

How do FinTech Start-ups Develop Capabilities? Towards a FinTech Capability Model

Completed Research Paper

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Abstract

This research investigates how FinTech start-ups, which refer to organisations that offer novel “financial services or products that are delivered via technologies”, develop capabilities for innovation, survival and scaling. The study draws from the dynamic capabilities theory to investigate how Fintech start-ups not only spur innovations in products, business models and processes but also ensure their sustenance both in the Fintech and financial industry. Empirically, the study uses qualitative case studies with 13 Fintech firms in Australia. The findings identified six clusters of FinTech firms’ capabilities that are associated with four broad micro-foundations. Based on these findings, the study contributes a model that illustrates the FinTech capability development process.

Keywords: *FinTech, Capabilities Development, Dynamic Capabilities, FinTech Model*

Introduction

There is conflicting evidence on the origin of the term “FinTech”, with one of the earliest use dating back to the 1970s (Bettinger 1972). Bettinger (1972) referred to “FinTech” as a series of models to analyse and solve problems that were encountered by a bank through a combination of technology and banking expertise. In their paper on the evolution of FinTech, Arner et al. (2015) described the historical development of FinTech as an ongoing process of financial service and technology evolving together. Schueffel (2017) suggest that Bettinger’s article and the bank project may have coincidentally derived the term “FinTech”.

Recently though, FinTech refers to firms (typically start-ups) that take advantage of advancements in regulations and technologies (Gimpel et al. 2017) to enter into the financial industry to disrupt, improve or enhance service types and delivery (Gimpel et al. 2017) by offering novel “financial services or products that are delivered via technologies” (Lee and Teo 2015, p. 2). Harnessing the use of information technology such as the internet, mobile and software applications to transform traditional financial service practices is a key characteristic of FinTech firms (Du 2017; Puschmann 2017). FinTech firms have been growing steadily. For instance, KPMG (2017) reported that the global venture investment volume in FinTech amounted to about US\$ 13.6 billion as of 2016 and expected to

continue rising. Gozman et al. (2018)'s cluster analysis of a group of 402 FinTech start-ups revealed a projected total investment from various sources of about US\$ 250 million within their first year.

As a result, there have been calls from leading information systems (IS) journals (Alt et al. 2016; Gomber et al. 2015; Hendershott et al. 2017) for more knowledge of how FinTechs develop the ability to utilise resources in order to design, develop, provide and sustain products and businesses while transforming the way financial services are delivered (Stoekli et al. (2018)). This study particularly takes note of Gimpel et al. (2017) call for research on how FinTech firms are configuring resources and capabilities to achieve innovative outcomes. We aim to address the question of how FinTech start-ups develop capabilities to innovate, sustain and scale.

This question is important due to three reasons. First, some literature focus on describing the activities of FinTechs and developing taxonomies (e.g., Eickhoff et al. 2017; Gimpel et al. 2017), but these studies do not examine how FinTechs develop their products and business models. Second, the process of FinTech capability development remains largely under-researched with most scholars (e.g., Gozman et al. 2018; Kazan et al. 2018; Stoekli et al. 2018) focusing on the final technology platforms and services that FinTechs are offering to the market. There is a need for insights on the micro-foundations that enable FinTech firms to enter into and remain viable in the highly competitive financial industry when considering the resource dependency of developing capabilities and the limited resource endowment of start-up firms. Third, despite the potential of FinTech in highlighting firms evolutionary process of developing their products and businesses (Leong et al. 2017), few studies have explored FinTechs in terms of dynamic capabilities. A recent study on digital platform demonstrates the utility of the dynamic capabilities perspective to explore firms with access to strategic linkages (Kazan et al. 2018). Other IS literature has also employed the use of dynamic capabilities to highlight the role of capabilities in overcoming industry changes (Karimi and Walter 2015).

In this study, we aim to contribute to the emerging FinTech body of knowledge by examining FinTech capabilities drawing from the dynamic capabilities theoretical position as it offers insights to investigate the heterogeneity of firms in managing resources in changing industry such as that of the financial services (Teece 2018a; Teece 2018b). In particular, the study contributes to the existing theorisation of FinTechs as disruptors of the financial services industry and as developers of alternative solutions by considering their capabilities to enter, survive and thrive in the highly competitive financial market.

