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Value Co-creation in Fintech Ecosystem: A Case Study of Australia

Short Paper

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Abstract

The development of the Fintech Ecosystem brings radical socio-economic value by increasing entrepreneurship, innovation, and financial inclusion. Yet, there is a lack of knowledge regarding how value is co-created among the actors in the Fintech Ecosystem. The research objective is to conduct an in-depth case study in the Australian Fintech Ecosystem to explore the processes and mechanisms of value co-creation. Our study develops a framework for understanding value co-creation facilitated through digital affordance infrastructure. The study has several potential theoretical contributions to the literature on Fintech Ecosystem development by providing insights into antecedent conditions, mechanisms, paradoxical tensions, and outcome attributes derived from the framework. For practitioners, our framework could assist regulators and organizations within the ecosystem in gaining a deeper understanding of the processes necessary for continued success. Regulators could adjust the intensity of controls in response to environmental uncertainties and tensions.

Keywords: Fintech Ecosystems, Affordance, Value Co-creation, Digital Infrastructure, case study

Introduction

Fintech, the portmanteau of "financial technology", refers to the startup firms using emerging technologies to improve the delivery and use of financial services (Suryono et al. 2020). These fintech firms with traditional financial institutions, technology service providers, regulators and customers form a Fintech Ecosystem (Lee and Shin 2018). These ecosystem actors compete and collaborate to deliver financial services in new ecosystem business model ranging from payments, wealth management, crowdfunding, lending, capital market to insurance services (Muthukannan et al. 2020). The organizations in financial service industry are increasingly embracing the ecosystem business model (Palmié et al. 2020). In the recent survey of Forbes listed top global financial service firms, over 66% of CEOs said ecosystem were extremely important to their company's future success (EYsurvey 2022). Further, one quarter of the survey

respondents predicted that in the next 3 years 20% of their revenue arise from the Fintech Ecosystem business models.

While the rise of Fintech Ecosystem provides significant socio economic benefits (Lee and Shin 2018), there is a need to ensure the Fintech Ecosystem sustains continuous value creation through innovation (Palmié et al. 2020). The Deloitte-Ecosystems (2021) report reveals that, while over 77% of fintech industry players believe that ecosystems will have significant importance on their future growth, the dominant hurdle hampering collaboration is the operational challenges within these ecosystems. Moreover, the mechanisms of value creation in the Fintech Ecosystem, especially in the mature ecosystem settings has not been the subject of research to date (Autio et al. 2020). Addressing this knowledge gap is crucial, to ensure the ongoing success of the Fintech Ecosystem (Palmié et al. 2020). To address the knowledge gap in the value co-creation in the Fintech Ecosystem, we conducted a case study of Australia, which hosts one of the most successful and vibrant Fintech Ecosystems with over 775 active startups (KPMG-Insights 2022). Australian FinTech Ecosystem is especially appropriate case because not only it is increasingly more mature ecosystems with over 78% in fintech startups posts revenue, but it has established and nurtured innovation in the financial service industry (Fintech-Australia 2022). The collaborative value creation in the Fintech Ecosystem is facilitated by the availability of state-of-art digital infrastructure promoted by local government such as New Payments Platform for real-time payments, and supportive regulatory frameworks (RBA 2022). The unique combination of advanced technologies with supportive regulation making it a revelatory or extreme case (Gerring 2008) for the purpose of our study. Accordingly, the research question we aim to address in our proposed study is: How value is co-created by the actors in the Fintech Ecosystem?. The study seeks to uncover the process of co-creating value by examining how actors and infrastructure contribute to the dynamics of value generation.

Literature Review

Existing Research on Fintech Ecosystems

A Fintech Ecosystem (FE) is a network of Fintech startups, technology organizations, regulatory bodies, traditional financial institutions, investors and financial consumers who collaborate, compete in a symbiotic relationship (Lee and Shin 2018) and contribute to innovation in the financial industry by deploying technology-enabled financial products and services (Hendershott et al. 2021). The formation of an ecosystem brings several benefits to all the players in the system, including increased information exchanges, improved efficiency, enhanced market offering through collaboration (Iansiti 2004; Pierce 2009). A healthy development of a Fintech Ecosystem will not only improve a mutually beneficial collaboration among the players but also improves financial services to the wider economy (Blakstad and Allen 2018).

