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Is FinTech a Disruption or a New Eco-system? An Exploratory Investigation of Banks' Response to FinTech in Australia

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Abstract

The emergence of FinTech companies has drawn much speculation about their potential to disrupt incumbent financial institutions and take as much as 20% of their earnings by 2020. While time will tell about these predications, one emerging reality is that FinTech is creating a new ecosystem where the structure has incumbents, start-ups and tech firms forming alliances, partnerships, and investments. This paper investigates how traditional financial institutions are responding to the FinTech? We draw from the concepts of sensing and responding to analyse more than 3000 news articles, webpages, reports, and press releases covering the period 2008-2017 related to four Australian Banks. Within the limitations of the method, our findings indicate that Australian Banks are actively embracing FinTech by creating mechanisms for inbound FinTech knowledge flows, monitoring and facilitating FinTech activities of start-ups, crowd-sourcing FinTech ideas, setting up innovation hubs to encourage internal FinTech innovations, modernizing their platforms with the adoption of technologies commonly associated with startups, partnering, and investing in FinTech start-ups. These findings indicate banks' continuous adaptive behaviour and open avenue for future research.

Keywords FinTech, Digital Business, Digital Disruption, Sensing-and-Responding, Banking

1 Introduction

The financial service industry is not new to the use of technology for service delivery and has a long history of innovations (Bátiz-Lazo & Wood 2002). The emergence of FinTech has drawn much attention about modern technology used in finance. FinTech, which is at the intersection between finance and technology, involves novel technology and service models (Maier 2016), new or redeveloped business structures (such as the development of digital transaction channels) (Ferrari 2016), and other new or improved abilities that enable FinTech structures, processes, technologies and personnel to meet the need of the dynamic financial services industry (Sia, Soh & Weill 2016). Such improved abilities continue to extend the relevance of technology in providing faster, more reliable and reduced cost financial services. Financial services such as payments, investment, insurance, and lending are being transformed by using modern technologies and innovative business models such as Peer to Peer (P2P) technology, cryptocurrencies, and crowdfunding services (Gulamhuseinwala, Bull & Lewis 2015). In particular, FinTech firms provide attractive value propositions such as instantaneous, less bureaucratic, portable, and simplified experience for services (Gulamhuseinwala, Bull & Lewis 2015).

This study is set out to address the question of how traditional financial institutions are responding to FinTech? This question was motivated because of three reasons.

First, some authors argue that start-ups and their innovative technology such as Blockchain pose a threat or challenge to traditional institutions such as banks (Bunea, Kogan & Stolin 2016; PWC 2016). The report by (PWC 2016) went as far as to suggest that over 20% of global traditional financial institution earnings will be lost to new FinTech entrants by the year 2020. However, others opine that the innovative solutions and services associated with FinTech start-up firms, incumbent financial institutions such as banks, and technology firms such as telecommunications and mobile technology companies are creating a new ecosystem of financial services (Puschmann 2017; Zavolokina, Dolata & Schwabe 2016). Thus, traditional banks which are considered the dominant institutions have opportunities in the FinTech ecosystem, but still have challenges in aligning their culture and systems with that of others in the ecosystem. In this regard, Schmidt, Drews and Schirmer (2017) call for research into new and emerging ecosystems as new technologies and services do not necessarily align with most existing banking model and processes. Thus, investigating the FinTech initiatives of incumbent institutions provides important insights into the nature and shape of the future financial eco-systems.

Second, emerging FinTech literature have covered aspects such as the evolution of the phenomenon (Arner, Barberis & Buckley 2015), recognising the banks' opportunities (Dapp 2015), understanding the phenomenon (Zavolokina, Dolata & Schwabe 2016), and exploring the development of a start-up (Leong et al. 2017). Literature on incumbents' response to FinTech is still emerging, with researchers indicating the evidence of banks developing new digital infrastructure or adopting co-operative approaches such as partnership (Gomber, Koch & Siering 2017; Hawes & Chitra 2016). Nevertheless, the rational process guiding banks' actions remains unclear.

Third, Australia's financial sector is the largest contributor to the economy, and the government supports the competition and co-existing nature of long existing local and multinational banks and emerging firms (Australian_Government 2016). New entrants into Australia's financial industry provide alternatives with technologies such as cryptocurrencies and crowdfunding, while evidence of close interaction with Banks have started emerging (Hawes & Chitra 2016). Australia provides a useful context of exploration in FinTech, most especially regarding the coexisting relation amongst local and foreign key players of the FinTech ecosystem (Australian_Government 2016).

