



International Journal of Advanced Research in Education and Technology (IJARETY)

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

INNO SPACE
SJIF Scientific Journal Impact Factor

doi
crossref

निसकेयर
NISCAIR

Digital Strategy and Value Creation in Digital Platform Ecosystems

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ABSTRACT: Digital platform ecosystems are essential to a company's digital strategy and are at the centre of value creation in the digital age. Because digital technologies are generative, it is challenging for a platform sponsor to imagine and create every possible version of the offering. Therefore, it is essential to co-create value with independent third-party complementors. Nevertheless, platform sponsors confront particular risks in facilitating this kind of value co-creation as, in many cases, complementors and their value-adding complements are unknown up front. We show how platform scope, which consists of three components: market scope, platform technology, and sponsor, lets the platform sponsor control uncertainties in value co-creation by luring in the appropriate complementors and producing a predictable complement set. We go over how scope decisions affect value co-creation and a company's digital strategy, and we identify important directions for further study.

KEYWORDS: Platform Scope, Digital Platforms, Value Creation, Digital Strategy, Firm Boundaries.

I. INTRODUCTION

Digital technologies have spread quickly in recent years, changing the way businesses work, compete, and generate and extract value. These technologies enable the creation of generative digital objects, which are constantly changing through reuse, extension, and modification by numerous players at once with little to no coordination (Cennamo & Santaló, 2019; Zittrain, 2005). Digital platform-based ecosystems, also known as ecosystems or platform ecosystems, are frequently at the center of this kind of value co-creation. They act as an organizational structure to regulate the actors involved and as a central digital infrastructure to support co-creation (Jacobides et al., 2018; McIntyre et al., 2020; McIntyre & Srinivasan, 2017). Thus, in the digital age, controlling value co-creation in digital platform ecosystems is an essential component of business strategy (Adner et al., 2019).

Digital platform ecosystems consist of a collection of independent entities, referred to as complementors, that are structured around a central digital platform infrastructure to collaboratively generate value alongside the platform sponsor (Chen et al., 2021; Kretschmer et al., 2020; McIntyre & Srinivasan, 2017). The platform sponsor encounters two distinct forms of uncertainty (Tajedin et al., 2019) in the process of value co-creation: firstly, complementors are often drawn to the ecosystem rather than being explicitly chosen, resulting in their identities being largely unknown to the platform sponsor prior to engagement; secondly, the specific contributions made by these complementors are also not predetermined. These uncertainties significantly influence the dynamics of value co-creation within the ecosystem, as they affect the design of the platform infrastructure and the governance of the ecosystem, as well as the strategies employed to ensure the commitment and collaboration of complementors, ultimately shaping the value proposition and identity of the digital platform ecosystem itself.

This chapter seeks to explore how the decisions made by the platform sponsor regarding the scope of the platform assist in navigating the uncertainties associated with unknown complementors and complements prior to their emergence, thereby influencing the process of value co-creation within the platform ecosystem. The delineation of the platform's scope serves as a vital mechanism for addressing these uncertainties, as it indicates potential opportunities for value co-creation (Chen et al., 2021; Murthy & Madhok, 2021), establishes the access of complementors to shared resources necessary for co-creation (Boudreau, 2010, 2017), influences the platform sponsor's ability to govern the ecosystem (Boudreau, 2017; McIntyre et al., 2020), and determines the market identity of the platform ecosystem (Cennamo, 2021). The initiation of the value co-creation process is fundamentally rooted in the actions of the platform sponsor, who serves as the catalyst for the ecosystem's development. The selection of both the product and the market domain for competition, along with the decision to engage in specific segments of the value creation process while allowing other aspects to be managed by complementors, is crucial. This decision fundamentally defines the platform's scope,

which is a critical component of digital strategy. It significantly influences the ability to attract and nurture the involvement of external stakeholders, as well as to oversee the collaborative creation of value within the ecosystem.

