Preprint: Tsai S., Cheng X., Yang Y., Xiong J. & Zarifis A. (2023) 'The social-technological ways to develop digital entrepreneurship: Targeting value creation and value capture', Information Processing & Management

# The social-technological ways to develop digital entrepreneurship: Targeting value creation and value capture

A B S T R A C T

Enabled and catalyzed by advanced digital technologies, digital entrepreneurship integrating digital technologies and entrepreneurship forcefully propels enterprise digital transformation and ameliorates social problems. However, empirical, and theoretical research about digital entrepreneurship is surprisingly scarce, let alone on the strategic guidelines to develop digital entrepreneurship and reach success. In this article, we structurally conclude the ways sparsely proposed and evidenced to develop digital entrepreneurship based on a socio-technical perspective. Technology itself and the process to utilize it should be carefully considered. From the social perspective, the needs of customers in social interaction should be well-satisfied, and employees and managers should develop characteristics and social skills that fluent the interaction within the digital work environment.

## 1. Introduction

Benefiting from the rapid development of technologies, the digitalization trend revolutionized the population into the computerized age from the industrial age. Particularly catalyzed by the COVID-19 pandemic, the new digital era has become the zeitgeist for tremendous markets and industries. These advanced technologies, such as generative artificial intelligence, blockchain, and cloud computing, prevail in entrepreneurship. On the one hand, these digital technologies stimulate firms to leapfrog traditional operational models for operation cost reduction, strengthening value capture. On the other hand, these technologies elicit business model innovation and create new opportunities, engendering innovative patterns of value creation digitally (Elia et al., 2020). Considering the technological support to enterprises, digital entrepreneurship, an emerging form of entrepreneurship formed based on the deep integration of digital technologies and entrepreneurship, has thus become an important topic in entrepreneurship studies (Davidsson, & Recker, 2018; Nambisan, 2017). However, the existing theoretical and empirical research on digital entrepreneurship is far from adequate, failing to illuminate how to effectively reach digital entrepreneurship in the current digital era. The promising value of digital entrepreneurship and the sub-optimal literature thereby urge more research for deepening the theoretical and empirical research.

Trist initially introduced socio-technical theory (STT). STT delineates an underlying mechanism in which the social subsystem and the technical subsystem jointly and interactively work to engender organizations' responses toward IS innovation and IS changes (Bostrom & Heinen, 1977a; Lyytinen & Newman, 2008). Specifically, social subsystems consist of social components, such as individuals and groups, and the interaction between them. The technical subsystem contains techniques, devices, tools, and the manners in which technical components play in effect for performance promotion (Bostrom & Heinen, 1977b). The two subsystems mutually produce the optimized consequence of organizations' value capture and value creation operation. Applying the rationale of STT to developing digital entrepreneurship, technical perspective guided enterprises to think out technique infrastructures, technology skills, and knowledge, while social perspective propel exploration into inter- and intra-organizational relationships, including leadership, collaboration, and venture.

Confronted with the potential of digital entrepreneurship in the digital era along with the scarce theoretical and empirical

understanding thereof, this special issue of the Information Processing and Management journal contributes to the literature from a comprehensive socio-technical perspective by answering the general issue: How firms develop and reach digital entrepreneurship from a socio-technical perspective in the digital era?

## 2. Digital entrepreneurship: update and create mechanisms of value creation and capture

Value creation and value capture play a big role in entrepreneurship development and are promoted by digital technologies to a large extent. Generally, new digital technologies could enable digitalization at the industry level and ensure value creation and value capture through business model innovation and traditional enterprises' digitalization transformation (Mancuso et al., 2023). For instance, the metaverse, which has long been noticed, has just progressed from concepts to promising entities these years as combinatorial innovations, craft an immersive virtual world (Cheng et al., 2022). Synthesizing business-to-business, and business-to-customer markets in various sectors and disciplines, the metaverse is expected to create trillions of dollars by 2030 (Gregori & Holzmann, 2020). By constructing a "phygital" context where physical and digital worlds' realities both participate and deliver immersion to users, the growing metaverse renders new opportunities regarding the internal process of entrepreneurship operation and customers (Mancuso et al., 2023). These new opportunities thus warrant new business models and subsequently engender new patterns of value creation and capture.

Besides the steering effect of advanced digital technologies in creating mechanisms of value creation and value capture in new industries, the employment of digital technologies in traditional enterprises actualizes enterprise digital transformation for updating and optimizing value creation and value capture. The initial response to the digital changes in the market relates to goal setting for value at the strategic level. Targeting further realization of enterprise digital transformation, resources comprised of digital technology and digital talent, and capabilities that indicate the implementation of strategies respectively ensure the substantial and operational feasibility of value creation and capture. To eventually fulfill value creation and value capture in the digital era, which manifests the success level of enterprise digital transformation as well, enterprises satisfy the oriented customers by outputting the service or products adaptively (Wu et al., 2023).

