digital platforms to create ecosystems that facilitate seamless interactions and transactions. Digital platforms serve as infrastructures that enable interactions and transactions between different participants, fostering connectivity and collaboration.

In this research, we will be examining the intricate interplay of digital platforms and ecosystems, their impact on the business world, and how they are redefining the very essence of business as well as customer's

interaction in the age of connectivity. This journey will unveil the fascinating evolution of business models, illuminating the pathways to success and sustainability in an increasingly interconnected and digitized global economy. This research will comprehensively examine the multifaceted influence of digital platforms and ecosystems on modern business models. It aims to shed light on the strategic significance of these platforms in reshaping how businesses collaborate, innovate, and compete. By analyzing this rapidly evolving landscape, the research seeks to provide insights that can guide organizations, policymakers, and stakeholders in navigating the challenges and opportunities presented by digital platforms and ecosystems.

Furthermore, this research tends to answer the following questions:

1. How have digital platforms and ecosystems altered traditional business models, and what are the key drivers behind this transformation?
2. What are the economic and strategic implications of participating in or building digital ecosystems for businesses of varying sizes and industries?
3. How do digital platforms and ecosystems impact customer behavior, engagement, and value creation, and what strategies can businesses employ to harness these effects?

This research endeavors to address these questions and provide a comprehensive understanding of the intricate relationships between digital platforms, ecosystems, and the reconfiguration of business models, thereby offering valuable insights to businesses and policymakers in navigating this transformative landscape.

2.0 Literature Review

Digital platforms and ecosystems have reshaped business models, leveraging connectivity to create new value (Teece, 2018b). The interconnected nature of these platforms facilitates collaboration, innovation, and the delivery of personalized services. Scholars argue that this shift challenges traditional business models, emphasizing the importance of adaptability and strategic partnerships. The evolution of digital ecosystems is seen as a transformative force, influencing how businesses operate, compete, and create value in the age of connectivity.

As technology advances, organizations are leveraging digital platforms to create ecosystems that facilitate seamless interactions and transactions. Digital platforms serve as infrastructures that enable interactions and transactions between different participants, fostering connectivity and collaboration. According to (Hagi, 2020) these platforms act as intermediaries, connecting producers and consumers in innovative ways, not limited to a single business entity but extends to the formation of entire ecosystems, where various actors collaborate and share resources. The interconnected nature of digital ecosystems facilitates dynamic interactions, allowing for the creation of value beyond the capabilities of individual entities (Geoffrey Parker, March 2017). This collaborative approach challenges conventional business models, prompting a reevaluation of how organizations create and deliver value. Teece (2018a) argues that adaptability is crucial in this context, as firms must navigate a rapidly evolving landscape where success depends on their ability to integrate into and leverage digital ecosystems.

The shift towards digital platforms has also led to a focus on customer-centric business models. (Liang et al., 2019) highlight the personalization and customization enabled by digital platforms, allowing businesses to deliver tailored experiences to their customers. This emphasis on customer engagement and experience represents a departure from traditional product-centric models. Furthermore, the concept of 'open innovation' within digital ecosystems has gained prominence. (Chesbrough, 2003) posits that organizations can no longer rely solely on internal R&D but must tap into external networks for innovation. Digital platforms provide a fertile ground for such open innovation, fostering collaboration among diverse participants and accelerating the pace of product development. Strategic partnerships within digital ecosystems have also become a crucial aspect of business models. (Van Alstyne et al., 2016) argue that successful participation in digital platforms often requires firms to form alliances with other ecosystem players. These partnerships enhance complementary strengths and resources, contributing to the overall value proposition of the ecosystem.

Enterprises, in recent times have leveraged the affordances of digital platforms as a result, these platforms are used as a medium for organizing a wide range of human activities, encompassing economic, social, religion and political interactions (Ahmad Asadullah, 2018). In particular, the rise of digital platforms has transformed and disrupted the existing and traditional business models and landscape of multiple industries such as transportation hospitality and development of software have achieved significant growth beyond boundaries over the years. A typical example of growth from the digital platform providers in the areas of e-commerce and software development have attained more than \$700 billion in market value (Ahmad Asadullah, 2018). As a result, digital platforms have become an attractive business model and strategies, being it has created relatable and replicable achievements.