The scope of a platform encompasses elements of technology, governance, and competition. Within the three primary domains of platform literature technology management, economics, and strategy there exist three unique interpretations of platform scope: platform technology scope, platform sponsor scope, and platform market scope (Boudreau, 2017; McIntyre et al., 2020). The platform technology scope pertains to the components that are accessible to complementors, with the technological boundaries both facilitating and constraining the innovation efforts of these complementors (Boudreau, 2012; Boudreau & Jeppesen, 2015; Boudreau & Lakhani, 2015). In contrast, the platform sponsor scope involves the selection of activities undertaken by the platform sponsor in relation to complementors, including the assets they possess and the degree of control they exert over the actors involved (Boudreau, 2017; Gawer, 2020). Lastly, the platform market scope pertains to the selection of products and markets that the platform ecosystem addresses through its offerings (Cennamo, 2021). While the platform technology scope and platform sponsor scope focus on the internal decisions regarding the boundaries of actors within the ecosystem, the platform market scope addresses the external decisions regarding the products and markets in which the firm opts to compete.

The determination of scope plays a crucial role in influencing value creation within ecosystems and the digital strategies employed by various stakeholders. For example, if a platform sponsor opts for a wider scope, it may result in less openness of technological interfaces, which in turn allows for enhanced control over essential assets and provides more mechanisms for platform governance, as illustrated by the broader Apple ecosystem in contrast to the narrower Android smartphone ecosystem. Nevertheless, such a broad scope choice implies that consumer benefits will largely hinge on the advantages derived from the offerings of the platform sponsor. This example clearly demonstrates that decisions regarding platform scope significantly impact value co-creation within the ecosystem and the digital strategies of the participating entities.

This chapter makes a significant contribution to the literature surrounding digital strategy, platforms, and the scope of firms. By highlighting the distinct challenges associated with value co-creation within digital platforms, where the scope of the platform plays a crucial role in the overall digital strategy of organizations, we elucidate the importance of the platform sponsor's decisions regarding boundaries in relation to co-creating complementors and competitors as a vital strategic consideration. Our analysis illustrates that while platform scope shares similarities with existing concepts of firm scope, it also possesses unique characteristics that merit further exploration by both researchers and practitioners. In our examination of scope, we pinpoint various avenues for future research that could enhance our comprehension of the dynamics inherent in digital platforms.

II. DIGITAL PLATFORM ECOSYSTEMS: DIGITAL STRATEGY AND VALUE CREATION

2.1 Digitalization and Platform Ecosystems

Digital technologies refer to the collection of digital resources, assets, and information that collectively facilitate the creation of modular digital artifacts, which can be reconfigured into various end-products. These digital artifacts possess generative qualities, allowing for their reuse, modification, and extension by numerous participants concurrently, with minimal need for coordination. They are capable of evolving in terms of their applications and functionalities, influenced by their integration with other products and services. The process of digitalization highlights a transition towards the digital representation of information, fostering enhanced connectivity among various stakeholders and enabling the aggregation of disparate data. While the generative characteristics of digital technologies propel innovation in end-products and value propositions, the digitalization of information and data aggregation significantly improve the ease of connectivity and interaction among participants. For instance, although generative smartphone operating systems facilitate the creation of millions of applications, the insights gained from data aggregation play a crucial role in driving user adoption by allowing platform sponsors to align the appropriate applications with consumer preferences and usage patterns.

2.2 Value Creation in Digital Platform Ecosystems

Digital platform ecosystems provide the benefit of value co-creation; however, they also introduce two significant uncertainties regarding value creation: the unknown complementors and the unknown complements that exist prior to their emergence (Tajedin et al., 2019). To begin with, a digital platform's infrastructure facilitates the independent creation of value-adding complements by allowing the extension of core modules without altering the core itself (Cennamo & Santaló, 2019). This leads to the formation of an ecosystem comprising complementors and their

respective products surrounding the core platform (Gawer, 2014; McIntyre & Srinivasan, 2017). Complementors are empowered to develop their own offerings by utilizing the core platform and its open interfaces (Gawer, 2014; Tiwana et al., 2010). Consequently, a variety of value propositions can arise (Dattée et al., 2018) as consumers choose from competing complements and integrate them with the platform's offerings. Nevertheless, it is essential to note that this setup means the platform sponsor lacks prior knowledge of which complements will be generated around the platform. Additionally, the platform sponsor is also unaware of the potential complementors that may engage with the platform. The modularity and open interfaces of the platform infrastructure allow complementors access to the platform modules, contingent upon the sponsor's provisions. Since no formal agreement is necessary to initiate the production of complements, the platform sponsor possesses limited insight into which complementors may emerge to create these complements. Therefore, platform sponsors encounter dual uncertainties in the process of value co-creation within ecosystems, stemming from the unknown complementors and the unknown complements that arise prior to their actualization.