The paper is organised as follows: We first present a review of studies on FinTech and dynamic capabilities. We then present a theoretical framing of FinTech capabilities followed by how FinTechs can develop dynamic capabilities. The method describes the case selection, data collection and analysis procedures. Finally, we present our discussions and conclusions.

Literature Review

FinTech is an emerging phenomenon that is associated with innovation where firms develop new products, business models and processes (Puschmann 2017). FinTech firms are contributing to incremental and disruptive innovations (Puschmann 2017). Incremental innovation refers to the degree of innovation that leads to the optimisation of the status quo of financial service (Puschmann 2017). For instance, the effective use of technology and other resources to improve the quality, time and cost of delivering financial service. Disruptive innovations usually feature menial performance at an early stage but eventually leads to profound changes in the financial service value chain (Puschmann 2017). For instance, the use of emerging technologies like decentralised distributed ledgers (e.g. Blockchain) or Peer to Peer systems have the potential to radically change the financial industry status quo. The implication is that FinTechs would require abilities to design, develop and sustain their position in the financial industry (Gozman et al. 2018).

FinTech literature indicates that resources in the form of information technology (hardware, software) and business resources (personnel, money, information, and relationships) would be required in the process of developing capabilities (Du 2017; Kazan et al. 2018). In fact, Du (2017) cites that the fusion of various forms of resources into IT-enabled resources is what FinTech firms use to transform

the financial industry. In other words, IT resources cannot facilitate change alone but require to be orchestrated with other resources such as workers and partnership (Kazan et al. 2018), strategy development (Leong et al. 2017), business models (Gozman et al. 2018; Stoeckli et al. 2018) and niche technology models (Du et al. 2018) as customer expectations and knowledge basis change (Gomber et al. 2018; Jung et al. 2017).

Theorising FinTech Capabilities

FinTech start-ups are entrepreneurial in nature (Haddad and Hornuf 2018; Mackenzie 2015). In fact, Mackenzie (2015) referred to FinTech start-ups as technology-focused entrepreneurs in the financial industry. In other words, FinTech start-ups are entrepreneurial firms that identify significant financial industry problems and explore new ways to offer digital innovations to change service offerings. Instances of entrepreneurial characteristics of FinTech start-ups is demonstrated in the case study by Leong et al. (2017) where the authors examined a firm that set out to identify new markets and create opportunities that can be developed as part of its business and products.

FinTech start-ups are also nimble and highly adaptive as they continually modify their core offering and value proposition to accommodate new purposes. Riemer et al. (2017) suggest that most FinTech start-ups can quickly adapt their offerings to meet the emerging needs of customers. Leong et al. (2017) narrate the case of a FinTech start-up that identified potential challenges and capitalised on opportunities.

The entrepreneurial and adaptive nature of FinTechs implies that these firms continually sense industry, market and technological opportunities and respond by pulling-in new and mobilising existing resources to renew their products and business models (Kazan et al. 2018). Therefore, this study employs the dynamic capabilities framework (Teece et al. 1997; Teece 2018a) as a theoretical lens to answer the research question. Although the study acknowledges the distinction between dynamic and static entrepreneurship in ensuring innovation (Gianesini et al. 2018), our understanding of FinTechs as firms with a propensity to develop new ideas, informs the theorisation that FinTech capabilities involve an evolution of organisations resource-base.

Teece (2007; 2018a) articulated the nature of dynamic capabilities into three clusters of activities: sensing, seizing and transforming. Although these clusters offer a broad nature of capabilities that can be developed by firms, some scholars such as Pavlou and El Sawy (2011) have further unpacked activities that are associated with dynamic capabilities. These include activities related to exploring, discovering and interpreting the potentials of existing ideas and (Pavlou and El Sawy 2006) new opportunities (Teece 2007; Teece 2016); planning, developing and commercializing opportunities (Teece 2012; Yeow et al. 2018); and major (re)calibration of business model, products and structures (Foss and Saebi 2018; Teece 2018a).

Other researchers further elaborate on the micro-foundations for developing sensing, seizing and transforming capabilities (Eisenhardt and Martin 2000; Helfat and Peteraf 2003; Pavlou and El Sawy 2011; Teece 2014a). These include leveraging existing or historical resources and competencies (Helfat and Peteraf 2003); strategising for market-entry, product and business development and expansion through prescient diagnosis, guiding policies and coherent actions (Teece 2014b); mobilisation of tangible (e.g. technology, financial, skills) and less-tangible (e.g. information, brand, designs and relationships) resources through building or buying (Teece 2014a) and re(configuring) new resources into operational competencies (Pavlou and El Sawy 2011) or formation of new competencies (Helfat and Peteraf 2003) through integration, combination and alignment (Eisenhardt and Martin 2000).