The digital age has birthed what is save to be referred to as the digital revolution, that has brought together billions of digital devices that have created a techno-socio environment and have generated an unprecedented opportunities, globally (Hein et al., 2020). Industrial revolutions in recent times have enabled massive upscale of economies, scope and supply chain. In the same vain, digital revolution has birthed new frontiers in major industries that has come to stay (Gawer, 2022a).

Although, Digital Platforms and Ecosystems has overtime been proven to be a value creation system where actors are connected around activities in other to enable collaborations and the use of resources more efficiently (Xiaolan Fu, 2021), these values are created based on their ability to generate effects as a results of the network.

Despite the unprecedented impact and growth of both the macro and micro enterprises as a result of Digital Platforms and Ecosystems, its research, understanding of what opportunities they hold for development remains unclear especially in the developing economies, as the available research focuses largely on the functioning of platforms and their governance, and on the providers (owners) of platforms with little discussions of the various dimensions of Digital Platforms (Xiaolan Fu, 2021), and consolidation of the diverse perspectives and critical knowledge gaps within the context of a growing economy.

2.1 Conceptual Framework for Digital Platforms

Understanding the conceptual underpinnings of digital platforms is essential for grasping their transformative role in business models. Scholars such as (Parker et al., 2016) emphasize the importance of platform business models, defining platforms as digital infrastructures that enable interactions between producers and consumers. This research delves into the different types of platforms, ranging from two-sided markets to multi-sided platforms, shedding light on their distinctive characteristics.

2.2 The Rise of Digital Ecosystem.

Digital ecosystems go beyond individual platforms, creating interconnected networks that foster collaboration and innovation. (Adner, 2017) argues that ecosystems are crucial for sustained competitive advantage, emphasizing the need for organizations to participate in and shape these dynamic networks. Examining seminal works on digital ecosystems and how companies navigate the challenges of building and sustaining ecosystem partnerships.

2.3 Business Model Evolution

The advent of digital platforms has necessitated a reevaluation of traditional business models. (Teece, 2018a) discusses the dynamic capabilities required for firms to adapt their strategies in the face of technological disruption. The shift from product-centric to platform-centric business models represents a significant transformation in how companies create value and engage with customers. This transition reflects changes in technology, consumer behavior, and market dynamics, prompting firms to rethink their strategies for revenue generation and relationship management.

Product-Centric Models - Traditionally, product-centric models focus on creating and selling tangible goods, with companies prioritizing product quality and features. Revenue is primarily generated through direct sales, and value creation is largely determined by the product's performance and uniqueness (Muhammad Elfi Azhar & 2019). However, this approach often limits opportunities for continuous engagement with customer's post-purchase.

Transition to Platform-Centric Models - The emergence of digital technologies has facilitated the rise of platform-centric models, where companies provide a digital infrastructure that connects multiple users, including consumers, suppliers, and third-party developers. This shift is characterized by several key features:

Network Effects: Platforms benefit from network effects, where the value of the service increases as more users join (Thomas Eisenmann & Alstynne, 2006). This can lead to exponential growth and greater market reach.

Ecosystem Creation: Platform-centric companies often create ecosystems that foster collaboration among diverse participants. This environment encourages innovation and enhances the overall value proposition (Adner, 2017)

Recurring Revenue Streams: Unlike traditional product sales, platforms can generate multiple revenue streams, including subscription fees, transaction fees, and advertising revenue. This diversification mitigates risk and promotes long-term financial stability (Teece, 2018a)

Implications for Revenue Streams - The transition to a platform-centric model fundamentally alters revenue generation strategies. Companies can leverage data analytics to identify new monetization opportunities and optimize pricing strategies based on user behavior. Subscription models and freemium offerings are common, allowing firms to build a loyal customer base while generating predictable revenue (Cennamo, 2019)

Value Creation - In platform-centric models, value creation shifts from product features to user interactions and experiences. The focus is on facilitating connections and enhancing engagement among users. By enabling user-generated content and fostering communities, platforms can create a rich ecosystem that continually adds value (Appio et al., 2021). This dynamic often leads to improved customer satisfaction and loyalty.