The unpredictability associated with ex-ante unknown complementors and their respective complements carries significant implications for value co-creation within the ecosystem. Initially, it is essential for the platform sponsor to design the platform's infrastructure and governance in a manner that encourages the engagement of these unknown complementors. Consequently, the design and governance of the platform play a pivotal role in facilitating value creation for the complementors while ensuring value appropriation for all stakeholders involved. Furthermore, the platform sponsor must foster the commitment and collaboration of these complementors for effective value co-creation, doing so without resorting to formal contracts or hierarchical oversight. This allows the sponsor to manage the value co-creation process through indirect and informal means of authority. Additionally, the platform sponsor is tasked with overseeing the ex-ante unknown complements present on the platform to maintain a coherent value proposition and to continuously nurture the ecosystem's health and identity throughout its lifecycle. In summary, these uncertainties introduce unique challenges at various stages of the value co-creation process, including the attraction of complementors, collaborative value creation, and ecosystem governance.

The challenges posed by ex-ante unknown complementors and complements in the context of value co-creation are similarly observed across both innovation and transaction-oriented platform ecosystems. The uncertainty stemming from these unknown complementors, along with the necessity of attracting suitable complementors, is vital for the success of both ecosystem types. While the impact of ex-ante unknown complements is particularly pronounced in innovation ecosystems, it remains a significant consideration in transaction ecosystems as well. For example, a sponsor of an innovation platform must carefully evaluate the degree of openness in the interface to selectively facilitate certain types of complements. In a similar vein, the sponsor of a transaction platform ought to evaluate design options that facilitate specific categories of transactions. Consequently, with suitable adjustments, the concepts presented in this chapter are relevant to both innovation and transaction platform ecosystems. As we elaborate in the subsequent section, the scope of the platform serves as an essential instrument for platform sponsors to navigate uncertainties and foster value co-creation.

III. PLATFORM SCOPE

The relationship between a firm's scope and its performance has been a significant topic of inquiry within strategic management research for many years (Ahuja & Novelli, 2017; Conner, 1991; Rumelt et al., 1991). The determination of a firm's scope influences its strategic direction, survival prospects, performance results, and competitive landscape (Zenger et al., 2011). In the context of digital platform ecosystems, the concept of platform scope encompasses various dimensions that have important implications for both value creation and competitive dynamics. The literature on platforms can be categorized into three main streams—technology management, economics, and strategic management perspectives (McIntyre & Srinivasan, 2017)—each offering a unique interpretation of platform scope, which we classify as platform technology scope, platform sponsor scope, and platform market scope. As elaborated in the following sections, while the topic of platform scope has been explored across these different streams, the discussions have predominantly remained aligned with their individual areas of focus.

3.1 Platform Technology Scope

The literature concerning technology management within platforms has primarily concentrated on the technological and architectural dimensions of platforms and their effects on the surrounding ecosystem. In this context, the scope of platform technology pertains to the components provided to complementors, which are influenced by the design decisions made by the platform sponsor. These choices regarding platform technology scope significantly impact the

decisions made by complementors regarding their participation (Boudreau, 2012; Boudreau & Jeppesen, 2015; Boudreau & Lakhani, 2015) and also affect the platform sponsor's capacity to manage the ecosystem effectively for the purposes of value creation and capture (Gawer, 2014; Tiwana, 2008; Tiwana et al., 2010). The scope of platform technology includes design elements such as modularity, openness of interfaces, and the provision of software development kits (SDKs). Subsequently, we will examine these design choices and their ramifications for value co-creation within platform ecosystems.