The past literature on Fintech Ecosystem Development (FED) can be categorized into three main types (refer Table 1). The first category is *Antecedents of Fintech* which deals with the drivers of the FED. The second category is *Process of Fintech Ecosystem Development* which discusses the phases and business models adopted in dealing with the challenges and issues encountered. The third category *Implications of Fintech* describes the outcome of FED such as financial inclusion, legal implications, regulatory mechanisms, technical standards which evolve in the environment.

Source		Key Arguments and prescriptions	
<i>Antecedents of Fintech Ecosystem</i>			
Berente et al. (2021)		AI is increasingly applied in financial services to make autonomous decisions (e.g., Robo advisor that auto allocates investments suiting trigger conditions). The application of AI brings a paradigm shift involving autonomy, learning, and lack of transparency	
Sun et al. (2022)		Regulators in several countries work alongside Fintech organisations in developing novel financial services by providing sandbox infrastructure and adopting conducive policy frameworks to suit the local culture.	
Hendershott et al. (2021)		Blockchain technologies have potential to revolutionise the digital economy by improving transaction quality and efficiency. The new innovations in this space require a dramatic change in the governance in the financial services industry.	
<i>Process of Fintech Ecosystem development</i>			
Muthukannan et al. (2021)		New forms of collaboration emerge in the provision of financial services. The mechanisms of platformisation, decentralisation, localisation and democratisation positively influence the scalability in the delivery of financial services.	
Gozman et al. (2018)		Fintech innovations can be grouped into three distinct constructs: core services, business infrastructures, and underlying component technologies. Fintechs create value by competitive and cooperative mechanisms of disintermediation, an extension of access, financialisation, hybridisation, and personalisation.	
Lee and Shin (2018)		Six distinct business model are identified in use by Fintech businesses - payments, wealth management, crowd funding, lending, capital market & insurance. The value proposition, operating mechanism differs based on their business model adopted by the business.	
<i>Implications of Fintech Ecosystem formation</i>			
Elia et al. (2022)		Technology is driving the financial service industry at a very rapid pace that the regulatory bodies and business operators struggle to keep up with. Regulators in the Fintech sector are not able to anticipate and strategize new innovations and usually have to catch up.	
Milana and Ashta (2021)		AI tools are increasingly applied in financial markets for complex algorithmic trading, and robo-advisory functions. Often model misspecifications lead to substantial financial losses or unexplained results that need cross verifications.	
Blakstad and Allen (2018)		A growing number of financial services have been emerging outside the traditional financial institutions, advances the financial inclusion of unserved and underserved consumers	
Arner (2017)		Argue that a new regulatory framework formed at the nexus of data, digital identity and regulation is essential to capture the transformative nature of financial technology.	
Table 1: Selected past works on Fintech Ecosystem			

Based on the review of the existing literature, it is found that previous research did not provide adequate understanding on how the value is co-created in the Fintech Ecosystem. Our knowledge of the Fintech Ecosystem Value co-creation is limited due to at least the two gaps in the existing literature. First, the underlying mechanism of how the affordance enable the potential for any kind of new function that is perceived as valuable by someone in the ecosystem is not adequately explored (Autio et al. 2020). Second, our knowledge is limited on the tensions the actors in the ecosystem navigate in the dynamics of value co-creation (Wareham et al. 2014). More precisely, the existing literature lacks knowledge on how the fintech actors can navigate through the paradoxical tensions to create value. In our quest to find answers to our research question, we began to review earlier literature on ecosystem value co-creation

Affordance Digital Infrastructure for Ecosystem Value Co-creation

The existing IS literature predominantly considers ecosystem value creation as an outcome of an affordance digital infrastructure that generates unprompted, unpredictable innovative contributions by large uncoordinated audience (Autio et al. 2020). The Digital Infrastructure represents the sociotechnical systems that brings humans with technology, with an installed base of diverse information technology capabilities, operations, and design communities (Hanseth and Lyytinen 2010). The digital infrastructure can be either provided by the one or more fintech firms or by the regulated industry bodies. Example of the digital infrastructure include a mobile app or e-commerce portal through which the users consume the financial service, or a centralized clearing and settlements platform that enables real-time payments between participating financials service organization. The value co-creation in the ecosystem is ultimately enabled by affordance digital infrastructure, which enables the distributed recombination of innovation (Nambisan et al. 2017). The application of emerging technologies in novel ways increasingly making the digital infrastructure more affordable (Autio et al. 2020) for the actors in the Fintech Ecosystem to co-create value.