Customer Relationships - The transition to platform-centric models also impacts customer relationships. Companies must adopt a more collaborative approach, treating customers as active participants in the value creation process. This requires developing robust customer engagement strategies that utilize feedback loops and personalized experiences (Filipe Sardo, 2018). The platform's design must prioritize user experience, ensuring that interactions are seamless and rewarding.

2.4 Connectivity and Data Driven Insight

Connectivity lies at the heart of digital platforms, enabling the collection and analysis of vast amounts of data. Research by (Brynjolfsson & McAfee, 2017) underscores the transformative power of data-driven insights, influencing decision-making processes and enhancing user experiences. The work investigates the ethical considerations of data usage, the role of artificial intelligence, and the potential risks associated with the increasing reliance on digital connectivity

Ethical Considerations of Data Usage

Privacy Concerns: The collection and analysis of vast amounts of personal data raise significant privacy issues. Users often unknowingly share sensitive information, leading to potential misuse or breaches (Regan, 2020)

Informed Consent: Ensuring that individuals fully understand how their data will be used is critical. Many users do not read privacy policies, which complicates the issue of informed consent (Nissenbaum, 2011).

Data Ownership: Questions about who owns the data generated by individuals be it the users themselves, companies, or third parties are essential for ethical data management (Zuboff, 2023).

The Role of Artificial Intelligence

Bias and Fairness: AI systems can perpetuate existing biases if they are trained on biased data sets. This raises ethical concerns about fairness and discrimination in decision-making processes (Obermeyer et al., 2019).

Transparency and Accountability: The "black box" nature of many AI algorithms makes it difficult to understand how decisions are made, leading to calls for greater transparency and accountability in AI systems (Zachary, 2016).

Autonomy and Control: As AI systems become more autonomous, ethical concerns arise about the loss of human control and the potential for machines to make critical decisions without human oversight (McAfee, 2014).

Potential Risks of Increasing Reliance on Digital Connectivity

Cybersecurity Threats: As reliance on digital connectivity grows, so does the risk of cyberattacks, which can compromise sensitive data and disrupt essential services (Anderson, 2010)

Digital Divide: Increased digital connectivity can exacerbate inequalities, as those without access to technology or the internet may be left behind in terms of opportunities and resources (Dobrinskaya D., 2020).

Mental Health Issues: Overreliance on digital platforms can contribute to mental health challenges, including anxiety and depression, particularly among younger populations.

2.5 Challenges and Opportunities

While digital platforms offer unprecedented opportunities, they also pose significant challenges such as platform competition, regulatory concerns, and cybersecurity risks (Li et al., 2012). Understanding of the complexities organizations face in navigating the digital landscape leads to potential identification of strategies for mitigating these challenges and capitalizing on the opportunities presented by digital platforms.

2.6 The Evolution of Digital Platforms

Digital platforms have evolved significantly over time, driven by key technological and market factors. In the early days, bulletin board systems (BBS) laid the groundwork for online interactions. The advent of the World Wide Web in the 1990s facilitated the creation of websites and early e-commerce platform (Chesbrough & Spohrer, 2006). With the rise of broadband internet, platforms like eBay and Amazon gained prominence, offering online marketplaces and e-commerce services (Chesbrough & Spohrer, 2006). Technological advancements in payment systems and security also played a crucial role in fostering trust among users.

The 2000s saw the emergence of social media platforms like Friendster, MySpace, and eventually Facebook. The widespread adoption of mobile devices further transformed digital platforms, with apps like Instagram and Snapchat leveraging the capabilities of smartphones (Yoo et al., 2010). Cloud computing became a pivotal enabler, allowing platforms to scale and offer a seamless user experience. The growth of big data analytics provided platforms with valuable insights into user behavior, enabling targeted advertising and personalized services.

