

# Managing Innovation in a Digital Era

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## **Abstract**

The proliferation of digital technologies and infrastructures opens up an unprecedented paradigm shift in managing innovation. Through the lens of user experience (UX) and the wisdom of consumer crowds, this paper explores such deep-seated influence, focusing on crowdsourcing, crowdfunding, co-creation and ecosystem.

## **Introduction**

In the 21st century of human history, the digital transformation has been seen as one of the world's megatrends. It is widely predicted that it will be pervasive within institutions, societies and organizations, particularly in managing innovation (Hopp, Antons, Kaminski and Salge, 2018). Nevertheless, despite its popularity-in-use, innovation management research into this paradigm shift remains fragmented (Appio, Frattini, Petruzzelli and Neirotti, 2021).

Since its conceptualization, digital transformation has been considered as a priority for firms to improve their competitiveness and ensure their survival (Ceipek, Hautz, de Massis, Matzler and Ardito, 2021). Today, digitalization has been perceived by firms as an opportunity and many are keen to seize its upside potential (Johnson, Friend and Lee, 2017; Rindfleisch, O'Hearn and Sachdev, 2017; Hopp et al., 2018). Digital transformation marks the deep-seated changes occurring at shaping how firms to search, select, implement and capture values in the innovation process. From a business perspective, the fundamental customer centricity of digital transformation denotes a commitment to best practice user experience (UX). UX is considered as all of the experiences that target audience can have

before, during and after a specific interaction and in any context of use (Ryan, 2017). So much so, UX has increasingly moving towards the centre to the creation and optimization of digital properties.

The theory of UX upholds a profound implication to user-led innovation that involves a community of users to create and to use innovative solutions on a continuing basis. Digital technologies empower such communities to form ‘crowds’ for knowledge sharing. Jeff Howe (2006) has enlightened us with the idea of ‘The Power of Crowds’, underlying the wisdom of consumer crowds as a source of different ideas, perspectives or expertise that contribute to new directions to innovation development. To this end, we have witnessed such an approach and joining forces in the fight against the COVID-19 crisis, where the involvement of crowds as innovation partners can be of great support based on the crowdsourcing model.

Drawing from the user experience (UX) theory, this paper explores how digital transformation affects innovation management, focusing on crowdsourcing, crowdfunding, co-creation and ecosystem. Theoretically, this paper contributes to a better understanding of the role and importance of UX and user crowds in innovation management research. Empirically, this paper sheds light into practice of managing innovation in a digital world through the wisdom of consumer crowds, calling for further research in several pivotal issues.

Next section provides a review on the crowdsourcing model, followed by a study upon crowdfunding, co-creation and ecosystem. This paper is concluded by its implications to theory and practice and the suggestions for further research.

### ***Crowdsourcing***

The concept of crowdsourcing has its roots derived from the case of the prize established in 1714 by Britain’s Parliament in the Longitude Act reported by several authors (Ranard et al., 2014). It is now recognized as an efficient and useful tool for innovation with a wide range of applications (Wazny, 2018). In the crowdsourcing model, organizations use digital/internet

technologies to harness the efforts of a virtual crowd to perform specific organizational task or problem-solving activities (Saxton et al., 2013). That is, outsourcing tasks to internal (e.g. employees) or external crowds. Giving it allows easier access to a wide variety of skills, know-how, expertise, crowdsourcing can help the reduction of R&D costs, sharing of the risks of innovation. More importantly, crowdsourcing nurtures better UX before, during and after innovative offerings. Today, advances in digital technology have made crowdsourcing possible to gather ideas through online communities quickly and efficiently (Simula, Töllinen and Karjaluoto, 2013). Involving customers in designing innovative products to gain consumers' perspectives early in the innovation process can be valuable, especially when the products are perceived to be difficult to use. To this end, prior studies highlight that consumers play a central role in developing, adapting, and modifying existing products, thus creating innovations. 'Lego Community' testifies this approach, where consumers become part of the innovation process, especially, lead users exhibit a clear solution orientation and can help firms to develop completely new products (Hienerth, Lettle and Keinz, 2014).