Due to the emerging nature of academic studies in FinTech, we employ an exploratory review of public media texts. This study makes the following contributions. First, we contribute to information systems research an emerging topic of research. Second, the study contributes to FinTech research, which thus far focuses on the phenomenon and FinTech start-ups, secondary evidence about the innovative activities of incumbent institutions within the FinTech ecosystem. Finally, we propose areas for further investigation.

The remaining parts of the study are structured as follows: Section 2-Conceptual background, Section 3-Method, Section 4- Results, Section 5- Conclusion, limitations and future research.

2 Conceptual Background

While there are emerging FinTech research from IS and business related academic literature, the context of FinTech continues to unfold as activities within the ecosystem exhibits vibrancy. Existing research on FinTech have provided knowledge to understand the public perception and main actors (Zavolokina, Dolata & Schwabe 2016), functional aspects that lead to customer switching between the main actors (Maier 2016), the FinTech concept and its dimensions (Puschmann 2017), and activities of start-ups (Leong et al. 2017).

PWC (2017) projects that within the next few years, there will be an increase in traditional-start up partnerships, adoption of technologies commonly associated with start-ups (i.e., blockchain) by traditional institutions, and an increase in incumbents' investment in FinTech start-ups. Nevertheless, some studies that have examined banks activities have raised concern about the challenges that may arise in integrating FinTech related services (Dapp 2014; Haas et al. 2015). Dapp (2014) highlighted the need to step up evaluation of client data for insights as it is still in its infancy in some banks. The use of advanced data analysis is an area new comers and tech firms exploit to provide customer-centric solutions, and banks will need to respond in kind (Dapp 2014). Dapp (2015) suggested that banks need to consider strategic alliances such as collaboration, partnerships, direct and venture capital investments. Nevertheless, the issue of aligning FinTechs approach of operation with banks is of concern as integrating technology and services becomes an enormous challenge (Dapp 2014; Haas et al. 2015). In their study focusing on crowdfunding, Haas et al. (2015) proposed that banks may need to consider assessing their business model using a modular approach when considering partnership integration.

To conceptually underpin the unfolding process and activities of incumbent financial institutions within the FinTech ecosystem, we draw from the concepts of sensing and responding. Sensing involve firms' abilities to gain adequate knowledge rapidly and the related changes that they influence within the firm (Roberts & Grover 2012). Response are firms' abilities and willingness to take action towards technology-enabled transformation (Roberts & Grover 2012). Firms' with the abilities to sense threats or opportunities, but don't have the abilities or willingness to take actions guided by the outcomes derived from their sensing abilities are at risk of taken advantage of opportunities and even failure (Roberts & Grover 2012). Similarly, firms' with the abilities and willingness to take action, require proper knowledge before taking decisions (Roberts & Grover 2012). Sensing-and-responding abilities have been studied extensively in the field of management; for instance in administrative science (Kiesler & Sproull 1982) and marketing (Srinivasan, Lilien & Rangaswamy 2002). Kiesler and Sproull (1982) characterised the abilities to sense managerial complications as a precondition for decision-related actions toward adapting to changes. Kiesler and Sproull (1982) further emphasised that sensing is a cognitive process of quickly observing and developing meaning when faced with a rapidly changing environment. The proper cognitive process of sensing relevant issues can lead to a suitable response mechanism (Kiesler & Sproull 1982). Srinivasan, Lilien and Rangaswamy (2002) approach of conceptualising sensing and responding was concerning firms identifying and taking advantage of radical technology.

The alignment between sensing and responding is required and is primarily concerned with the quick process of firms utilising the abilities to sense and then respond to build competitive advantage (Roberts & Grover 2012). Srinivasan, Lilien and Rangaswamy (2002) suggested the term technology opportunism as the alignment between sensing-and-responding capabilities, which can be derived from using an internal process (such as research and development) or external (acquiring) development of technologies. Srinivasan, Lilien and Rangaswamy (2002) further suggested that technology and market orientation are relevant aspects to ensure that firms do not cannibalise their business process.