The concept of modularity within the platform infrastructure pertains to a disaggregated architecture of the essential components of the platform, which facilitates the independent development of complementary elements that do not disrupt the core or other complements, while still functioning cohesively as a unit (Baldwin & Clark, 2000; Tiwana, 2008). By allowing access to the core components through open interfaces, complementors can create enhancements that build upon these foundational elements. A narrowly defined technological scope of the platform, characterized by a modular architecture and more accessible interfaces, fosters greater innovation among complementors (Boudreau, 2010, 2017). Conversely, a limited technological scope defined by a less modular architecture and more restrictive interfaces enables the platform sponsor to exert better control and capture value effectively (Chen et al., 2021). For instance, Twitter's open interfaces attracted developers who created applications that acted as a front end for Twitter's users. While these applications drew in consumers, they hindered Twitter's capacity to generate revenue through advertisements, as users of these apps were less likely to visit Twitter's main application directly. Consequently, in 2012, Twitter began to impose restrictions on its interfaces, compelling users to engage with the platform through its own front-end. However, this tightening of interfaces resulted in the discontinuation of several complementary offerings to the platform.

Platform sponsors provide software development kits (SDKs) to facilitate access to platform technology for complementors, enabling them to design, develop, debug, and publish complementary products (Chen et al., 2021; Eaton et al., 2015). While these SDKs serve as an incentive to draw complementors into the platform ecosystem, they can lead to investments that are specific to the platform, effectively locking complementors into the focal ecosystem and diminishing the compatibility of their products with competing platforms. By distributing platform resources through SDKs and APIs, the platform sponsor establishes a more dynamic technological boundary with complementors, resulting in a narrower technological scope that fosters innovation in complementary offerings.

The technological scope of the platform significantly influences the opportunities available to complementors for co-creating value, as it imposes architectural limitations on access to essential platform components, interfaces, data, and algorithms. This strategic approach enables the platform sponsor to mitigate uncertainties associated with value co-creation from complementors and complements that may not be fully understood in advance. By selectively opening specific core platform modules, interfaces, and data, the sponsor can facilitate the development of targeted complements, a decision that may also be guided by the insights derived from ecosystem-generated data and algorithms. Nevertheless, while the technology scope is vital, it is not sufficient on its own and must be reinforced by additional elements, such as the scope of the platform sponsor.

3.2 Platform Sponsor Scope

The success of a platform ecosystem is attributed to the potential of the platform sponsors and complementors to co-create value (Kapoor, 2018), with each actor performing different parts of the value co-creation process. Accordingly, the actor that performs a focal process retains control over the corresponding part of value creation. Such an arrangement begins with the platform sponsor, as the initiator of the ecosystem, choosing to perform parts of the value creation process while opening the rest to the complementors. In essence, platform sponsors choose their scope in the value creation process vis-à-vis the complementors, a choice that we term as platform sponsor scope. The choice of platform sponsor scope complements that of platform technology scope. As McIntyre et al. (2020) rightly point out, "while technology choices on platform design and interfaces have an influence on complementors' incentives to innovate, and can affect to some extent complementors' capability, they constitute only one of the levers of action that platform owners can manipulate. The scope of the platform [sponsor] is another lever of action" (McIntyre et al., 2020, p. 19; in parentheses added). As we detail below, the strategy stream of platform literature has multiple treatments of platform sponsor scope that address key aspects of the digital strategy of the firm.

Scholars have identified the scope of platform sponsorship as a critical decision made both initially and on an ongoing basis (Gawer, 2011; Gawer & Cusumano, 2008; Kapoor & Lee, 2013). Gawer and Cusumano (2002, p. 9) highlight that the determination of platform sponsor scope is "not a one-time event," as companies consistently innovate their

products and introduce new features that may have previously been provided by external entities. Earlier research viewed platform sponsor scope as the decision regarding which complements to develop internally versus those to be left to external complementors (Gawer, 2011; Gawer & Cusumano, 2008). In this context, a broad platform sponsor scope indicates a platform with numerous in-house complements, while a narrow scope suggests a greater availability of third-party complements. Studies have shown that platform sponsors create in-house complements to initiate network effects and address gaps not covered by third-party complementors (Cennamo, 2018; Hagiú & Spulber, 2013). For instance, manufacturers of video game consoles often develop a limited number of games internally to draw consumers to their platform, subsequently encouraging game developers to create third-party games. Nevertheless, such in-house complements can only improve the quality and diversity of the ecosystem's complements until the market gains traction (Cennamo, 2018).

