

A Review on Digital Transformation: A Multidisciplinary Reflection and Research Agenda

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Abstract

The advent and enormous growth of digital technologies force firms to respond to digital challenges by transforming existing and introducing new business models. In the article "Digital transformation: A multidisciplinary reflection and research agenda," Here discuss the drivers of digital transformation and the strategic imperatives that result from digital transformation. Taking a business model perspective, the authors highlight how the demands for and execution of digital resources, organizational structure, growth strategy and metrics have changed in response to digital change. By identifying three stages of digital transformation - digitization, digitalization, and digital transformation - they delineate several growth strategies for digital firms that require specific (platform-based) structures and bears important consequences for measuring success (e.g., focus on sentiment- and engagement-related measures). The authors conclude with a research agenda on digital transformation. To gain a comprehensive understanding of the topic of digital transformation, this commentary reflects on the multiple perspectives, and applies them to the pinnacle form of digital transformation: the development of new digital platforms. To highlight the complexity of making platform design decisions, this commentary discusses the strategic analysis of platform openness.

Keywords: Digital transformation • Stakeholders • Growth strategy

Introduction

Although digital transformation is a relatively young phenomenon, its disruptive and transformative impact to consumers, organizations and society and unique features have led to increased scholarly interest, as demonstrated by the proliferation of academic articles. Scholars from a variety of research fields have tried to explain the concept of digital transformation, its drivers, and resultant strategic imperatives [1]. In their article, take a multidisciplinary perspective, and define digital transformation broadly as "a change in how a firm employs digital technologies, to develop a new digital business model that helps to create and appropriate more value for the firm". The authors highlight that academic research is scattered and occurs mostly within specific business disciplines, like information systems (IS), marketing and strategic management. The IS literature, for instance, has focused strongly on the drivers of technology adoption and resultant business value [2]. The strategic management literature has conceptualized and investigated the complexity and organizational imperatives of managing (digital) business models [3]. The marketing literature has focused on customer-centric digital transformation and yield insights into how to improve the effectiveness of digital advertising and develop effective multi-channel and omni-channel environments [4-6].

Literature Review

The authors claim that the investigation of digital transformation occurs in isolated silos, thereby limiting its progress on this timely relevant topic. A multidisciplinary perspective is needed to synthesize current findings, and to understand the consequences that digital transformation bears for strategy, information systems, finance, supply chains, and marketing [1]. To compare, contrast and synthesize the rich (and mixed) conceptual and empirical findings found across multiple disciplines, provide a common foundation and relate such insights to the different phases of digital transformation: digitization, digitalization, and digital transformation. By bringing together the diverse

research perspectives to the increasingly more complex and pervasive forms of digital transformation, they contribute to a better understanding of the phenomenon in relation to its strategic implications.

Digitization is the simplest form and merely entails the encoding of analog information into a digital format digitalization describes the use of IT or digital technologies to alter and improve existing business processes digital transformation refers to the most pervasive form, and describes a company-wide change to develop new business models that alter the business logic of a firm or underlying value-creation structure [7-11].

Prior to making changes, organizations are recommended to assess the strategic imperatives of their desired digital transformation phase. Shifting from simpler to more pervasive phases, organizations are expected to rely not only on digital assets, but also to invest heavily in digital agility, networking capability, and big data analytics (...). In terms of organizational structure, organizations shift from simpler, standardized top-down structures to more bottom-up structures allowing separated functional units to work flexibly, yet aligned with the help of IT. To monitor the progress and effectiveness of digital transformation efforts, organizations require different metrics when shifting to more pervasive forms. While traditional financial KPIs (cost-to-serve, ROI, ROA) are sufficient to assess the return on digitization efforts, digital KPIs (digital share, magnitude and momentum, user experience, co-creator sentiment) are needed when firms reconfigure their assets to introduce new cost-revenue models.

In terms of digital growth strategies, the authors expand Ansoff's growth matrix, and pinpoint how platforms, the pinnacle form of digital business models, may go beyond market development and product development, and diversify into co-creation (customer as alternative market development form) and platform diversification (offering multiple new products to multiple new industries). A digital platform may serve new markets, update the product and service assortment, while opening the firm to co-create value with sponsors (e.g. Google and Android), interoperable platforms, suppliers, consumers and complementary service providers.