The 2010s witnessed the rise of the sharing economy, exemplified by platforms like Uber and Airbnb. Blockchain technology emerged as a disruptor, introducing decentralized platforms and cryptocurrencies (Parker et al., 2016). Key market drivers include the increasing digitization of various industries, changing consumer preferences towards online experiences, and the globalization of markets. Regulatory frameworks, such as the General Data Protection Regulation (GDPR) influenced platform development by emphasizing data privacy and security.

2.7 Understanding Digital Ecosystems

Digital ecosystems refer to interconnected networks of organizations, individuals, and technology that interact to create, deliver, and capture value within a particular industry or market. Components of digital ecosystems include platforms, applications, data, services, and various stakeholders such as customers, developers, and partners (Li et al., 2012). In a digital ecosystem, these components collaborate and share information, creating an environment where innovations can emerge rapidly. Platforms play a central role, serving as the foundation for interactions and transactions (Briscoe, 2010). Comparatively, traditional business models often follow a linear structure, with a clear supply chain and defined roles for producers, distributors, and consumers. In contrast, digital ecosystems are characterized by dynamic relationships, often facilitated by technology, where participants can contribute and extract value in a more fluid and interconnected manner.

Digital ecosystems are intricate networks where different entities, such as businesses, customers, and third-party developers, collaborate through digital platforms (Subramaniam et al., 2019). These ecosystems leverage technologies like cloud computing, APIs (Application Programming Interfaces), and data analytics to facilitate seamless interactions and value creation.

2.8 Key Components of Digital Ecosystems

Platforms: These serve as the foundation, providing the infrastructure for interactions. Examples include social media platforms, app stores, and online marketplaces.

Applications and Services: Software applications and services that run on platforms, offering specific functionalities. These can range from mobile apps to web-based tools.

Data: Information generated and collected within the ecosystem, are crucial for personalization, analytics, and continuous improvement.

Stakeholders: Participants like users, developers, partners, and even competitors who contribute to and benefit from the ecosystem (Schaffnit, 2020).

2.9 Differences from Traditional Business Models

Interconnectedness: Digital ecosystems are highly interconnected, allowing for seamless collaboration and information exchange among participants. Traditional business models often have a more linear structure.

Value Creation: In ecosystems, value creation is often a collective effort. Users, developers, and other stakeholders actively contribute to and extract value. Traditional models may have a more one-way value

flow from producer to consumer.

Dynamic Nature: Ecosystems are dynamic and can evolve rapidly as new participants, technologies, or services emerge. Traditional business models may change, but the pace is often slower. *Innovation:* Ecosystems are conducive to rapid innovation due to the collaboration and diversity of participants. Traditional models may be more resistant to quick changes. Understanding these differences is crucial for businesses aiming to adapt to the evolving digital landscape and leverage the opportunities presented by digital ecosystems (Parker et al., 2016) and (Cusumano et al., 2019)

2.10 Business Model Transformation

Digital platforms have revolutionized traditional business models by enabling direct consumer engagement, streamlining operations, and fostering innovation. E-commerce has expanded global reach, data analytics optimize decision-making, and online marketing provides targeted outreach (Spremić et al., 2020). Traditional brick-and-mortar businesses increasingly integrate online components to stay competitive and enhance customer experience. Additionally, platform-based services, like ride-sharing or accommodation booking, have disrupted traditional industries, exemplifying the transformative impact of digital platforms on business dynamics (Hoch & Brad, 2021). For example;

Netflix's Disruption: Netflix's transformation in the entertainment industry, is well-documented in various business articles and books. Reed Hastings, Netflix's co-founder, has shared insights in interviews and his book, "No Rules Rules," co-authored with Erin Meyer, delves into the company's culture and strategic decisions.

Uber's Impact on Transportation: Uber's impact on the transportation industry is discussed in academic journals, business magazines, and books. "Super Pumped" by Mike Isaac provides an engaging narrative on Uber's rise and challenges.

Airbnb's Disruptive Model: Information on Airbnb's transformation of the hospitality industry can be found in industry analyses, Harvard Business Review articles, and books like "The Airbnb Story" by Leigh Gallagher.