An alternative approach for a platform sponsor to redefine its operational boundaries involves directly entering the product domains of complementors (Wen & Zhu, 2019; Zhu & Liu, 2018). A pertinent example is Amazon, which broadens its scope in relation to complementors by competing in their product categories with its own offerings. Research indicates that platform sponsors often penetrate the successful product areas of complementors, particularly those that require minimal platform-specific investments (Zhu & Liu, 2018). This expansion of scope by the platform sponsor can deter complementors from participating or compel them to redirect their innovation efforts toward different product spaces within the ecosystem. Such shifts in innovation strategies are particularly observable in dominant platform ecosystems (Wen & Zhu, 2019). Consequently, the choices made by platform sponsors regarding their scope significantly impact the participation behavior and performance outcomes of complementors.

The concept of platform sponsor scope is integrated into broader frameworks, such as the "vision that defines the ecosystem value proposition" (Dattée et al., 2018, p. 467; Iansiti & Levien, 2004), and encompasses an alignment structure that includes various actors, their activities, positions, and information flows that actualize the value proposition (Adner, 2017). While the overarching blueprint or vision of the ecosystem articulates the value proposition, the corresponding alignment structure is designed to delineate the ecosystem's design and governance. In this context, the platform sponsor's persuasive vision is crucial for attracting the engagement of ecosystem participants. However, in scenarios characterized by significant uncertainty, where such value propositions may not be clearly articulated in advance, the platform's effectiveness in guiding participation may be compromised.

Network effects refer to a phenomenon in which the benefits that an individual gains from engaging with a platform grow as more individuals join the same platform, either on the same side, known as direct network effects, or on different sides, referred to as indirect network effects (Katz and Shapiro 1994; Rochet and Tirole 2003). As a result, a significant presence of participants on one side of the platform can entice additional participants to engage on either the same side or across other sides. This interplay creates a reinforcing cycle, whereby increased participation leads to further attraction of new participants.

A more detailed examination of boundaries reveals that the scope of a platform sponsor includes the assets they possess, the workforce they engage, and the activities they undertake (Gawer, 2020). This scope is integral to the digital strategies of organizations and interacts with broader factors such as the nature of the ecosystem and its lifecycle stage. On a more detailed level, the platform sponsor's scope consists of two main aspects: first, the activities that the sponsor opts to conduct internally while allowing others to handle complementary tasks, and second, the sponsor's authority over these complements (Murthy & Madhok, 2021). This perspective on platform sponsor scope incorporates earlier conceptual frameworks, as the activities are essential for delivering the value proposition and are a crucial element of the alignment structure. The choices made regarding scope indicate potential opportunities for value creation and capture, thereby influencing the decisions of ecosystem participants.

Furthermore, the scope of the platform sponsor determines the extent of governance they can exercise over the ecosystem. The sponsor retains full control over the activities executed internally and has the authority to establish governance protocols for complementors and the wider ecosystem by determining who holds decision-making rights over the complements. In essence, the platform sponsor's scope represents an implicit boundary decision that communicates to complementors the potential for value creation and capture within the platform ecosystem. Consequently, the process of value creation in platform ecosystems entails not only direct actions but also indirect strategies employed by the platform sponsor; a deficiency in these strategies could ultimately jeopardize the success of the ecosystem (Dattée et al., 2018; Tiwana, 2013; Tiwana & Konsynski, 2010).

3.3 Platform Market Scope

An alternative perspective on platform scope involves the economic dynamics and the external dimensions of the markets and products within which the platform ecosystem operates. This perspective is referred to as platform market scope. The decision regarding platform market scope significantly influences the management of uncertainties associated with value co-creation, as it defines the identity and value proposition of the entire platform ecosystem. This, in turn, plays a crucial role in attracting and nurturing the appropriate complementors and consumers within the ecosystem. Rooted in the economic literature on platforms, platform market scope is primarily examined concerning the product and market positioning of the ecosystem in relation to its competitors.