Apart from benefiting enterprises, the digitalized value creation and value capture yield gratifying spillover effects at the individual, household, and regional levels. First, for individuals, the digitalized patterns of value creation and value capture juxtapose adaptive requirements and favorable outcomes. AI teammates have been widely integrated into the digital work environments and collaborated with humans. By taking over manual labor and programmed work containing little decision-making, AI helps humans improve work efficiency and effectiveness. Within contexts featuring complexity in decision-making, unknown emergencies, social skills, and creative works, humans take the dominant responsibility. This complementarity obliges humans, on the one hand, to invest in their creative skills to remain competitive and, on the other hand, to familiarize themselves with ways of collaborating with AI to keep workflows harmonious and efficient (Zheng et al., 2023). At the family level, digital finance expands the entrepreneurial value creation and captures to reach the micro-organizational level of the household through the inclusiveness of entrepreneurial financial service and lowered entrepreneurship threshold. In the long run, the radiation effects of digitalization on households with lower incomes are evidenced to increase the household income level and further narrow the household income disparity (Hu et al., 2023).

## 3. Technical ways to develop digital entrepreneurship

The digitalized pattern of value creation and value capture of entrepreneurship in the digital era is conducive to individuals, enterprises, and society. The point is how to develop entrepreneurship to create and capture value. Adopting the socio-technical perspective, the papers in this special issue serve as good examples.

From the technical perspective, technology and digital infrastructure emerge as the foundation of developing digital entrepreneurship. Tracing back, Apple, Netflix, Amazon, and Google all benefited from the Internet technology to create new business models. However, in the current digital era, despite the promising value of digital and generative artificial intelligence, the realization and application into industries are far from coming due to the technical limits. Thereby, digital technologies, including augmented and virtual reality, artificial intelligence, and blockchain should be continuously developed and advanced to actualize new business contexts and more potential users (Zhang & Ye, 2023). Additionally, the advancement of technologies should find their ways to adapt to the industry and market. Metaverse updates and synthesizes e-commerce and virtual games with the help of digital technologies and involves varied user interaction models (Cheng et al., 2022). These varied models manifest uneven focus on social-network effects and cross-network effects, thereby needing digital technologies to be modified delicately. Concentrating on the present technologies, enterprises are encouraged to dive into technology utilization. As empirically evidenced, the improved intelligent technology strengthens machines' abilities to interact with humans, providing personalized services and reliable recommendations in decision-making (Ma & Hu, 2023).

Taking the nexus between digital infrastructure in regions with enterprise digital transformation and entrepreneurial orientation into consideration, policymakers are suggested to enhance the construction of regional digital infrastructure through quality and quantity promotion of facilities. Moreover, since the propelling effect of digital infrastructure on enterprise transformation could be moderated by ownership, both policymakers and enterprises should focus on the accessibility of enterprises to the infrastructure. Specifically, policymakers should exert efforts to reduce inequality, while enterprises should assess their status in the region's life cycle for infrastructure utilization (Wu et al., 2023).

Beyond the digital technology itself which creates utilitarian economic benefits, the process, and manners it is utilized and modified matters as well. Specified technology skills relate to entrepreneurial value releasing. Lowering or eliminating technical skill thresholds

enables enterprises to reach more customers. For example, the NFT platform allows non-digital skilled users and experts to purchase, expanding the customer group. However, the embedded skills of users are prone to create and capture higher value. In the same NFT platform, digital experts know metaverse and cryptocurrency possibly invest in higher-value products (Mancuso et al., 2023). Moreover, some scenarios, where humans collaborate with AI to make complex decisions, postulate delicate requirements for humans' skill of technology utilization. In digital finance, human investors overly depend on the information provided by the intelligent environment to behave, exhibiting a catastrophe behavioral model sometimes. Financial institutions are thus recommended to design and implement guidance mechanisms and control strategies to develop investors' skills and shape their behavior when exchanging information with intelligent agents (Ma & Hu, 2023).

## 4. Social ways to develop entrepreneurship

Socio-technical perspective exaggerates human, social, and organizational factors in affecting organizational performance as well as material technical elements. The social considerations impact customers' and employees' behaviors and technical deployment. To develop entrepreneurship in the digital era successfully, the social fabric and the culture of organizations should be carefully considered and updated to cater to the digitalized environments. From the socio-technical perspective, papers in this special issue provide valuable insights.