Our analysis of past literature in value co-creation in digital affordance reveals varied properties in the ecosystem that drives the value co-creation. Daniel and Jonas (2023) suggests the modular architecture property driven by open banking regulations enable the new ways of collaborations of actors in the fintech ecosystem. Whereas Yoo et al. (2012) reveals the data homogeneity property in the ecosystem enables seamless data access across devices facilitating value co-creation. Further, Tilson et al. (2010) suggest another property, re-programmability which enables the actors in the ecosystem to loosely couple in new combinations to explore value co-creation. Collectively, the existing research literature in this category has provided insights for our inquiry on the value co-creation through the emergence of affordance digital infrastructure.

Research Method

The case study research method was chosen for our research study, that aims to explore the processes and underlying value co-creation in the Fintech Ecosystem. The case study research method is highly suitable for such exploratory research (Siggelkow 2007). This is especially relevant for our case study as value co-creation within Fintech Ecosystem is an emerging phenomenon with little insights in the existing literature (Eisenhardt 1989). The case research helps us to gain a deeper understanding of an emerging phenomenon (Flyvbjerg 2013), where the process needs to be analyzed with their context (Pentland 1999; Rynes and Gephart 2004). Moreover, the value co-creation within Fintech Ecosystem is a multifaceted phenomenon involving a variety of interactions between social, technological, and business factors. The case study research method enables the rigor in studying the inherently complex phenomenon (Dubé and Pare 2003). Further, the case study is a preferred research strategy to address “how” research questions (Walsham 1995). Our research intends to investigate “how” the value is co-created through a shared understanding of relevant stakeholders, which can be accomplished through a case study research (Klein and Myers 1999).

We narrowed down two selection criteria to identify the Fintech Ecosystem case based on our research objective. First, the case must be a mature Fintech Ecosystem with multiple players. Second, the ecosystem must be mature and successful with large number of new fintech startups. The case evaluation period is spanning from the global financial crisis in 2008 to the year 2021, inclusive of the Covid pandemic. The Australia Fintech Ecosystem is mature, vibrant and it fits well in both the aspects of our selection criteria. It hosts diverse players ranging from government, academia, corporates, investors and entrepreneurs. The Australia Fintech Ecosystem is particularly appropriate for our case study because not only are there more than 775 firms operates across multiple sectors that are providing innovative services in the form of – crowd funding, microfinancing and mobile payments (KPMG-Insights 2022), but also the Fintech Ecosystem is mature with mature regulatory framework (RBA 2022) making the Australia Fintech Ecosystem a revelatory case (Sarker et al. 2013) for the purpose of our study.

Data Collection and Analysis

The case access was granted in April 2021 and has been ongoing over the last two years. The data collection for the research study was designed in to two distinct phases – preparatory phase and fieldwork phase. In the preparatory phase a variety of secondary data from website, Fintech conference, newspapers were collected and analyzed to get an overview of FED and the role of each stakeholder. The information gathered

in the preparatory phase guided our progression to fieldwork phase (Ritchie 2013). The focus of fieldwork phase is to collect data pertaining to our research question by gaining an in-depth understanding of the value co-creation in the Fintech Ecosystem (Pan and Tan 2011). The interviews were the primary source of data collection (Myers and Newman 2007) and a total of 24 informants were identified by snowball sampling (Biernacki and Waldorf 1981; Marshall 1996). The informants range from managers and top leaders from a certain organization, which spans across fintech start-ups, tech service providers, incumbent financial institutions, Fintech incubators academia, and regulators (refer to Table 2).