A similar alignment process was used in the study Zaheer and Zaheer (1997) were the author suggested concepts of *alertness* and *responsiveness* in the information sensitive financial industry. Zaheer and Zaheer (1997) described alertness as proactive attentiveness to information, while responsiveness refers to firms taking quick action upon obtaining rapid assessment from changing business environment. Results from their study suggest that alertness and responsiveness is strongly associated with banks' influence on the market.

Studies propose concepts such as sensing and responding (Kiesler & Sproull 1982), alertness and responsiveness (Zaheer & Zaheer 1997), opportunism (Srinivasan, Lilien & Rangaswamy 2002) or capabilities (Roberts & Grover 2012). The underlining argument is focused on the precondition that has to do with organisation abilities to recognise or obtain insights before taking actions that define

their activities in changing business environment. The process is necessary for organisations to identify threats and opportunities, before their business actions. Recent FinTech literature has indicated that banks have indicated that banks are improving their digital business capabilities (Hawes & Chitra 2016) or adopting co-operative approaches such as acquisitions and partnerships (Gomber, Koch & Siering 2017). Nevertheless, it remains unclear how incumbent financial institutions are utilising their sensing-and-responding abilities as a result of the changing business environment linked associated with FinTech.

3 Research Method

3.1 Context of the study

Australia has a vibrant financial service industry, where the government supports competition between traditional and new entrants with the aim of providing alternative services for customers (Australian Government 2016). Few Australian banks traditionally dominate the banking sector with services such as home loans, market capitalisation and payments. Foreign banks, credit unions and building societies also provide banking services. For our review, we select four banks operating in Australia that offer comprehensive financial services. The banks selected are incumbents in providing a wide range of service, rather than institutions that are limited to fewer financial services functions. An extensive internet search indicated that there is limited academic literature investigating the activities of these banks, while there has been a surge in news media coverage of bank initiatives. Therefore, practitioner literature from and about these institutions will be examined for patterns indicating FinTech activities.

3.2 Procedures

To provide substantial evidence on the activities of banks, we adopt a review of practitioner literature using organisation reports, newspaper articles, organisation web pages and press releases. We limited our search to these sources because information published are considered to have undergone some level of information verification process before publishing. The method was chosen for two reasons. (1) FinTech research is still emerging and covered in few academic publications. Literature from popular media which have extensive coverage on FinTech can provide evidence of practical knowledge on the phenomenon (Zavolokina, Dolata & Schwabe 2016) and, (2) FinTech is a rapidly evolving phenomenon, and in order to follow organisational actions, it is necessary to engage the practitioner literature in understanding their responses, activities and narratives. Studies have identified the popular media play reliable role in demonstrating managerial practices and ideas (Mazza & Alvarez 2000; Zavolokina, Dolata & Schwabe 2016). Others have noted the value of practitioner literature studying themes that have not been addressed in academic literature (Deng, Ji & Wang 2017). As we undertake an exploratory study on how traditional financial institutions are responding to the FinTech ecosystem, text from practitioner literature forms the bases of the informative component for identifying evidence of banks' FinTech initiatives.

3.2.1 Data Collection and Analysis

To ensure broad and variety of sources, we decided to utilise Google search as the database for the study. We defined the following stages for the data collection and analysis.

Stage 1 (Search): We began by searching on Google, using the bank's names and the term "FinTech"¹. We also searched using abbreviations of bank names and "FinTech". We searched the years between 2008 and 2017. The year 2008 was selected to coincide with the period of one of the most significant developments in FinTech (i.e., Bitcoin and its associated distributed database – Blockchain).

Stage 2 (Selection): The first 30 hits were screened to identify sources that are relevant and fit the search criteria. After the first 30 hits, we screened every subsequent fifth hit, until we reached the Google search message "*In order to show you the most relevant results, we have omitted some entries very similar to the [number of hits] already displayed. If you like, you can repeat the search with the omitted results included*".

Two criteria guided selection of the sources. First, we ensured that the sources contained the name of banks and the term FinTech. Second, we scanned the source to ensure that it was related to FinTech

¹ The names of the banks are not included to protect their brand and identity

and that the search terms were not simply mentioned in the comments section, links, advertising or in passing.

Stage 3 (Aggregating): As we had earlier stated in stage 1 that we searched using both full names and abbreviations of banks alongside the term “FinTech”, we aggregated results to exclude reoccurring sources.