Yet, despite the potential to generate creative and novel ideas, the use of crowdsourcing in the innovation process still remains in its infancy for many organizations. Managers are likely to encounter both advantages as well as challenges in adapting an existing innovation process to include crowdsourcing (Zahay, Hajli and Sihi, 2018). For example, from a global perspective, Chua, Roth and Lemoine (2015) find that consumers/users from those cultures that have social norms and strong sanctions, are less likely to participate and generate successful contributions in foreign crowdsourced initiatives. Dahlander and colleagues (2017) show the importance of crowd engagement that organizations hosting crowdsourcing initiatives should offer ideas themselves and respond quickly and publicly to ideas received to demonstrate their commitment to these efforts. Indeed, digital transformation has enabled the use of crowdsourcing to a new era. Nevertheless, problems such as how to identify good quality ideas and how to incorporating these ideas into the existing process keep on challenging scholars' as well as practitioners' minds.

### ***Crowdfunding***

In managing innovation, resources (where capital and knowledge are two major ones) are the deciding factors in the new product development. Digital technologies and infrastructures

have empowered a unique platform – crowdfunding, which has gradually evolved as a vehicle to help innovative entrepreneurs to access capital. As Stanko and Henard (2016:15) have noted ‘for technology entrepreneurs, crowdfunding platforms can be appealing as a possible source of funding for product development’. Not only has crowdfunding allowed thousands of innovating entrepreneurs to raise money, it also is becoming a commonly used vehicle to build brand awareness, and to join a broader conversation with large numbers of potential backers, which are important crowds while still in the innovation process. Prior studies (e.g. Scholz, 2015; Stanko and Henard, 2017) find crowdfunding backers are important for the feedback, ideas, and word of mouth in the process of crowdfunding. In this regard, Mollick (2016) has suggests that crowdfunding backers who often take an active role in the innovation conversation, are central to understanding crowdfunding’s potential innovation effects. Here, the underlying implication is crowdfunding not only allows early stage innovators access to capital, but equally important, it allows them to potentially engage with a large number of individuals in ways that were previously unavailable. The large numbers of external voices (from crowdfunding backers) into the innovation process has the potential to dramatically affect innovation efforts and decisions. Notably, crowdfunding takes several forms, such as equity-based, reward-based, lending-based and donation-based (Belleflamme et al., 2013). Among which, Reward-based crowdfunding (e.g. Kickstarter, Indiegogo) offers a relatively risk free way for innovators, more importantly, it generate new product awareness and gauge potential market response. Nevertheless, challenges remain in managing crowdfunding. First, it may be overwhelming for organizations (small start-ups in particular) to interact with so many opinionated backers (Faems et al., 2010). Furthermore, it is conceivable that backers may less likely to take risks, pressuring the organization to confine with current market offering, which leads to less novel innovation over time (Moreau et al., 2001). These issues are awaiting further study and wisdom for remedies.

Despite these challenges, the significance of crowdfunding backers in the in innovation process is threefold. First, crowds of backers represent a potential source of knowledge creation through their cooperation. Second, they play as early adopters who offer advice, design ideas and even criticism throughout the innovation process. Finally, they also play an important role as product evangelists, spreading world-of-mouth about the innovation. These implications lead to our next topic – co-creation.