To satisfy customers or users, the social demands of their interest should be well-identified and met. For example, the hypothesized future prevalence of metaverse is partially accounted for its integration of multiple social sectors, including health, education, entertainment, and tourism. Given that e-commerce users manifest varied behavioral intentions for their characteristics and feelings of social presence (Cheng et al., 2021), personalized information actualized by intelligent technologies thus better satisfies users (Ma & Hu, 2023). Moreover, recognizing users' demands of self-awareness and prosocial behavior in the digital world, virtual identity affirmation, and virtual community building propose opportunities for user participation promotion. Notably, within the process of enterprise digital transformation, business activities should be carefully and thoughtfully converted from offline to online, as part of the social interaction in users' needs cannot be accommodated in the virtual world. Specifically, the business opportunities newly brought by metaverse refer to "phygital" transformation that combines physical and digital worlds to release omnichannel benefits (Mancuso et al., 2023). Acknowledging the social network effect lying the online world which improves the perceived quality of products and platform stickiness, enterprises could utilize social interaction to give impetus to e-commerce services (Zhang & Ye, 2023).

To fluent the operation of enterprises in the digital era, employees and managers are both attached with attention. For employees, processing enormous and rapid information brings about overload and emotional exhaustion (Cheng et al., 2020). This gives way to over-trust and over-reliance of employees on AI teammates and probably engenders human catastrophe behaviors (Ma & Hu, 2023). Psychologically, attaching a reasonable level of trust to AI teammates and treating them as a collaborator yet not completely trustworthy tools holds the potential to diminish unexpected outcomes. That is, employees are requested to participate in the organizational socialization of AI teammates. Within the process, human employees are suggested to transmit their roles. Beyond accepting the recommendations or comments provided by AI teammates, human employees are encouraged to assess and learn from AI's work (Zheng et al., 2023).

For managers or leaders of enterprises, their characteristics decide the success of entrepreneurial development and success. Explicitly, the CEO's decisions determine an Internet firm's development. Managers' cognitive elements, such as emotion, attitude, and belief, diverge the firm's usage of digital technologies. In this special issue, entrepreneurs' Internet-era imprint increases the level of entrepreneurial digitalization. Further, a higher level of the imprint functions as a positive signal to increase the success rate of accessing venture capital from outside financial institutions (Liu et al., 2023). Accordingly, managers are suggested to be inclusive and friendly to new digital technologies and start practicing with the technologies as early as possible for experience accumulation. Managers' influence in developing entrepreneurship in the digital era also unfolds through leadership. Besides the experience, the embedded digital leadership of entrepreneurs matters as well. Digital leadership indicates leaders' capabilities to plan the digitalization process and implement digital strategies. These kinds of capabilities influence employees' performance by striving them to accomplish the set goals. Confronted with the ultra-fast pace of industrial change in the digital era, this capability also reflects the elasticity and resilience of enterprises to tackle unknown challenges (Xia et al., 2023). For instance, since AI is pervading into work environments, AI is pinned with overly strong expectations to replace humans. Indeed, AI could not substitute humans right now but complement humans. AI and human employees exhibit apparent differences in what they are good at. Hence, managers, on the one hand, should utilize AI in the operation to improve efficiency and lower the costs, on the other hand, should carefully and strategically assign tasks to the two streams of employees and bolster AI teammates' socialization. To sum up, cultivating digital leadership bears significance for developing digital entrepreneurship (Xia et al., 2023).

## 5. Conclusions

We summarize the papers of this special issue to deepen the theoretical and practical understanding of digital entrepreneurship. Acknowledging the potential economic and societal benefits of digital entrepreneurship in the current digital era, how to develop digital entrepreneurship is far from clarified and comprehensively framed.

To fill this structural hole in the literature, we first illuminate the digitalized patterns of value creation and value capture in developing digital entrepreneurship, justifying the feasibility and necessity of digital entrepreneurship. Then, based on the socio-technical perspective, we conclude the papers with social and technical ways to reach the success of digital entrepreneurship.

Fundamentally, advancement in digital technology and infrastructure works as a premise, and developing technology skills relates to the level of technology value released. From the social perspective, satisfying and utilizing users' social interaction for further business activities is a reasonable way. Moreover, employees and managers are needed to modify the way they interact with organizations featuring digitalization. This article proposes an integrated framework to develop digital entrepreneurship in the current digital era, providing managerial insights for enterprises.

## Acknowledgment

This work was supported by the National Natural Science Foundation of China (Grant No. 72271236), Metaverse Research Center of Renmin University of China, School of Interdisciplinary Studies of Renmin University of China, and Public Computing Cloud in Renmin University of China.

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