Stage 4 (Screening): Each source was examined to screen literature that are discussing banks activities in the FinTech space. 59 sources were selected from this process. Table 1 highlights the outcome of the search and screen process. To protect the identity of the banks’, we refer to them using pseudonyms.

Bank	Search Term	Stage 1	Stage 2	Stage 3	Stage 4
BANK 1	[Bank 1 Abbreviated Name] FinTech	911	21	21	15
	“BANK 1 Full name” FinTech	42	0		
BANK 2	[BANK 2 Abbreviated Name] FinTech	785	18	23	16
	“BANK 2 Full name” FinTech	325	4		
BANK 3	[BANK 3 Abbreviated Name] FinTech	572	18	21	14
	“BANK 3 Full name” FinTech	507	3		
BANK 4	[BANK 4 Abbreviated Name] FinTech	544	24	25	14
	“BANK 4 Full name” FinTech	367	1		
Total		3686	89	89	59

Table 1. Search and Screening of sources

Although our search for the various banks started in the year 2008, we started identifying sources for analysis from the year 2014. Table 2 shows a breakdown of the year and types of sources we analysed.

Type	Newspaper	Organisation Web pages	Press Release	Reports
2014	1	4	0	0
2015	18	3	1	1
2016	14	0	3	1
2017	8	2	2	1
Total	41	9	6	3

Table 2: Breakdown of source Type and Year

Stage 5 (Analysis): We used the concepts of sensing and responding as a guide for performing a thematic analysis. We use NVivo 11 software to guide in the identification of themes. Notions expressed in a different form but refer to similar initiatives were grouped under a common category (Corbin & Strauss 1990). The next section highlights the results derived from the analysis.

4 Results

The results from the exploratory study identified twelve main findings which we categories into FinTech sensing and responding initiatives. Eight sensing and four responding initiatives were identified (see table 3).

Dimensions	Initiatives	Description of Initiatives
FinTech Sensing Initiatives	Deep engagement with customers	Identify and recognising customers desires
	Technology scanning	Seeking knowledge on technology innovation
	Crowdsourcing of FinTech Ideas	Obtaining FinTech related ideas from various internal and external sources
	Channels for inbound FinTech knowledge	Obtaining knowledge from external specialist
FinTech Responding Initiatives	Actively monitor activities of FinTech players	Attempt to understand the characteristics of other FinTech firms
	Setting up innovation labs	Banks have setup innovation labs for inhouse innovation development
	Investment Partnership	Banks provide venture capital and invest in FinTech start-ups
	Platform design and development	Working together with other banks and FinTech start-ups Banks actions relating to building, designing and redeveloping of digital platforms

Table 3: Result of Banks’ Initiatives

Initiative	Sub-Category	Bank 1	Bank2	Bank3	Bank 4
<i>Deep engagement with customers</i>	Interact with customers	✓		✓	
	Use live chat on mobile devices	✓			
	Obtain customer insights	✓		✓	✓
	Monitor customer desires with mobile devices	✓			
	Explore ways for better customer services			✓	
<i>Technology scanning</i>	Explore the use of voice biometrics	✓			
	Trial emerging technologies		✓	✓	
	Test Blockchain and cryptocurrencies		✓		
	Realising the benefits of big data	✓			
	Recognise sentiment to digital assets		✓	✓	
	Recognising sentiment towards cryptocurrencies			✓	
	Participate in novel technology event		✓		
<i>Crowdsourcing of FinTech Ideas</i>	Attract ideas across the firm			✓	
	Harvest ideas from society		✓		
	Participate in Hackathons		✓		
<i>Channels for inbound FinTech knowledge</i>	Setting up advisory panels	✓			
	Engage consultancy service	✓		✓	✓
	Consult on modular finance			✓	
	Organise training course	✓			
	Recruit staff with FinTech insight	✓	✓		
	Integrate promising FinTech ideas		✓	✓	
<i>Actively monitor activities of FinTech players</i>	Learn FinTech culture	✓			✓
	Looking for firms with specific business focus			✓	
	Observe evolving FinTech Scope			✓	
	Identify ecosystem leaders			✓	
	Monitor threats posed by Fintech		✓		
	Abreast of developments				✓
<i>Setting up innovation labs</i>	Monitor FinTech from inception				✓
	Launch innovation lab		✓	✓	✓
	Innovation lab to develop and test		✓	✓	✓
	Innovation lab to foster investment			✓	✓
<i>Investment</i>	Innovation lab to foster partnership		✓	✓	✓
	Acquire emerging FinTech	✓		✓	✓
	Launch venture fund	✓		✓	✓
	Replicable test investment		✓		
	Finance rival for innovative solutions				✓
<i>Partnership</i>	Partner with incubators/accelerators	✓		✓	✓
	Foreign collaboration		✓		
	Collaborate with start-up	✓		✓	
	Partner with promising FinTech	✓	✓		✓
	Collaborate with tech firm	✓			
	Collaborative sharing of data	✓		✓	
	Partner to improve in-house capabilities	✓		✓	
	Partner to enable innovation	✓			
	Partnership to share experience	✓			
	Partner analytic firm	✓		✓	
	Partner with other banks	✓		✓	
	Trial partnership				✓
	Consortium to test blockchain and cryptocurrencies		✓	✓	✓
	<i>Platform design and development</i>	Release regular platform updates	✓		
Build open API		✓			
Launch new digital channel for service application				✓	
Improve platform appearance/functionality		✓			✓
Build feature on modern digital technology		✓			
Adopt cloud platforms		✓			
Develop new platform				✓	
In-house solution development			✓	✓	
Overhaul core system		✓			
Build blockchain		✓			