The prevailing focus in this area pertains to the expansion of the platform ecosystem's market scope, typically initiated by the platform sponsor. The choice of platform market scope is essential to digital strategy, as organizations that successfully capture and integrate data across various sectors can discover and leverage new synergies, thereby broadening their market and product reach. This strategic approach not only enhances the platform's competitive positioning but also facilitates the creation of a more robust ecosystem that can adapt to changing market conditions and consumer needs.

A platform sponsor may seek to broaden its market reach by addressing entry barriers posed by the network effects of competitors. This can be achieved through a strategy known as platform envelopment, where the primary platform sponsor integrates features from the competing platform into its own services, thereby appealing to a shared user demographic. This approach capitalizes on both demand-side and supply-side economies, allowing the sponsor to utilize existing components and user relationships effectively. By engaging in platform envelopment, the sponsor not only increases its market share but also restricts the rival's access to users, subsequently leveraging network effects to foster growth. A notable instance of this strategy is Microsoft's integration of Windows Media Player with its Windows operating system, which effectively enveloped the offerings of the RealNetworks media platform.

Another strategy for expanding platform market scope involves the acquisition of rival platform ecosystems by the focal platform sponsor, aimed at stifling the target's innovation initiatives and preempting future competition. While this method bears similarities to strategies employed by non-digital companies, digital firms particularly benefit from such acquisitions through enhanced network effects and the aggregation of data from the acquired platform ecosystem. A prime example of this approach is Facebook's acquisition of Instagram and WhatsApp, which illustrates how platform market scope can be expanded through strategic acquisitions that consolidate user bases and resources, thereby strengthening the sponsor's competitive position in the digital landscape.

Additionally, platform market scope comprises of the decision to position as a niche or generalist platform ecosystem depending on whether they target specific groups of users or not (Seamans & Zhu, 2014). Platform market scope choice also shapes the distinctiveness of the platform ecosystem relative to its competition in terms of the type of complements and content available within the ecosystem (Cennamo, 2021; Cennamo & Santalo, 2013). Overall, the platform market scope is a key component in creating a unique platform market identity of the ecosystem from the perspective of the users.

3.5 Integrated View of Digital Platform Scope

In the realm of platform literature, the concepts of platform technology, sponsor, and market scope represent distinct yet interrelated perspectives on firm boundaries. Each of these three streams has approached the topic of platform scope from its unique origins and interests, leading to a somewhat fragmented examination of the issues at hand. The technology stream has predominantly concentrated on the scope of platform technology, often neglecting the aspects related to platform sponsor scope. Conversely, the economics stream has directed its attention towards platform market scope, exploring its expansion and the resulting competitive dynamics, while largely overlooking organizational and governance considerations. The strategy stream, on the other hand, has emphasized the governance implications arising from the relationship between platform sponsors and complementors.

Despite their apparent distinctions and varying focal points, these three streams of research collectively shape the overarching digital strategy and the process of value co-creation. As noted by Boudreau (2017), the boundaries of technology and platform sponsors are not only different but also interact in ways that significantly impact organizational and governance matters. Chen et al. (2021) conducted a comprehensive literature review, revealing that various aspects of platform sponsor scope play a crucial role in determining the design elements of platform technology scope. For instance, the platform sponsor's control over access can dictate the extent to which complementors are permitted to engage with the platform ecosystem, which is influenced by technological restrictions on boundary

resources and interfaces. Additionally, the requirement for complementors to utilize specific software development kits (SDKs) can limit the compatibility of their offerings with competing platforms, further illustrating the interconnectedness of these scope choices.