The implications of the dynamic capabilities' literature as summarised in table 1 is a sensitising framework to guide the interview, data analysis and interpretation.

Table 1: Theoretical Framing for Exploring Start-up Firms Capability for FinTech

Dynamic capabilities dimension	Description	Seminal references	Implications for studying FinTech firms' capabilities
Nature of dynamic capabilities	Clusters of observable sensing, seizing and transforming capabilities	(Teece 2014a; Teece 2018a)	Informs the exploration and identification of start-up firms' ability to discover significant financial industry and customer problems and technological opportunities; innovate and commercialise new digital finance business and platform models; sustain their market position and scale their offering and value proposition to remain viable in the industry.
Actions of dynamic capabilities	The micro-foundations for developing sensing, seizing and transforming capabilities	(Helfat and Peteraf 2003; Teece 2007)	Informs the understanding that start-ups firms' can potentially leverage on existing or historical resources; strategise their market entry, product, business development, and expansion; mobilise tangible and intangible resources and configure new competencies or reformat existing operational competencies.

Method

This study adopted a case study for three reasons. First, this study sought to inquire how FinTech firms develop capabilities- a question which is appropriate for case study research (Walsham 1995). The focus is to determine in-depth meaning and understanding by interpretation of data collected from various FinTech actors (Yin 2003). Second, a case study is suitable for new research areas, such as FinTech (Alt et al. 2018; Hendershott et al. 2017), where fresh perspectives are needed (Eisenhardt 1989). Third, a case study is useful to provide a robust and compelling understanding of the development of capabilities from diverse points of views amongst FinTech founders and management.

Case Setting

The case setting is the Australian FinTech industry selected for two main reasons. Firstly, Australia has a vibrant financial service industry, where the government supports competition between traditional and new entrants to provide alternative services for customers (Australian_Government 2016). Secondly, the financial service industry in Australia contributes over 9% to the country's economy making FinTechs an important aspect of the industry (Austrade 2017). Although the research is not asserting that Australia is the only country in the world for favourable conditions for researching FinTech, the country possesses the scale and diversity, with a fast-changing landscape that make it suitable for FinTech research (Pollari and Mabbott 2017). The FinTech landscape in Australia comprises of both locally and internationally founded firms. Some of the locally formed Australian FinTechs are known to be strong innovators and catalyst for changes in the global FinTech business landscape (Heap and Pollari 2017). For instance, some of them have featured in reports that suggest that they are amongst the leading FinTechs that are shaping the global financial industry (Heap and Pollari 2017; Heap and Pollari 2018).

The study was based on 13 locally founded FinTech firms offering alternative financial services (see Table 2). All firms in the sample are similar in size and age range; that is, they have less than 250 employees and have not been in operation for more than five years. Some of the firms in the study are at their foundational stage where the owner-manager is solely responsible for developing business and

platforms. Some owner-managers or management have prior experience working in the financial or technology industries while others have been able to access financial resources such as venture capital funding from external sources. This implies that FinTech cases are endowed differently regarding resources. Nevertheless, these firms share similar experiences regarding the historical lifecycle of developing capabilities. Collectively, the 13 firms form part of a single case study of FinTechs.

Data Collection

Before conducting the data collection, the interview questions were developed based on the initial review of FinTech literature and the theorisation of FinTech capabilities that are earlier highlighted in table 1. Interview questions were framed around the evolution of FinTechs in design, develop, provide and sustain products and businesses. For example, the researchers probed for the understanding of designs by asking questions relating to the activities that led to firms setting out on the FinTech journey, how they identified, select, or prioritised ideas and individuals that were involved in the process. The aforementioned example formed part of the data collection protocol that supported the collection of data using semi-structured interviews. The study involved interviews with founders and owner-managers of FinTechs. Excepting one case, only one interview per company was conducted because the FinTech firms are largely start-ups where the views of the founders and owner-managers are crucial in most of the phases in their organisation's capabilities development. This approach is in line with the recommendation by Creswell and Plano Clark (2007) who suggest the need to use a sampling method that will enable the selection of participants that can provide reliable data. A total of 14 interviews (see Table 2) were conducted each lasting for between 30 minutes and an hour. Upon completion, the recorded interviews were transcribed resulting in a total of 145 pages.