Table 4: Result of second level initiatives

5 Discussion

This section elaborates on the results of the FinTech sensing and responding initiatives. The bank initiatives and sub-categories highlighted in tables 3 and 4 make up the discourse in this section.

5.1 FinTech Sensing Initiatives

Banks are developing steps to ensure proper knowledge is obtained in the FinTech space. We identify five focal areas of sensing initiatives.

Deep engagement with Customers: One of the key characteristics of FinTech first is their ability to elicit the desires and needs of customers to provide financial services (Puschmann 2017; Zavolokina, Dolata & Schwabe 2016). The results highlighted in tables 3 and 4 reflect that banks are also taking steps to engage more deeply with their customers to understand more about their needs and requirements. Although they have always had the physical branch playing a role, where customers approach the banks through interactions with bank staff, this approach can only identify what the bank customer divulges, with many of their needs and behaviour remaining concealed. The review of practitioner literature indicates that banks are interacting with their customers. For example, bank 1 using live chats on mobile devices as a channel for customer interaction. Certainly, channels for communication are aimed at knowing customers' needs. The results indicate that three banks are taking steps to obtain more insights about their customers. Through user-generated content, banks now have deeper and timely knowledge of customers' attitude, regular insights about their experiences and expectations and new ways in which customers want to obtain services. For example, bank 1 monitors the trend of some of its customers desire to use devices such as mobile phone or watches. The results also indicate that one bank is expressing their desire for further exploration of better ways for customer services as an organisation initiative of FinTech sensing.

Technology Scanning indicates banks have initiatives to get abreast with novel technologies and their functionalities. Results indicate that one approach is by engaged in trial projects to scan the functionalities of emerging technologies. For example, bank 2 testing the practical use of blockchain and cryptocurrencies in areas such as trade and finance. This is consistent with the study by Dapp (2015) as the author suggested that there is an increase in pilot projects to scan new technologies. There is also evidence that bank 1 is realising the benefits of the concept of big data, while bank 2 and 3 are taking steps to recognise the user sentiments to technologies and digital assets. For example, bank 3 has indicated that the organisation recognises the global sentiment towards cryptocurrencies and exploring the underlying technological functionalities of the of the payment system. Voice biometrics is another technological system that is explored, as results indicate that bank 1 is investigating its potential for customer authentication of financial services. To ensure technology scanning, evidence indicates that bank 2 is participating in events that are focused on blockchain as an approach for FinTech sensing.

Crowdsourcing of FinTech ideas, Banks are sourcing for wide-range and quicker supply of innovative ideas. One approach used by a bank to crowd-source FinTech ideas is through hackathons and inviting young people to suggest future innovation. Hackathons are sprint events that allow participants to use any software to achieve business-focused solutions. Also, there is evidence bank 3 attract ideas by setting up FinTech idea repositories to encourage employees within banks to share, contribute, and advocate for ideas to be implemented. On the other hand, evidence associate bank 2 with harvesting ideas from the society as an approach to crowd-source ideas.