In the realm of digital platforms, the scope of platform technology encompasses the limitations regarding ownership and access to transaction and user data, as well as the algorithms utilized for analytics and governance. Digital platform ecosystems produce data concerning the participants, manifested through reputation scores, ratings, reviews, interactions, and transactions among these participants (Alaimo & Aaltonen, 2021; Ritala & Karhu, 2021). Nevertheless, this amassed data frequently remains confined within the parameters established by the platform sponsor (Clough & Wu, 2020). When combined with artificial intelligence algorithms, this accumulated data can generate network effects that enhance participation and facilitate value co-creation within the ecosystem (Adner et al., 2019). In this framework, the choices regarding the scope of platform technology involve decisions about the degree to which the platform sponsor disseminates data and analytics to complementors. However, as noted by Chen et al. (2021), these technology scope decisions should align with the sponsor scope choices, which subsequently influence governance within the ecosystem. Despite outlining the relationship between platform technology and governance mechanisms, Chen et al. (2021) emphasize that the consequences of these decisions on value co-creation remain inadequately understood. For instance, there is ongoing discussion regarding who ultimately benefits from the value generated by leveraging these digital resources. On one side, the platform sponsor, as the data owner, holds a considerable advantage in capturing this value (Clough & Wu, 2020). Conversely, it is argued that data sharing agreements and open platform interfaces may mitigate such advantages (Gregory et al., 2021). Therefore, the ramifications of technology scope choices concerning data and algorithms, as well as their implications for the platform sponsor's scope, are not yet fully comprehended, highlighting the need for further research in this domain.

In a recent initiative aimed at bridging the seemingly distinct yet interconnected choices regarding platform scope, Gawer (2020) examined the relationship among platform sponsor scope, platform sides, and interfaces, positing that these scope decisions are mutually dependent and must be aligned for an effective digital strategy. From our viewpoint in this chapter, the 'platform sides' can be regarded as a component of the platform market scope, particularly in relation to pricing and network effects. Likewise, interfaces represent a crucial aspect of the platform technology scope. While this study marks a significant initial step, it does not delve into the various underlying components of platform technology and market scope, nor does it address the governance ramifications of these scope choices or their interrelations. To underscore a vital point, a comprehensive understanding of how technology, sponsor, and market scope choices influence value co-creation is essential for a deeper insight into the phenomena at hand. Consequently, the subsequent sections will explore the ramifications of these scope choices on the overarching digital strategies of firms and will identify critical areas for future inquiry.

IV. IMPLICATIONS FOR DIGITAL STRATEGY

To date, we have examined the significant function of digital platforms and their scope within the digital strategies of organizations. We will now explore the ramifications of digital platform scope on our current comprehension of firm scope and value generation. The concept of firm scope has historically been a pivotal topic in strategic management, with research illustrating its impact on essential performance metrics. The understanding of digital platform scope diverges from traditional firm scope literature, which often focuses on hierarchical organizations and hybrid structures such as alliances. The technology of platforms and the scope of sponsors pertain to the determination of boundaries in relation to complementors, who play a crucial role in value co-creation within the ecosystem. While these decisions share similarities with the conventional concept of firm scope, they also present distinct characteristics. For example, the definition of platform sponsor scope, which involves the selection between in-house and third-party complements, closely aligns with the make versus ally debate prevalent in traditional firm scope discussions. However, the choices regarding platform technology and sponsor scope are fundamentally different from those in conventional firms, where relationships among participants tend to be transactional and arm's length. This distinction arises from the interdependent nature of platform ecosystems. Furthermore, the boundaries in these ecosystems are not analogous to those found in hybrid organizational forms like alliances, as the platform sponsor, acting as the primary economic entity, does not choose its partners or create intricate contracts that define firm scope. The scope of platform markets represents an external choice that, while akin to the scope decisions made by traditional companies regarding the products and markets in which they compete, possesses unique characteristics. The presence of fungible digital assets facilitates seamless entry into new markets, and the influence of network effects enhances the ability to exploit economies of scale and scope, resulting in less rigid distinctions between various products, markets, and industries

(Adner et al., 2019; Gregory et al., 2021). A pertinent illustration of this phenomenon is Amazon, which initially emerged as an e-commerce platform but subsequently utilized its digital infrastructure, including data centers, to penetrate the cloud computing sector. As noted by Adner et al. (2019), the "extreme fungibility [of digital assets] indicates that traditional concepts of relatedness" in a firm's selection of competitive products and markets warrant reevaluation.