Table 2: List of Participants.

FinTech pseudonym	Year founded	Financial Service	Participant pseudonym
S1	2015	Health Payment	S1A- Founder
S2	2015	Lending	S2A- Founder
S3	2015	Payment	S3A- Head of sales and partnership
S4	2014	Payment	S4A- Founder
S5	2016	Investment and trading	S5A- Founder
S6	2014	Lending	S6A- Chief Digital Officer
			S6B- Founder
S7	2015	Insurance	S7A- Founder
S8	2017	Investment decisions	S8A- Founder
S9	2014	Investment	S9A- Founder
S10	2015	Foreign currency transfer	S10A- Founder
S11	2015	Insurance	S11A- Founder
S12	2017	Middleware financial services	S12A- Chief Product Officer
S13	2013	Payment	S13A- Founder
Subtotal: 13			Subtotal: 14

Data Analysis

The study adopted the thematic analysis technique and was guided by using Braun and Clarke (2006)'s six-phase thematic analysis process. The technique was adopted because the thematic analysis is known for its flexibility of the researcher's interest and requires a systematic protocol to ensure consistency and rigour (Guest et al. 2011).

The first phase we adopted to conduct the thematic analysis was to familiarise ourselves with the data by reading through the interview transcripts. Afterwards, we generated initial codes by focusing on each line and paragraph of the transcript. A total of 42 unique codes were generated from the 14 interviews. For instance, participants indication of learning about new technology applicability or new business ideas was identified as unique codes for FinTech entrepreneurial discovery. In the next step, we searched and merged codes to form subthemes. The process of collating codes into potential sub-themes also required a constant review of literature to refine our theoretical and analytic interest. For instance, earlier informing literature on dynamic capabilities suggest that firms explore, discover and interpret potential opportunities. Therefore the above unique codes were collated into the sub-theme of FinTech entrepreneurial alertness following the work of Sambamurthy et al. (2003).

Lastly, drawing from the literature summary in tables 1 and 2, we defined two main themes – the nature and actions of FinTech capabilities. The nature of FinTech capabilities encompasses six sub-themes. They include FinTech entrepreneurial alertness, Discovery of viable financial service idea, platform development capabilities, business development capabilities, FinTech product commercialisation and FinTech expansion. The actions reflect four sub-themes- leverage, strategise, mobilise and configure. Table 3 below further highlights examples of the thematic analysis protocol from the quote, unique codes, sub-theme and themes.

Table 3: Examples of Coding to FinTech Capability Development

Theme	Sub-theme	Code	Interview Quote
Nature	Discovery of viable financial service idea	Discover technology applicability	<i>"From the technology side, obviously I was never really a technical person. For me its everyday learning and making mistakes and improving in what and how it is done" S10A.</i>
		Discover significant financial service problem	<i>"Yea...I mean we were just looking for the things that were not currently being served well... what was not being served was an ability for a customer to make an informed decision" (S2A).</i>
Action	Configure	Combining resources	<i>"So, everything that said it was like I was doing development beginning with Melvin...We were all contributing to the proposals that we know makes sense" (S1A).</i>
		Replicating FinTech related experiences	<i>"We can replicate some of these things and probably we will, but ultimately, they might go off onto the next development which may or may not have anything to do with something that we would be interested in" (S12A)</i>

Findings

This section elaborates on the findings of the nature of FinTech capabilities developed and actions that further elaborate on the capability development process.

Nature of FinTech Capabilities

As indicated earlier in the data analysis section, we identified six concepts that reflect Fintech capabilities.

FinTech entrepreneurial alertness refers to the ability of FinTechs to continually seek information that can be relevant in the formation of ideas in the ever-changing financial industry. This capability is initially developed in the *inception stage* but is a continuous activity as FinTech seek information in the *development* and *expansion stages*. Participants interviewed often referred to developing the ability to explore trends from within and outside the Australian financial industry. Further, there was evidence that global and local industry alertness also contributes to detecting ideas that have potential in the formation or improvement of their businesses. S6A commented about his firm's alertness to “*new trends and new technologies that could be useful or just might be exciting*”. At the same time, his firm is usually alert to issues that are related to the Australian financial industry. S6B was more specific to suggest that most of the inception ideas of his firm have come from monitoring activities overseas as:

“So, a lot of the ideas we have seen have come from a different market; we have been watching what is happening in the US and what has happened in the U.K. and around Europe for some time. To a lesser extent also been watching Asia and Africa but not as heavily as the U.S. and Europe” (S6B).