Channels for inbound FinTech knowledge, banks are actively attempting to attract knowledge from external sources. Attracting external knowledge is a common practice with banks and other organisations to prescribe knowledge and line of direction within certain situations that are not well-known with a firm. Evidence suggests that bank one has set up advisory panels to understand their future strategies and obtain knowledge on FinTech to address business change within the banking sector. There is also evidence of bank 1 and 2 recruiting professionals with knowledge of FinTech as well as the ability to manage radical change. Consultancy is another approach used to channel inbound FinTech knowledge. For example, banks three are consulting on concepts such as modular finance. An early stage of research on crowdfunding proposes the use of modularisation of financial service (Haas et al. 2015). The study by Haas et al. (2015) proposes that the strategy of unbundling FinTech service in an attempt to configure and proffer an alignment to banking business models. This is an indication that modularisation of banking service is an example of an approach being proposed by consultants. Another approach used to channel inbound FinTech ideas is through the organisation

of training courses. Evidence suggests that bank one has adopted the approach of developing a course to help channel FinTech related knowledge to the organisation. In the process of channelling inbound FinTech knowledge, results indicate that two banks that have expressed their desire to integrate promising FinTech ideas.

Actively monitoring FinTech players indicates banks efforts to keep abreast of the activities of players within the FinTech ecosystem. One bank's approach identified is based on learning the FinTech culture. The culture of creativity, customer-centric design and an aggressive desire to explore new opportunities are some of the traits that are commonly associated with FinTech. FinTech start-ups are also known to have an innovation-driven culture which has been producing similar or even much better services than banks (Gulamhuseinwala, Bull & Lewis 2015). Banks are more observant on the activities within the space through initiatives such as identifying leaders within the ecosystem, monitor threats posed by FinTech. Results also indicate that two banks are monitoring the evolving FinTech scope and keeping abreast of development within the space. Although such evidence of monitoring the scope and keeping abreast of development are broad evidence and not peculiar to FinTech area, Our results indicate that bank three are looking into FinTech with more specific business focus which is of interest to the bank. Another approach of observes FinTech players is evident from the result as one bank monitors FinTech start-ups from their inception.

In summary, Australian banks are actively seeking ideas and knowledge from external sources through customer engagement, crowdsourcing and channelling of inbound knowledge. They also have initiated approaches to obtaining ideas from their employees on the ways to address the continuous transformation associated with FinTech. An important question now arises about how all the multiple sources of idea and knowledge do not end up causing a situation of overload, erroneous or misleading sensing process. We also observed that some of the high-level initiatives are similar to open innovation literature (West & Bogers 2014), while the sensing dimensions open areas for further investigation.

5.2 FinTech Responding Initiatives

Since the financial service industry started experiencing the influence of FinTech, indications suggest that incumbent financial institutions have been responding to the FinTech-driven phenomenon using different approaches. This subsection discusses Australian banks' responding initiatives.

In the outset, Some bank executives have been outright to suggest the need to be creative in their approach to FinTech which has resulted in some banks **setting up of innovation labs** and banking research & development. Banks plan to use the innovative hubs to cultivate the mindset and innovative asset to enable them to fit into the continuous changing FinTech ecosystem. These innovation labs are involved in developing and testing technology and solutions such as blockchain. Some banks use their innovation hubs to foster innovation through either investment or partnership with other players in the ecosystem. As such, some banks appear to be embracing the potential opportunities of working together and the possibilities of providing their customers with the best of financial service experience.

Regarding investment, three banks reviewed have set up venture funds that are operated either under their innovative hubs or separately to fund new entrants. Between the years 2014 and 2015, the four banks we studied have pledged over a hundred million dollars to invest in smaller new entrants. The result also indicates that three banks have invested in FinTech start-ups, with an indication of one bank investing in rival FinTech for innovative solutions. This is because some of the FinTech firms acquired are perceived to utilise better customer interactive solutions for service delivery. Banks are also focusing on firms that can guarantee transparency, trust, and improved flexibility. Investments have also gone into firms that are known to provide faster transactions, easy to navigate, instantly assessable solutions as well as those that leverage on using radical technologies such as Blockchain and cryptocurrencies. In some cases, the acquisitions of FinTech start-ups are used to explore new market prospects and opportunities. For example, bank two was reported to have invested in a foreign FinTech start-up with the intention to replicate the experience in Australia and other countries. Such process of acquiring-trialling-replicating demonstrates that innovation is continuous and consistent with the alignment of sensing and responding framework. Therefore, acquisition is a form of banks reaction to FinTech, then sensing through trials, and further responding to future needs by replication derived from prior knowledge.