Fintech Ecosystem actors	Informant's titles	Topics covered
Fintech startups	Fintech start-up founder, Founding partners, Head of IT	Collaboration dynamics between fintech and banks, Challenges of establishing fintech firm.
Technology firms	Director, Head of innovations, Service director, Application architects, CIO	Nurturing innovations in large scale service organizations,
Traditional FIs	Program manager, Vice president, Portfolio manager, Product manager	Pace of innovation, regulatory intricacies, banks and fintech dynamics, consumer confidence factors
Fintech mentors, scaleups	Director – startups & scaleups, Fintech regulation advisory	Fintech growth challenges, skill gaps, establishing connections, regulatory implications
Academia	Head of training – Information and communication technology	Gaps in the tech skills, Regulatory support to nurture innovation and building emerging skills, evolution of training delivery
Regulators	Chief Innovation manager, Senior manager	Role of self-regulatory body in nurturing innovation, challenges in managing the rapidly evolving technologies in payment services

Table 2: Summary of Interviews

The average time of interviews was about an hour and was conducted using a semi-structured interview guide (Myers and Newman 2007). The guide consists of a standard set of questions on value co-creation dynamics in the Fintech Ecosystem with social and economic implications. The interview guide was planned with few questions targeted to specific informants based on their direct involvement in events, activities and decisions (Pan and Tan 2011). All the interviews were conducted in English and were digitally recorded and subsequently transcribed for data analysis. To ensure the data accuracy and completeness, the transcribed data was validated diligently independently by each researcher from the team. The research team held throughout the development of the study to ensure consistent interpretation data (Klein and Myers 1999). We started analyzing the data while the data collection is still ongoing to take advantage of case research flexibility (Eishenhardt 1989)

Since Fintech relies on a networked structure that necessitates the involvement of a wide range of entities (Gozman et al. 2018), it is essential to employ an ecosystem as unit of analysis. We have iteratively performed the data collection and data analysis. The evidence that emerge from our initial data analysis of Fintech Ecosystem lead us to arrive at themes and sub-themes, which guided our subsequent data collection phase (Glaser and Strauss 1968). These dimensions and themes served as a theoretical lens for our data collection. The collected data were then coded using a combination of open, axial and selective coding (Gioia et al. 2013). The open coding was used to segregate the data and label them with first order concepts of value co-creation, while the axial coding was used to find new, and validate existing, second-order themes (e.g. the mechanisms and the paradoxical tensions in the Fintech Ecosystem). The selective coding was then used to derive aggregate dimensions. We identified the dimension that encompasses all of the data, then reviewed the data again to selectively code any data that is relevant to the identified dimension. The collected research data were organized using visual mapping and narrative strategies (Langley 1999). The visual mapping lays a roadmap of critical milestones in the FED from early establishment to date, which is augmented by narrative strategy with a summarized description of activities, decisions and factors influenced the value co-creation in the ecosystem. We verified the accuracy of visual map and narratives by cross-checking with a few of our informants to ensure our interpretation is on the right track. The collected data is being analyzed while more data collection is still ongoing to take advantage of the case study research methodology (Eishenhardt 1989). We aim to iterate between data collection, data analysis and theory development until the theoretical saturation is achieved (Glaser and Strauss 1968).

Preliminary Findings

While our study is still ongoing, our preliminary findings suggest that the emergence of an affordance digital infrastructure enables the Fintech Ecosystem actors to co-create the value (refer Figure 1). The digital infrastructure is the backbone of modern financial services, acting as the conduit that connects technology, financial institutions, and consumers. Its multifaceted nature and the various entities involved in its development and operation underscore its critical role in shaping the contemporary fintech landscape (Ng et al. 2023). The provision of digital infrastructure can take various forms, either through the efforts of one or more fintech companies or via the oversight and regulation of industry bodies. Whether driven by fintech companies or regulated by industry bodies, the provision of digital infrastructure is crucial for the continued evolution and efficiency of financial services in the digital age. These digital infrastructures are foundational for the financial service firms and the broader the industry to function Nambisan et al. (2017). The value in the digital infrastructure represents the ability to perform a new function or perform existing functions more efficiently. The value is co-created by the interplay of the Fintech Ecosystem actors in the digital infrastructure. The following subsections describe the predecessor conditions, the mechanism of formation and outcome of the affordance digital infrastructure.