Discovery of viable financial service idea refers to the ability for FinTechs to continually exploit their alertness to learn and imagine practical ideas within the financial industry. Like the FinTech entrepreneurial alertness, start-ups develop this ability in the inception, development and expansion stages as they continually gain knowledge of potential ideas that can be incorporated into their products. An example of the *discovery of viable financial service ideas* in the *inception* of a FinTech is summarised in the comment by S2A:

“I mean we were just looking for the things that were not currently being served well... what was not being served was an ability for a customer to make an informed decision” (S2A).

Unsurprisingly, FinTechs expressed that they are creating ideas that are centred around technological possibilities in the financial industry. The nature of creating ideas conforms with extant literature that suggests that FinTech is about product and business model that are delivered via technologies (Du 2017; Puschmann 2017). Participants cited that technology potentials include the ability to offer new approaches and functionalities for financial service. New approaches were mainly about realising the possibilities of automating manual processes used by traditional firms. An example of realising the viability of automating existing manual processes is summarised in the comments by S6A:

“we realise that there was an opportunity for a very manual process meaning that to apply for [a loan application], you will fill in a lot of paperwork. There were a handful of people involved, there were some checks needed to be performed externally, and it took a long time” (S6A).

FinTech platform development reflects the abilities to develop new FinTech platform based on entrepreneurial alertness, and viable FinTech ideas as FinTechs become familiar with technological possibilities. Scholars such as (Pavlou and El Sawy 2006) emphasised similar activities with new platform development as the capabilities of firms to effectively incorporate IT functionalities in products. FinTechs reflected on two technical capabilities to convert ideas into *initial viable FinTech designs*, which can be continually refined into more *suitable products* for customers. Therefore, FinTech platform development capabilities are incremental.

All participants expressed their abilities in developing the *initial viable FinTech designs* as this entails converting their initial ideas into early-stage products that can be used to showcase to potential customers and investors. Such early-stage designs can be in the form of prototypes, proofs-of-concept or a workable financial solution with sufficient features that demonstrates the practicality of an early stage FinTechs. After initial viable FinTech design has been showcased to stakeholders, FinTechs

ensures that their product undergoes a series redevelopment to improve product functionalities. When asked how often his firm makes changes to their platform, one participant responded by stating that:

“So, we do we do daily deployments. So, it is not like Version one, version two version three. It is a small and free small change, which fits into an agile methodology that's important for us because it means we can push out small changes. Test it with an audience” (S1A).

Business Development Capabilities: In addition to developing platforms FinTechs also expressed the need for developing their business model. FinTechs abilities to develop their business models is also depended on their FinTech entrepreneurial alertness, and viable FinTech ideas as the two earlier discussed capabilities help firms to determine customer segments, channels, or revenue stream. For instance, the various FinTechs had different customer segments that varied to focus on either individual (B2C) or businesses (B2B). While the channels varied to include mobile or website applications. Similar to product development, business models can undergo a series of redevelopment.

S13A also narrated how his firm was able to rethink their original strategy as the firm was amongst the first organisation in Australia to introduce open banking APIs. Hence, the firm was able to complement its existing business activities of offering loans with the ability to assess customers and determine the best products that suit their needs.

“We have also been the first company. I do not know if you have been reading up about the banking inquiry and commission with open banking API? allow the ability to retrieve and port data from one bank to another and access the best products for you..... So, [PRODUCT 1] and [PRODUCT 2] did the first open banking API integration with a bank between fintech and that was between [PARTNER] in January” (S13A).

FinTech Product Commercialisation reflects the ability to continually exploit products to make a profit from unique and products developed by FinTechs. Ultimately, FinTechs set out to create value when they can commercialise unique products or digital products that solve customers' problems or creates new technology-enabled means that improve on a product that is already in the market. An example of commercialising new FinTech products and digital solutions is summarised in the statement by S10A:

“So, we the first digital currency business in Australia that receive the license from ASIC and AUSTRAC.... You know with the technology we use you know we allow you to almost track your money to see where that money is and where were dark....we've simplicity in its use, seamless, you know good customer service, you know competitive prices, broad network of what you can deliver, that really what our main elements are” (Comments by S10A).

