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Barry Robbins

Kennesaw State University, brobbi17@students.kennesaw.edu

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FINTECH TECHNOLOGY INNOVATION SUCCESS

Barry Robbins

Kennesaw State University
brobbi17@students.kennesaw.edu

ABSTRACT

Innovation is vital to firm competitiveness. Increasingly, innovations from fintech startups are impacting their financial services neighbors. As additional capital flows into the fintech sector, leaders make initial and continuing investment decisions on the projects in their innovation portfolio. The literature indicates insufficient research is available to help predict innovation success and how digital options (i.e., digital process reach and richness, and digital knowledge reach and richness) impact successful innovation. This paper theorizes that fintech technology innovation success is positively related to entrepreneurial mindset and mediated by digital options. The R&D laboratory as a system and digital options theories are integrated to provide the theoretical context for this research.

Keywords

Fintech, innovation success, digital options, process, knowledge, reach, richness, entrepreneurial mindset

INTRODUCTION

The financial services industry is undergoing a significant business transformation, dubbed the "Fintech Revolution" (Gomber et al., 2018, p. 221). Fintech is a "new financial industry that applies technology to improve financial activities" (Schueffel, 2016, p. 45). Led by fintech startups, technology innovation, process transformation, market challengers, and other disruptive pressure sources such as corporate restructuring, mergers, and acquisitions are driving industry incumbents to meet new customer and efficacy expectations quickly (Schueffel, 2016). In 2021, Fintech startups secured \$89 Billion in funding, more than double 2020 (Scanner, 2022).

The success of both incumbent and startup companies hinges on their ability to innovate quickly (Overby et al., 2006; Sambamurthy et al., 2003). Innovation enables organizations to gain market share and lose it if they fail "to consistently innovate over time" to their more innovative competition (Edison et al., 2013, p. 1390). With the acceleration of technology, organizations struggle to focus their investments on the innovation that will best meet their corporate goals (Gomber et al., 2018). The organization that can most accurately harness the power of innovation positions themselves to outpace their peers (Sambamurthy et al., 2003).

This study found differing process frameworks (Amabile & Pratt, 2016; Bhuiyan, 2011; Brown & Svenson, 1998; Edison et al., 2013; Hille, 2015; Janssen et al., 2011; Nambisan et al., 1999; Sherif & Menon, 2004), many with untested success drivers, and a need for further research to empirically understand the relationships between those antecedents and innovation success. This study pursues a better understanding of technology innovation its enablement via process and knowledge to enrich these frameworks. This paper raises the research questions: What are key innovation dimensions, and how do they impact fintech success? What are the key antecedents that impact fintech technology innovation?

This paper's theoretical framework, proposing that entrepreneurial mindset and digital options drive innovation, provides a foundation for financial service leaders to understand what influencers drive fintech technology innovation success.

LITERATURE REVIEW

Technology Innovation as a Fintech Investment

As the investment in fintech drastically grows, "the speed at which the financial services industry transformed to help their customers through the pandemic is the speed at which they want to continue operating," requiring inculcation of innovation into an enterprise (Rowe, 2021). Innovation is imperative for organizational success as organizations face the changing market forces driven by technology and leverage technology innovation for organizational agility (Sambamurthy et al., 2003). "Therefore, continuous innovations in products, services, or channels and vigilance to emerging opportunities or countervailing threats are vital for superior performance" (Sambamurthy et al., 2003, p. 241).

Research argues that the competitive industry in which a firm resides moderates a firm's choice between investing in technology for efficiency or innovation. Specifically, the dynamism, munificence, and complexity of the industry, or stated differently, the more volatile, available opportunities, and competitive an environment exists, leads to using IT investments for innovation.

(Xue et al., 2012). Incumbent firms face competing concerns in moving forward with digital innovation, such as addressing innovation existent or requisite capability, focusing on product versus process innovation, collaborating with internal versus external sources of innovation, and governing innovation control versus flexibility. The authors argue that these competing concerns must be balanced for incumbents to embrace innovation successfully (Svahn et al., 2017).