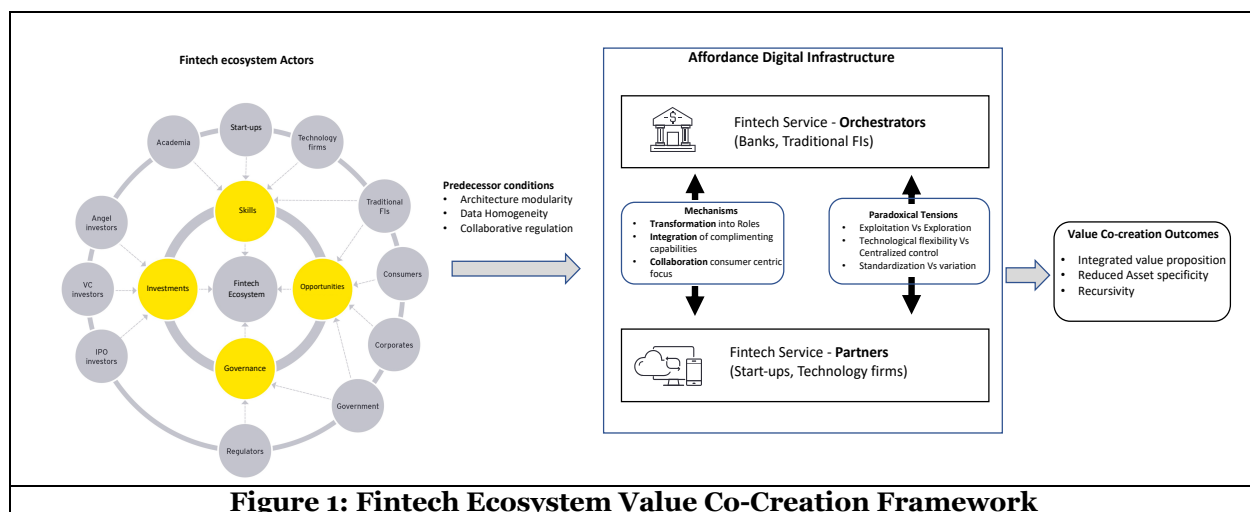


Figure 1: Fintech Ecosystem Value Co-Creation Framework

Predecessor conditions for the formation affordance Digital Infrastructure

Our findings suggest that the value co-creation in Fintech Ecosystem is facilitated by the emergence of the affordance digital infrastructure. The organizations involved with the delivery of the fintech service to the end customer, seamlessly collaborate between them though the digital infrastructure. Evidence from the case reveal three antecedents for the digital infrastructure creation namely, Architectural modularity, Data homogeneity and Collaborative regulation. First, the architectural modularity supports the Fintech Ecosystem constituents to explore and collaborate new combinations of across different layers of the digital infrastructure. The service director from software-as-a-service (SAAS) Technology firm described how the integration got easier through the affordance digital infrastructure: *“where we are now [in Technological advancement]. We are kind of evolved beyond integration limitations, right? Because in the SAAS company, end of the day. What matters is your APIs. You really do not care about the underlying technology. And it is all fully in the cloud, right?. So to integrate with third-parties is seamless..”*. Second, the data homogeneity enables easy access of the digitized information from any device. The data harnessed by the applications in the devices apply it for a wide range of purposes and innovate in unexpected combinations. Third, the collaborative regulation facilitates the effective use of the digital infrastructure through collaboration between competing players. The innovation manager from self-regulatory body describes as: *“The financial industry self-regulatory bodies essentially plays a role, that can bring competing institutions to work together in a way that doesn't stifle competition. make sure that there is collaboration where it's needed while supporting competition and Innovation.”*

Mechanism / processes involved in the Affordance Digital Infrastructure

The empirical evidence from the case suggest that the value co-created in the Fintech Ecosystem through three mechanisms grounded on the affordance digital infrastructure. First, the **Transformation into roles** by the fintech firms involved in the delivery of the financial service. The firms integrate and collaborate in new ways to perform a new function or perform an existing function more efficiently. We observe from the data that the Fintech Ecosystem actors involved in the delivery of financial service align to Orchestrator or Partner roles. The organization that delivers the financial service to the end user performs the role of orchestrating the functions required to deliver the service. For instance, in the delivery of personal loans to the end user, the organization that interact with the customer performs the role of orchestrator delivering the financial service through mobile or Web interfaces. In order to deliver the financial service multiple functions need to happen in the backend such as – performing credit risk check on the customer, ascertaining the credit limit, securely encrypting the payment transaction, providing the front-end user experience to consumers and so on. The orchestrator firm might choose to perform a few of these function on their own, while collaborate behind the scene with various partner firms to seamlessly integrate and deliver the financial service. The Head of Innovations, Banking and Financial service solutions, Technology service firm described the role of integration as *“We [Technology firms] position ourselves as integration partners between traditional banks and fintech startups. The end user avail the service from the banks while behind the scene fintechs and technology firms provide specialized services.”*