V. DIRECTIONS FOR FUTURE RESEARCH

The concept of platform scope plays a crucial role in the formulation of digital and platform strategies. While various underlying factors related to this subject have been thoroughly examined in existing platform literature, the specific issue of platform scope has not garnered significant scholarly attention. The limited research that has addressed the boundaries of platform ecosystems often concentrates on elements relevant to particular areas of study, thereby neglecting a more comprehensive exploration. We propose multiple avenues for future research that could enhance understanding of this vital aspect of digital strategy.

As digital platform ecosystems continue to evolve, there are several promising directions for future research in the area of digital strategy and value creation. One critical avenue is the exploration of platform governance models and their impact on value distribution among stakeholders. Understanding how different governance structures influence user participation, innovation, and long-term sustainability of platforms is vital. Another important area is the interplay between data analytics and value creation in platform ecosystems. Future research could investigate how platforms leverage big data and artificial intelligence to enhance decision-making, personalize user experiences, and create competitive advantages, as well as the ethical implications of these practices. The role of regulatory frameworks in shaping digital platform ecosystems also warrants further investigation. As platforms increasingly operate across borders, understanding the impact of varying legal and regulatory environments on platform strategies and value creation mechanisms is crucial.

Additionally, there is a need for research into platform-based business models in emerging economies. These contexts present unique challenges and opportunities, and studying how digital platforms adapt their strategies to local conditions could provide valuable insights for global platform strategies. Finally, interdisciplinary approaches combining insights from technology, economics, sociology, and law can offer a more holistic understanding of digital platform ecosystems. Such research could examine the broader societal implications of platform dominance, including issues of digital inclusion, labour market impacts, and the influence of platforms on cultural and social norms. These directions offer a robust foundation for advancing our understanding of digital strategy and value creation in platform ecosystems.

VI. CONCLUSION

With the rapid proliferation of digital technologies, platform ecosystems have become central to the functioning of modern economies, societies, and industries. These ecosystems, which facilitate interactions between users, producers, and third-party developers, have fundamentally reshaped traditional business models and value creation processes. As these platforms grow in complexity and influence, it is increasingly important to explore a range of perspectives to fully understand the underlying elements that drive their success and the ways in which they manifest in different contexts. Traditionally, much of the research on digital platforms has been rooted in technology and economics-based perspectives. These approaches have provided valuable insights into the technical infrastructure of platforms, the economic dynamics of network effects, and the mechanisms of value capture and distribution. For instance, technology-focused studies have examined how platforms leverage digital tools to scale operations and enhance user engagement, while economics-based research has explored the competitive dynamics, pricing strategies, and market structures that characterize platform-based businesses. However, as digital platforms continue to evolve and permeate various sectors, novel considerations have emerged, challenging the dominance of these traditional perspectives. These new lines of inquiry have raised important questions that were not fully addressed by earlier work, offering fresh opportunities to enrich our understanding of digital platform ecosystems. For example, sociocultural perspectives have begun to shed light on the ways in which platforms shape, and are shaped by, the social practices, norms, and values of their users. This includes examining the role of platforms in fostering community engagement, influencing user behavior, and even altering cultural landscapes. Moreover, legal and regulatory perspectives are becoming increasingly crucial as platforms expand their reach and impact. Scholars are now delving into issues related to platform governance, data privacy, antitrust concerns, and the ethical implications of algorithmic decision-making. These

considerations are particularly pertinent in the context of growing debates around platform accountability, transparency, and the protection of user rights. In addition, interdisciplinary approaches are gaining traction, combining insights from fields such as sociology, anthropology, psychology, and political science to offer a more holistic view of platform ecosystems. These perspectives encourage us to think beyond the purely economic or technological dimensions of platforms and consider their broader societal implications. In conclusion, while technology and economics-based perspectives remain vital for understanding digital platforms, it is essential to integrate these with newer, more diverse perspectives. By doing so, we can address the ongoing debates and challenges that accompany the rise of digital platform ecosystems, ultimately leading to a more comprehensive and nuanced understanding of these complex and dynamic systems.

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