However, more innovation investment is not always a good thing. Research cautions that overinvestment in technology can inhibit innovation. Moderate technology investment strengthens performance, while large investments inhibit performance as a firm attempts to cope with disruptions introduced by those investments (Karhade & Dong, 2020).

Technology Innovation

For this study, we use the definition of innovation as a "successful implementation of creative ideas within an organization" (Amabile & Pratt, 2016, p. 158) and define fintech technology innovation, a subset of innovation, as "an innovation in the application of digital computer and communication technologies" (Carlo et al., 2012) in a fintech environment. Further, technology innovations are distinguished by newness or novelty and categorized as processes, services, and base (Lyytinen & Rose, 2003), and "digital innovation is both a process and an outcome" (Huang et al., 2017).

Technology innovation includes applying IT in novel ways (Nambisan et al., 1999), assimilating and absorbing technology innovation (Sherif & Menon, 2004), diffusion of technology innovation (Wang, 2007), fitting to business environments (Wang, 2007), adopting into an organization (Wang & Ramiller, 2009), applying to new product development (Nambisan, 2013), and embedding into products or services (Tarafdar & Tanriverdi, 2018). Most of these discussions presume the innovation exists rather than created by the technology organization.

The R&D laboratory as a system framework describes the system as an eight-step process (Brown & Svenson, 1998). This seminal work included inputs, processing system, outputs, receiving system, and outcomes, in addition to three feedback loops, in-process measurement, output measurement, and outcome measurement. Interestingly, the authors use the academic adage "publish or perish" analogy to illustrate that drivers may not achieve the desired outcomes. "Of course, the real value of such an evaluation system is not simply the performance data collected. The value is realized when these data are used to shape the R&D program for maximum impact on business results." (Brown & Svenson, 1998, p. 35). Two companion adages in the technology arena including "just because it compiles doesn't mean it will run" and "lines of code don't measure success."

Frameworks for evaluating innovation success define different ways of describing the process. The New Product Development (NPD) process is divided into new product strategy, idea generation, screening, business case development, and testing stages (Bhuiyan, 2011). Janssen et al. (2011) constructed a balanced view across input, process, output, and outcome. Lean Product Development (LPD) (Hille, 2015) focused on a specific process to introduce innovation. Edison et al. (2013) divided the innovation process into research, development, and production use phases, categorizing success by capability, output, and performance. Others split the process into an evaluating-phase, defining-phase, and formalizing-phase (Florén et al., 2018); presented innovation indicators (Dziallas & Blind, 2019); or identified innovation success (Bican & Brem, 2020). These perspectives were less on understanding the antecedents of innovation success than establishing process models, stage gates, or decision points to evaluate its success.

Some research recognizes that innovation combines individual, workgroup, and organization perspectives (Amabile & Pratt, 2016). Individual innovation characteristics are learned from the organization (Nambisan et al., 1999), and members must be creative (Taggar, 2002). Innovative behaviors are reinforced by synergistic extrinsic motivators that enhance an individual's intrinsic motivation, such as rewards, recognition, encouragement, or access to knowledge or new initiatives (Amabile & Pratt, 2016). Antecedents of innovative IT use and innovating with IT are different (Rahrovani & Pinsonneault, 2020), and individual and team creativity is linked to organizational innovation performance (Amabile & Pratt, 2016).

Most researchers included environmental characteristics, such as the availability and quality of knowledge and their relationship to innovation. This includes knowledge sharing of artifacts (Malhotra et al., 2001), availability of knowledge (Nambisan et al., 1999), knowledge centrality to the process of innovation (Nambisan et al., 1999), knowledge as a valuable asset (Wang & Ramiller, 2009), a need for a "deeper and more diverse knowledge base" (Carlo et al., 2012, p. 867), interaction with R&D (Bardhan et al., 2013), and an increasing requirement for multiple domain knowledge (Amabile & Pratt, 2016). Innovation does not just consume knowledge but is also an "intentional process of knowledge creation (Nambisan et al., 1999, p. 368); or the "creation, adoption, use, and codification of novel and heterogeneous knowledge" (Carlo et al., 2012, p. 866).