Second, **Integration of Complimenting Capabilities** happens in the Fintech Ecosystem leading to the value co-creation. The case data suggests that the firms consciously invest and build the capabilities to integrate with the complementing partners to experiment and collaborate in new ways to deliver the financial service. While the traditional financial institutions are constrained with the legacy systems, they invest to establish a digital infrastructure where they can collaborate with an ecosystem of partners. The individual organizations recognize that they do not need to do all the functions on their own, and building the capability to identify the complimenting partners and collaborate through an ecosystem. The Program Manager, Delivery of SAAS Fintech Solutions described how the capability is nurtured in the Fintech Ecosystem: *“I would say, we are kind of crossed that hurdle [technology layer restrictions], since our products are fully cloud-based and browser-based and Mobility based. It is still not uncommon that we still hear [from traditional banks] that we are a mainframe shop or a Linux shop right. That will create a friction, that is why banks are all kind of investing in the Capability to build the API ecosystem rather than trying to change the underlying hardware shop called linux or mainframe whatever.”-*

Third, **Collaboration customer centric focus** drives the value co-creation in the Fintech Ecosystem. In the endeavor to capitalize the emerging customer demand and market opportunities, the fintech firms collaborate and make new combinations. The technology Architect, Banking and Payments, leading Banking Platform as a service provider elaborated it as *“What is more important is we [Technology firms] to ensure that all the service-level-agreements such as application traffic thresholds, response time are established and managed between the provider and consumer of the services such that the end consumer can avail a seamless service.”*

Our preliminary data analysis reveals presence of paradoxical tensions in the ecosystem with in the fintech ecosystem actors. The tensions unfold in the form of exploitation vs exploration, providing technical flexibility vs gaining a centralized control, and standardization vs variation in the fintech products and services. We endeavor to further develop the implication of the tensions with the roles by performing in-depth analysis and getting additional data from the Fintech Ecosystem. Further, the value co-creation outcome is observed to have three distinct attributes. First, the **Integrated value proposition**, which represents the alignment of fintech service orchestrator and partners with their best in-class complementing product and services to generate the integrated solution to consumers. Second, **Reduced asset specificity**, this attribute of the outcome represents that the solutions generated leveraging the digital infrastructure is reusable to multiple use cases of the consumer. Third, **Recursivity** which represents the re-combinative innovation in the fintech ecosystem.

Discussion and Conclusion

While our study is still ongoing, our work to date already indicates several potential theoretical implications. First, our framework reveals three mechanisms through which the value co-creation unfolds in the digital infrastructure. Second, we have explored the properties that form the antecedent conditions for the affordance digital infrastructure. Our study validates the findings from previous research on the influence

of properties architecture modularity (Daniel and Jonas 2023) and data homogeneity (Yoo et al. 2012). Additionally, identified collaborative regulation is identified as an additional property that drives the affordance digital infrastructure formation. Third, we could identify the presence of tensions in the ecosystem between the actors in the dynamics of value co-creation. These tensions act a boundary condition and provide important tools for regulators and governmental decision makers in the ecosystem. In terms of practical implications, our framework could inform the fintech actors who are actively devising strategies to tap into the opportunities and challenges offered by playing the roles of Orchestrator and Partners in delivering the financial service. The banks and legacy financial institutions can play to their strengths with the understanding of the tensions in the ecosystem. Our future research will be focused on extending and verifying framework with the collection and analysis of additional data from Australian Fintech Ecosystem. Based on more in-depth analysis and evaluation of boundary conditions, we aim to refine the framework further so that a more holistic understanding of Fintech Ecosystem value co-creation, as well as its strategic and organizational implications, can emerge.

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