FinTechs Expansion: The FinTech expansion strategies were quite rare amongst the participants as only two firms were at the *growth stage*. The capabilities were mainly reflected amongst these firm's ability to introduce a new product. Both S6 and S13 demonstrated that they were able to diversify their products. For example, S6 introduced two additional products which meant that the organisation was able to target three specific lending market segments. This implied that S6 had expanded their business to create new product lines. The scenario expressed by S13A was slightly different as the main purpose for expanding their product line was to create a cut down version of the original product for smaller loans. S13A commented that:

“So, we created [PRODUCT 1] which worked really well for a thousand dollars plus. We found though as a typical start-up that signing up for purchases that were lower than a thousand dollars; there was a little bit too much friction. So as a typical start-up, we created a cut-down version called [PRODUCT 2] and put that in the market, and it grew very successfully” (S13A).

Actions of FinTech Capability Development

As indicated earlier in the data analysis section, we identified four concepts that elaborate on the Fintech capability development process.

FinTech leveraging on resources: During the inception phase of FinTechs, an individual or a group of individuals set out to form a new financial service venture. Although early-stage FinTech start-ups are characterised as firms that are devoid of resources, processes and values (Christensen and Overdorf 2000), participants expressed that they venture into the formation of FinTechs with pre-existing endowments that are relevant in the financial industry. These endowments include their extended networks and prior industry competencies that are relevant in setting up and operating a financial service firm.

Participants have also indicated that they develop entrepreneurial alertness by communicating with organisations and individuals from within and outside their team. Participants also suggested that they can develop entrepreneurial alertness from external interactions with other members of the Australian FinTech ecosystem. The Australian FinTech ecosystem is a network of individuals and firms that are interested in FinTech trends with financial industry potentials. Some participants expressed that they leverage on the interactions with their external industry networks that support their abilities to be alert of potential ideas for their business.

Further, founding team members usually have *prior industry competencies* based on their *prior experiences and skills in banking and finance*, other FinTechs or *exposure with specific features*. Such pre-existing endowments help founders of FinTechs develop and determine *viable FinTech ideas*. Scholars such as Helfat and Peteraf (2003) have indicated that the individuals' abilities to *leverage on relevant competencies* involve the *cognitive* task of understanding ideas based on what is considered as a *viable FinTech idea*.

At the same time, leveraging on prior industry competencies is instrumental to the development of initial viable FinTech designs and business development capabilities. Participants such as S4A expressed that they “developed ... solution off the back of industry experience”. Founders of FinTechs leverage on each of their accumulated experience over time towards the development of capabilities. The predisposition of the founders determined the choice of components for products and business model development.

FinTech Strategising: Participant expressed that they needed to strategise at different stages of capability development. For instance, the choice of technologies and business ideas tend to involve some selection and prioritisation. There is also evidence of strategies to build, buy, partner towards developing capabilities. One example S2A commented on the partnership context as a “*way for FinTech companies to get access to cheap, high-quality distribution channels*”.

FinTech mobilise resources: Participants expressed that they mobilise additional resources besides those of the initial founders to develop capabilities. It was not in every situation that founders had to leverage on relevant prior experience or external networks. Nevertheless, acquiring new resources such as information, partnership resources and accumulating new experiences are depended on the founder's pre-inception endowments. One compelling instance is related to the situation that was earlier discussed where founders leverage on extended networks to develop entrepreneurial alertness. Some participants such as S1A were able to leverage their relationships with previous organisations where they had worked to facilitate the acquisition of strategic resources such as finance and technology. This implies that extended networks can be used in developing capabilities such as entrepreneurial alertness but at the same time are relevant in extending the resource-base of FinTechs.

For some FinTech, there was the need to reach out to new extended networks that they had no prior relationships with. Mechanisms used to extend a FinTechs business network, and resources further include the use of people they already knew or “cold outreach” partnership with incumbents and acquiring other firms. For example, S13A purchased another firm to gain access to their customer data resources and processes for decision-making purposes. By acquiring a company, S13A was able to incorporate the banking transaction data that “allow [S13] to provide you with the real-time decision”, and then determine the best products that suit their customers' needs.

FinTechs also suggest that they can *obtain industry feedback* when developing FinTech product and business model capabilities. For firms that are yet to get customers, an extended network such as partners and other organisations in the ecosystems are instrumental in validating the product and

business model opportunities that are developed. For FinTechs that later become endowed with prospective users or existing customers, feedbacks are instrumental in enabling the continuous improvement of their products and business model. For example, S11A narrated that his company is at “beta testing” stage of their development and have begun to attract some initial customers that will be instrumental in getting feedback to refine the initial product and business model.