Innovation requires "a systematic, institutionalized innovation process that is well defined, legitimated, and resourced" (Tarafdar & Tanriverdi, 2018, p. 7), views processes that enhance communication and collaboration as essential (Taggar, 2002), consider "technology for knowledge management is less important than technology that allows knowledgeable people to

collaborate" (Malhotra et al., 2001, p. 247), depends on processes that support knowledge behaviors such as sensing and experimentation (Carlo et al., 2012), and use progress transparency to encourage innovative behavior (Amabile & Pratt, 2016).

As financial services firms continue their transformation, researchers call for them to "embrace disruption" (Gomber et al., 2018, p. 225). Given the questions that Fintech innovations have neither been "transformational nor successful in the long run" (Gomber et al., 2018, p. 227) and the amount of investment into the Fintech sectors (Scanner, 2022), they have added incentive to seek and find those drivers that move innovation forward to success.

THEORETICAL PERSPECTIVE

Structural Model

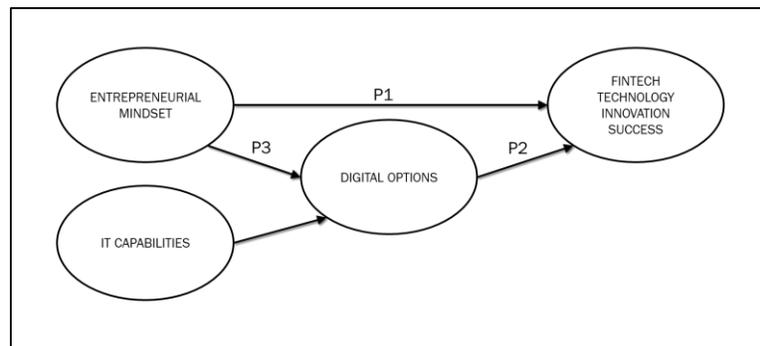


Figure 1: Theoretical Model

Entrepreneurial mindset

Multiple studies sought to understand the relationship between entrepreneurial mindset and organizational culture (Shepherd et al., 2010), self-efficacy (Mauer et al., 2017), empathy (Korte et al., 2018a), and social identity (Korte, 2018b). We use the integrated definition of entrepreneurial mindset: "a cognitive perspective that enables an individual to create value by recognizing and acting on opportunities, making decisions with limited information, and remaining adaptable and resilient in conditions that are often uncertain and complex" (Daspit et al., 2021). One of the five core attributes of an entrepreneurial mindset includes social interaction (Naumann, 2017), reflecting the need for both process and knowledge support.

Digital Options

A firm's capabilities drive firm financial performance but are moderated by competitive actions (Sambamurthy et al., 2003). The authors found that IT capabilities drive competitive actions (number of actions and complexity of action repertoire) but are mediated by digital options, agility, and entrepreneurial alertness. Competitive actions, in turn, drive financial performance. Thus, they view IT as a "digital options generator" (Sambamurthy et al., 2003, p. 237).

Reach and richness (Evans & Wurster, 2000), as applied to technology, are identified as four types of digital options (Sambamurthy et al., 2003). (1) Digitized process reach is the "extent to which a firm deploys common, integrated, and connected IT-enabled processes." (2) Digitized process richness is the "quality of information collected about transactions in the process, transparency of that information to other processes and systems that are linked to it, and the ability to use that information to reengineer the process." (3) Digitized knowledge reach is "comprehensiveness and accessibility of codified knowledge in [a] firm's knowledge base and the interconnected networks and systems for enhancing interactions among individuals for knowledge transfer and sharing." (4) Digitized knowledge richness is the "systems of interactions among organizational members to support sense-making, perspective sharing and development of tacit knowledge" (Sambamurthy et al., 2003, pp. 248-249).