Digital transformation and digital platforms

Digital transformation is not primarily about technology, but about the changing relationship between people, technology and the business and social environment. As digital platforms interconnect, humans, technologies, and business and society, the introduction of platform-based business models provides a canonical example of digital transformation. In the remainder of this commentary, I reflect upon the pinnacle form of digital transformation: the

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development of new digital platforms, and what inherent challenges these platforms face.

Platforms have existed for centuries (e.g. the Grand Bazaar of Istanbul has been built in the 15th century), but they have proliferated since the advent of new technologies. Advances in (communication) technologies have created a hyperconnected world that allows multiple actors to seamlessly connect and transact via (centralized) digital platforms [12]. Such intermediary platforms and larger platform ecosystems link or facilitate exchanges between two or more groups of users; they can gain architectural leverage through the use of smart interfaces that enable improved correspondence between supply and demand. To succeed, a multi-actor approach is needed as organizations shift away from single ownership to shared ownership, enabling mass-scale, efficient co-creation and transaction opportunities. To be successful as a platform, it is necessary to regulate or govern the relationships between multiple users, in such a way that the users perceive sufficient benefits of using the platform (value creation), while appropriating the rents from the facilitation of transactions (value appropriation). Important platform design choices exist to foster the production logic (economies of scale and scope), innovation logic (economies of innovation and complementarity), and transaction logic (economies of transactions and search) of platforms [13].

Discussion

One important platform design choice is the openness of the platform in terms of access (are all users allowed on the platform?) and authority (what are users allowed to do on the platform?) [14]. The decision to be very restrictive (or open) affects impacts all logics: the degree of innovation on the platform, the scale and scope advantages, as well as the ability to fit the heterogeneous needs of users to existing market offerings [15]. According to platform openness is a complex platform design choice as the platform's value creation and appropriation is affected by (i) a complex interplay of underlying dimensions, (ii) actor interdependencies and tradeoffs, and (iii) platform dynamics. Rather than being a simple dichotomous choice, platforms need to consider the configuration of openness toward users (including supplier access/authority, customer access/authority, complementary service providers access/authority), as well as product categories and channels to develop an effective value proposition that caters to the needs of multiple types of users. To complicate matters, such openness decisions are also subject to actor interdependencies and tradeoffs, such that improving the benefits for one actor may go at the expense of the benefits for another actor. Here, the strategic imperative is to analyze how favoring one type of user may imply tradeoffs, and under what circumstances synergies can be created. Another complication is that platforms are subject to platform dynamics, in which decisions are subject to, and influenced by past decisions and platform evolution [16]. While new digital platforms often start with high openness to maximize user growth, their focus tends to gravitate toward greater value appropriation in later phases by charging users more or restricting access or authority. Yet, as demonstrated by the recent dispute between Apple and Epic Games to offer in-game transactions in the successful game *Fortnite*, even powerful platforms do not operate in a vacuum and may lose power when users are disgruntled and join forces (i.e., Facebook, Microsoft, Spotify, Tile, and Match have banded their forces to fight against Apple's App Store policies). To keep users loyal, platforms should take a holistic approach to platform openness, and configure their openness toward product categories, channel offerings, and users.

Platform success depends on how well platforms can cater to the needs of multiple, interdependent actors, who operate at different layers and in different markets, and who are subject to technological and market change. Such a research setting requires that scholars take a multi-disciplinary, multi-level and dynamic perspective to help platforms navigate through business currents. Existing models and assumptions used for single-sided markets may no longer be adequate or sufficient in multi-sided platform industries [17]. Hence, future research is recommended to consider the incorporation of multiple actors, their interdependencies, and platform dynamics [18-21].

Conclusion

Digital transformation is inevitable for incumbent organizations operating in industries confronted with digital change. In order to survive and seize the digital opportunities, they are forced to invest in digital resources, adjust their organization to be responsive to and experiment with digital technologies, and seek out new growth paths. While digitalization efforts generally help organizations to improve and measure performance, it has also increased the complexity of navigating the organization in a world of change. The introduction of platform-based business models provides a canonical case of digital transformation: this pervasive form introduces a new business model leveraging the power of digital technologies by seamlessly connecting multiple stakeholders. The dominance of platform-based giants may suggest that success is easy. Developing a platform strategy is, however, inherently complex, as it requires decisions on the design of platforms to cater to the needs of the multiple, heterogeneous stakeholders, while incorporating the interdependencies between users, as well as the short-term and long-term performance effects of such decisions. Digital transformation may lead to the sustainable development of business models but only when organizations succeed to create superior value to its users.

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