Regarding partnership, we identified entities that makeup bank partnership in response to FinTech to include: bank-to-incubator, bank-to-start-up, bank-to-tech firms, bank-to-analytic firm, and bank-to-bank. Some of the intended or actual purpose of various partnerships where not

indicated in practitioner literature but can be explored in future studies. Despite the limitations resulting from using practitioner literature to understand bank partnership, we identified some of the reason for FinTech triggered partnership to include sharing of data, improving in-house capabilities, enabling innovation, sharing experience and trialling partnerships. Surprisingly, we identified that three of the banks indicating their desire to partner promising FinTech firms, as it is unexpected that any bank would set out to be part of a non-futile association. There are also indications of collaborations efforts among three banks as part of a consortium that enhances testing of blockchain and cryptocurrencies. The consortium has set out to explore the feasibility and compatibility of blockchain and cryptocurrencies with bank operations. Trials using blockchain have been used to model trade, transfer, and redeeming of promissory notes. Consortia are also formed to improve communication and ensure wide acceptability of innovative platforms developed amongst banks.

Regarding platform design and development, banks have been able to use their innovative in-house labs, partnership, and investment to guarantee the roll-out of innovative platforms. Systems which have been considered obsolete within banks' are being upgraded with modern technology. Results indicate that a bank had a system overhaul of some of their core systems to ensure that they can now redesign and integrate modern digital offerings such as analytic tools and other automated systems for better customer experience, the release of digital platforms to customers and provide banking solutions under data sharing agreements. Other initiatives identified include the building of open API, blockchain, adopting cloud solutions, development of in-house solutions, and building features on modern digital technology. Evidence also suggests that bank 1 and four have improved platform appearance and functionalities, with an indication of bank 1 releasing regular platform updates. We also identified some statements that indicate the development of new platforms and the launch of new digital channels to enhance financial service application processes.

In summary, While some of these institutions have made attempts to partner and collaborate with other organisations to enhance their innovativeness, banks have also made attempts to utilise existing competencies to develop in house-proprietary solutions. These efforts to harness the opportunities associated with the emerging FinTech ecosystem and starve off threats from market competition requires in-depth knowledge of the implications of responding to the phenomenon. Industry experts have associated the opportunity for jointly developing solutions that support firms to gain access to data amongst peers in the financial service industry. Banks that collaborate and invest in other players in the ecosystem can jointly develop platforms with other FinTech firms. Partnership provides a win-win solution as traditional banks have the brand, customers, and other resources, while smaller firms are more open to utilise radical technology and may possess an admirable innovative culture. Initiatives such as setting up innovation hubs, partnership and investment all showed evidence that the process of sensing and responding is a continuous process through in-house testing and joint trials of technology for improvements in future banking solution.

6 Conclusion, Limitation and Future Research

In this paper, we conducted an exploratory study using practitioner literature to answer the research question: *How are traditional financial institutions responding to the FinTech ecosystem?* To address the research question, we drew from the concepts of sensing and responding. We identified that deep engagement with customers, technology scanning, crowdsourcing of ideas, and channels for inbound FinTech knowledge as examples of how Australian banks are sensing the opportunities and challenges of FinTech. Further, setting up innovation labs, investment, partnership and platform design and development were identified as some of the response initiatives that Australian banks are taking.

The study has several limitations. Firstly, the data source, which is popular literature, might have bias and might only tell us the rhetorical position of these banks. Therefore the results and discussion have to be taken with caution. Secondly, our selection of the banks used in the search term and the location of the institutions might also have had an impact on the outcome of the study. Further empirical study is important to verify the initiatives identified in this paper. Other possible directions for future research is to examine how banks wide-range of sources of idea and knowledge are managed to ensure the right response is derived from the FinTech sensing process. Researchers can further chart out the iterations involved in identifying FinTech related knowledge and responding.

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