Some authors have categorized IT systems using digital option type (Lee & Lim, 2005) or considered IT resources as an antecedent for developing digital options (Chen et al., 2014). However, creating digital options is costly and not always an appropriate priority. Instead, organizations should be selective in their technology investments and acknowledge that previous failed attempts to create digital options may inhibit future pursuits (Tallon et al., 2019). An organization's market decisions impact the creation of digital options and subsequent IT capabilities (Richardson et al., 2014). Therefore, digital options both facilitate (Richardson et al., 2014) and are facilitated by technology (Chen et al., 2014; Overby et al., 2006) and must be wisely chosen investments (Tallon et al., 2019).

Theoretical Framework

This paper examines the relationship between entrepreneurial mindset (Daspit et al., 2021) and fintech technology innovation success (Bican & Brem, 2020) as mediated by digital options (Sambamurthy et al., 2003).

First, this paper positions technology development units as R&D laboratories that articulate innovation's stages and recursive nature (Brown & Svenson, 1998) to strengthen predictors of fintech technology innovation success.

Second, this paper uses the definition of innovation success suggested by Bican and Brem (2020), created using the R&D laboratory as a system framework, and applies it to a fintech environment context. As a result, this paper focuses on technology development units in fintech organizations as its research context.

Third, this paper leverages entrepreneurial mindset since it most closely aligns with the enterprise context of a fintech organization. Entrepreneurial mindset has been frequently used in the corporate environment (Abun, 2021; Brazeal et al., 2008; Davis et al., 2016; Korte et al., 2018; Kuratko et al., 2020; Naumann, 2017; Shepherd et al., 2010). This study theorizes that a higher entrepreneurial mindset, a higher disposition towards innovation, should have higher fintech technology innovation success.

P1. Entrepreneurial mindset will be positively associated with fintech technology innovation success.

Last, this paper uses digital options theory (Sambamurthy et al., 2003) as a lens to examine the R&D laboratory as a system (Brown & Svenson, 1998).

Digital process reach provides consistency to seek innovative solutions. Digital process richness provides transparency between individuals, leadership, and others to contribute to decision-making. Digital knowledge reach allows access to knowledge across the enterprise and outside its boundaries, while digital knowledge richness supports effective ideation, observation, contribution, and collaboration to share knowledge during development. Inadequate digital processes or knowledge would inhibit the ability to work effectively, reduce visibility to opportunities, constrain progress, and negatively affect fintech technology innovation success. Alternatively, if process reach and richness support recording ideas and accessing others' ideas, it encourages collaborative ideation and innovative elaboration. If knowledge reach and richness increase, then access to both positive and negative data increases, along with work in progress that may inspire different directions. Digital options capture the contextual characteristics that impact an innovation and shape fintech technology innovation success.

Higher digital options such as process reach and richness, and knowledge reach and richness are theorized to yield higher fintech technology innovation success.

P2. Digital options (i.e., process reach, process richness, knowledge reach, and knowledge richness) will be positively associated with fintech technology innovation success.

Digital options mediate the relationship between entrepreneurial mindset and fintech technology innovation success.

P3. Entrepreneurial mindset will be mediated by digital options to positively associate with fintech technology innovation success.

CONCLUSION

The financial services industry is seeking to make effective investments in innovation. An incomplete understanding of what drivers exist has left many firms placing bets in a game where the probabilities of success are unknown. In addition, academia has identified that process and knowledge are fundamental to success. Fintech leaders need tools to help them manage their innovation portfolio.

This paper theorizes that by examining entrepreneurial mindset and digital options, managers in practice can influence fintech technology innovation success. Such influence would allow leaders to shift resources or invest in training to strengthen entrepreneurial mindset or invest in process or knowledge tools to improve the reach and richness. Leaders could assess IT capabilities (or lack thereof) and direct innovation investment to overcome internal constraints. Academia benefits from this research as it provides a framework for predicting innovation success within the fintech context and invites further research on integrating digital options and entrepreneurial mindset to other technology contexts. In addition, future research could use alternate definitions of innovation success (Bican & Brem, 2020), alternate drivers such as innovation mindset (Sidhu et al., 2016) or work orientation (Amabile & Pratt, 2016), different measures of digital options (Sambamurthy et al., 2003), and examine open innovation (Whelan et al., 2014) in applying this theory to differing contexts.

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