## *Co-creation*

Co-creation offers significant potential for managers wishing to improve their innovation capabilities. As Frow and colleagues (2015) noted that co-creation is the key to unlocking new sources of competitive advantages. Co-creation processes entail collaborative activities by actors who involved in direct interactions that aim to contribute to value for one or both parties (Grönroos, 2011). It is important to recognize that the co-creation processes involved the customer as co-creator of value and the provider as a value facilitator (Sjödin, Parida and Wincent, 2016). The use of digital tools benefits collaboration platforms the interaction of individuals and teams even if they are widely distributed in time and space. Such platforms can also form the nucleus for co-creation among concerned crowds (or actors). For example, Dell and Starbucks, both have created digital platforms where customer (and prospective customers) can submit ideas around innovation they want to see. In this way, the platforms also give the companies an opportunity to provide feedback on what is feasible or not, and a reasons why. Here, user experience is essential in co-creation with crowds of consumers. Prior literature (Sjödin, Parida, Kohamäki and Wincent, 2020; Grönroos, 2011) points to that in co-creation process, value is in exchanges and usage. Eventually, it is what the customer is willing to pay for the newly developed products. Ramaswamy and Ozcan (2016: 95-96) describe this phenomenon as ‘joint agencial experiential creation’ to depict a joint creation through agencial assemblages, oriented in its ‘virtual’ capacity toward the future, informed in its ‘repetition’ aspect by the past, summoned as ‘intensive’ actions in the present, to ‘actualize’ experiential outcomes within the contingencies of exteriority of relation’s.

In short, co-creation implies that the nature of the interaction between the buyer and seller is transformed from a transaction-based business to a relationship-based collaboration. More importantly, digital technologies can endow this transformation both efficiently and effectively. Notably, as value co-creation takes place in direct and indirect interactions among multiple actors (e.g. customer, supplier, and third party), proliferation of business ecosystem under digital transformation is versatile and is becoming ubiquitous. We now turn to this topic - eCcosystem.

## ***Ecosystem***

The rise and the use of digital technologies and infrastructures empowers unprecedented changes in the very nature of business activities in industrial ecosystems that eventually affect how organizations capture value from their innovations. Here, ecosystem is viewed as a community of moderately co-specialized actors, often organized around a digital platform, within which different actors interact to ‘co-create mutual benefits (or value) (Constantinides, Henfridsson and Parker, 2018; Jacobides, Cennamo and Gawer, 2018). Prior research studies ecosystem from at least two distinct lenses: ecosystem-as affiliation and ecosystem-as-structure. The ecosystem-as-affiliation theory stresses ecosystem as a community of associated actors affiliated in a network or platform, and it focuses on interdependence and the breakdown of traditional industry boundaries (Kamalaldin et al., 2021; Iansiti and Levien, 2004). Whereas the theory of ecosystem-as-structure highlights interdependent value creation because it focuses on the structure starting with a value proposition, aiming to identify the set of actors that need to interact in order to actualize the proposition (Ander, 2017; Laczko et al., 2019).

Indeed, achieving and sustaining growth from innovation development depends on the effective work of multiple and interconnected actors, such as industries, governments, societies and many others, who build an ecosystem. In a digital world, the underlying implication is that, the development of innovation can be hardly achieved through well-developed stand-alone strategies. Rather, the success of innovation development requires a sound ecosystem, allowing resources sharing, network externalities, knowledge spill-overs and co-creation endowments.

## ***Concluding Remarks***

Today, no industry is immune to the pervasiveness of digitalization. The use of digital technologies is versatile and is becoming ubiquitous. According to the World Economic

forum1, platform-driven interactions are expected to enable approximately two-thirds of the \$1000 trillion value at stake from digitalization by 2025.

The digital revolution marks a paradigm shift from an industrial to a digital economy. While the development and use of new digital technologies are prerequisites for digital transformation, it is yet far from sufficient for success. Managers and innovators are advised that to harvest from digital transformation is more than simply the digital technologies and ideas from the crowds of users. Rather it requires re-optimization to allow effective use of digital technologies to create and capture value in new ways. This may require new forms of organization and novel work practices to facilitate this change. This paper recognizes that further research is needed to illuminate the intricate gravity between digital transformation and innovation management and urges further research into this vital yet much under-researched topic.

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