Since the development of capabilities is a knowledge-intensive activity, FinTechs expressed that they also *generate FinTech learnings* from their internal and external processes. Although founders of FinTechs tend to be endowed with prior experiences that are relevant at an early stage, most participants expressed that they set out to develop new knowledge. For instance, the initial developments of products which involves the design require the process of continuous learning. FinTechs engage in using mechanisms such as learning-by-doing and trial-and-error. Since the design and refining of the business development capabilities was something most founders of FinTechs were doing for the first time, they had to acquire knowledge through learnings. Moreover, some participants expressed that they did not know what to expect when developing their business model components.

FinTechs Configure Resources: The findings on how they configure their resources to develop capabilities indicated two important mechanisms: *combination of FinTech resources* and *replicating FinTech-related experiences*. Regarding the *combination of FinTech resources*, participants expressed that their firms synthesised internal and external learning at different phases of their development. In the inception where the objective of the founders is a joint action is for the development of capabilities, individuals organise themselves contributing ideas towards the development of their firm. Founders of FinTechs contribute information which determines the formation of ideas in the financial industry. At the same time, the founders set out to seek additional ideas that are intended to enrich the generation of ideas. By sharing their different experiences and comparing opinions, the founders can jointly articulate what they consider as practical aspects of FinTech with potential opportunities. For example, S2A expressed that he and his co-founder were able to deliberate and identify aspects in the lending space that were not offered at the time of their inception.

Although the founders of FinTechs are the primary source of knowledge at the early stage, some participants expressed that the number of employees over time enables the further combination of FinTech resources. During the development phase, the founders are primarily involved in combining ideas that form the initial exploited within firms. An owner-manager (S1A) echoed this view and emphasised that his co-founders deliberated the viability of ideas and developed the initial designs together: “So, everything that said it was like I was doing development beginning with Melvin... We were all contributing to the proposals that we know makes sense” (S1A).

As the number of employee increases, the internal combination pattern of FinTechs continues to enable the abilities to pioneer new components for product and business model development. Most interviewees suggested that their staffs are allowed the flexibility to innovate. Although owner-managers in the FinTech case acknowledged that there are mechanisms for facilitating the integration of resources.

Further, FinTech can synthesise existing firms’ resources with those of external entities such as partners, customer and other extended networks to develop capabilities. When asked how FinTechs combine a multitude of information and ideas towards developing their capabilities, participants expressed that they engage in prioritisation session which helps in determining the various potential value to the businesses.

Regarding the *replication of FinTech-related experiences*, some participants indicated that their firms *apply existing endowments* elsewhere within their firm, while also *imitating offerings of other firms*. For example, S6A narrated how his firm develops three different products by applying each of the corresponding learnings. Since most FinTechs develop their platforms based on service-oriented architecture (e.g. Cloud-based architecture), they use existing components for multiple platforms. The use of cloud technology does not only offer the shared pool of configurable computer systems resources but also enable firms to gain access to shared expertise of building compelling FinTech

solutions. Besides the use of shared resources offered by cloud technology; few participants have also indicated that *imitate offerings of other firms* from outside Australia.

Discussion and Conclusion

In Summary, the findings show that FinTechs develop different capabilities at their (i) inception, (ii) development, and (iii) growth phases. Although this finding is consistent with previous literature on start-ups (Helfat and Peteraf 2003; Sirmon et al. 2010), it offers unique insight to the FinTech domain by providing a deep understanding of the period or circumstances of FinTech capability development. For instance, the capabilities identified amongst FinTechs at different phases include (i) FinTech entrepreneurial alertness (ii) FinTech entrepreneurial discovery (iii) viable FinTech idea definition which is usually needed at the inception stage but also remains important as FinTechs learn and adapt. The research also indicated the platform and business development capabilities of FinTechs adding to the studies of (Puschmann 2017) and (Gozman et al. 2018). As Fintech start-ups aspire to profit from their platform and business model, they tend to develop the ability to commercialise products. The expansion strategies capability brings to attention the importance of developing capability not only to enter and grow in the financial industry but to also sustain a future position. Earlier studies such as Leong et al. (2017) had indicated that FinTechs could expand the scope of their offerings as a strategy of managing potential risk. The results from our investigation extend the notion of expansion strategies to include new products to new markets segments and creating cutdown versions to existing markets.