Shopify's Empowerment of Small Businesses: Shopify's influence on small businesses in the e-commerce space is often discussed in e-commerce and entrepreneurship publications. The company's reports and success stories on its official website offer valuable insights.

2.11 Key Challenges and Risks

Operating within digital ecosystems presents various challenges and risks. One significant concern is data privacy. As organizations collect and process vast amounts of user data, there's an increased risk of data breaches, potentially compromising sensitive information (Lenkenhoff et al., 2018). Competition within digital ecosystems can lead to monopolistic behavior, limiting choices for users. Tech giants dominating certain markets may stifle innovation and hinder smaller players (Valdez-De-Leon, 2019). Regulatory challenges also play a crucial role. Governments worldwide are adapting to the fast-paced digital landscape, introducing new laws to protect user data and ensure fair competition (Mukhopadhyay & Bouwman, 2019). For instance, the General Data Protection Regulation (GDPR) in the European Union imposes strict rules on data handling, and non-compliance can result in significant fines. Navigating these challenges requires a

delicate balance between innovation and regulation, ensuring that digital ecosystems foster healthy competition while safeguarding user privacy and adhering to evolving regulatory frameworks (Cusumano et al., 2019).

2.12 Opportunities and Benefits

(Hein et al., 2020) outlines that, participating in digital ecosystems opens up opportunities for businesses to collaborate, share resources, and co-create value. Through interconnected platforms, companies can tap into a diverse array of expertise and technologies, fostering innovation by combining strengths. This collaborative approach often leads to the development of novel products or services, giving businesses a competitive edge. Moreover, digital ecosystems enhance customer engagement by creating seamless, integrated experiences (Gawer, 2022b). By leveraging data across interconnected platforms, businesses can gain a holistic understanding of customer behaviors and preferences. This enables them to provide personalized and targeted offerings, strengthening the connection between the business and its customers (Hsieh & Wu, 2019). In terms of revenue, the collaborative and customer-centric nature of digital ecosystems contributes to sustainable growth. By expanding their reach through partnerships within the ecosystem, businesses can access new markets and customer segments. Additionally, the efficiency gained through shared resources and streamlined processes often results in cost savings, positively impacting the bottom line. In essence, (Abbate et al., 2022) the synergy within digital ecosystems empowers businesses to innovate, deepen customer relationships, and drive revenue growth in a mutually beneficial environment.

2.13 Conclusion

In conclusion, the literature on digital platforms and ecosystems reveals a transformative shift in the business landscape. From conceptual frameworks to practical implications, scholars have explored various facets of this evolving phenomenon. As organizations continue to adapt to the age of connectivity, understanding the dynamics of digital platforms and ecosystems becomes imperative for shaping successful business models and maintaining competitiveness in a rapidly changing environment.

3.0 Methodology

For the purpose of researching digital platforms and ecosystems while redefining business models, we shall be using the qualitative research methods, while employing surveys and interviews to gather insights into user experiences and organizational strategies. The surveys will be used to collect subjective opinions and feedback from users, businesses, and industry experts, while focusing on understanding perceptions, challenges, and opportunities related to digital platforms and ecosystems. Interviews and Focus Groups discussion in this research will be a means of discussions with stakeholders to gain deeper insights into their experiences, expectations, and strategies as a means of gathering rich qualitative data.

Findings

Once data for this research is collected, the findings will be present as indicated in the research, including insights into business model transformations.

Discussion

Analyzes and the implications of the findings will be discussed and the practical implications for businesses and policymakers.

Conclusion

The research on digital platforms and ecosystems underscores the transformative impact of connectivity on business models. The evolution of these platforms has redefined how businesses operate, collaborate, and create value. As organizations navigate the age of connectivity, adapting to the dynamic landscape of digital ecosystems becomes imperative for sustained success. The interconnected nature of these platforms presents opportunities for innovation, customer engagement, and new revenue streams. However, it also poses challenges related to privacy, security, and competition. Striking the right balance and leveraging the full potential of digital platforms will be crucial for businesses aiming to thrive in the evolving environment of the interconnected world.

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