The research also showed that start-ups develop the capabilities above by (i) leveraging, (ii) strategising, (iii) mobilising and (iv) configuring their resource-base. Based on these, we propose a Fintech capability model (Figure 1) to demonstrate the sequences and activities that are necessary for FinTechs to develop capabilities.

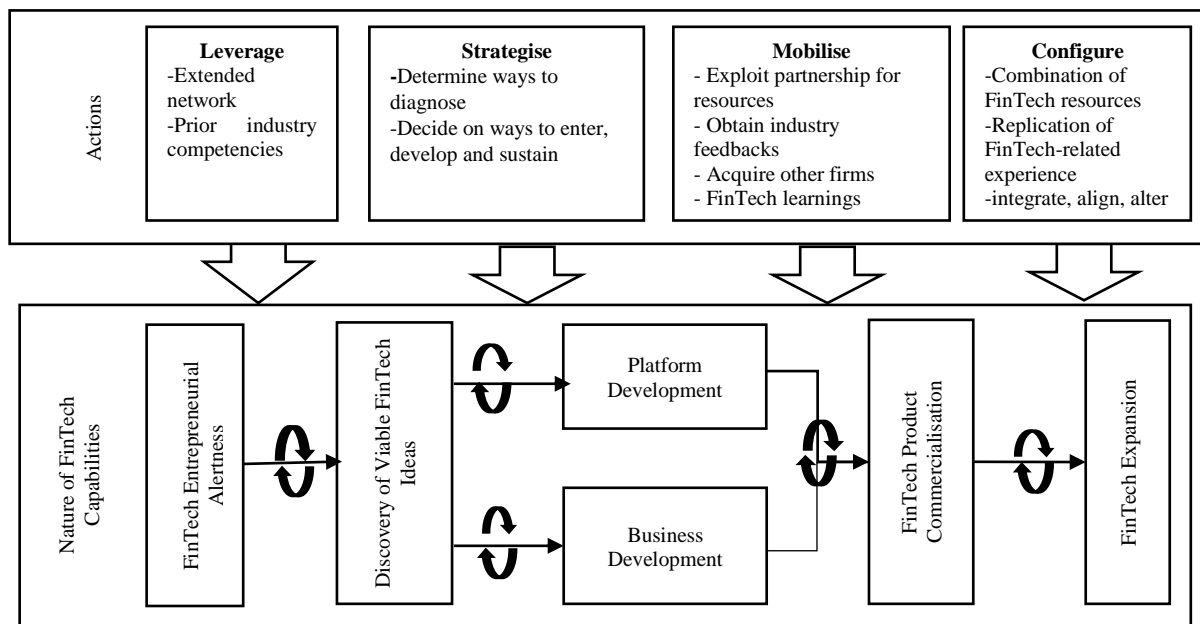


Figure 1: FinTech Capability Model

Based on the FinTech capability model illustrated in Figure 1, we found the alignment between capabilities was indeed an ongoing process. The straight arrows between the six Fintech capabilities indicate the pathway of continual development of the entrepreneurial FinTech firms towards sustaining their business. The spiral arrows also indicate that the pathway of capability development involves instances of re-evaluation and resolution of issues that may occur during the process of designing, developing and sustaining FinTech digital products and businesses. Street et al. (2018) in their study also found that new entrepreneurial ventures tend to undergo a continuous flow towards improving their balance sheet. At the same time, we found that the actions such as leveraging,

strategising, mobilising and configuring demonstrate the necessity for resources and competencies at different point in time when capabilities are developed. Hence, the capabilities are dependent on firms depended on firms' evolution of strategies and resources (Yeow et al. 2018).

Although the findings of this study and the proposed FinTech model offer both theoretical and practical contribution on how FinTechs develop capabilities, it is important for future researchers to consider them in light of the limitations of this study. First, future research can consider focusing on capabilities developed in specific FinTech niche sectors such as those of lending, payment and investment models. Our findings are generalisable towards the broad characteristics of FinTech, and future studies could achieve a deeper investigation on specific offerings. Second, our study is based on FinTech firms only, but future research can consider other actors in the FinTech ecosystem such as incumbents and other large organisations. Finally, future studies can further elaborate on additional themes of capability development such as the agent (founder, manager, or organisation), the object (resources or competencies) and the reasons.

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