

Strategic implications of Fintech on South African retail banks



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Background: Since the global financial crisis, banks have been exposed to new opportunities and threats unprecedented in history driven fundamentally by technology. So-called 'Fintech disruptors' are aggressively tapping into their service delivery chain to offer clients a better (cheaper, more convenient or efficient) value proposition. As banks have subsequently been forced to think more strategically about how to conduct themselves due to the imminent use of, for example, virtual reality, artificial intelligence, biometrics and big data, regulators have simultaneously had to ensure that the pervasiveness of technological disruption does not threaten the soundness of banks and the stability of economies.

Aim: To identify the strategic implications of Fintech on South African retail banks.

Setting: The study is conducted in the South African retail banking industry.

Methods: A post-positivist paradigm approach that is qualitative in nature.

Results: There are several main findings: firstly, technology-based skills are becoming mandatory for staff and regulators alike; secondly, interaction policy is migrating clients towards a remote-based distribution strategy; thirdly, the bank of the future will not rely as heavily on brick-and-mortar branches as it has in the past; fourthly, new competitors are entering the fray and offer competitive digital-only solutions; finally, given the innovation and growth shown by these disruptors, financial sector regulators will have to find ways to hold them accountable.

Conclusion: By adapting to the Fintech revolution, South African retail banks are hoping to become strategically pre-emptive rather than merely proactive. This will allow them not only to identify opportunities first, but also to offer solutions before competitors are able to do either of these.

Introduction

The way banks operate will change dramatically over the next decade as technology and changing consumer preferences redefine how they do their business, what solutions they offer and how interaction occurs. Technological advances such as artificial intelligence (AI), biometrics and robotics are set to become the norm and challenge conventional thinking about how to interact and offer banking products and services. A completely new era in banking has therefore emerged and done so post the global financial crisis (GFC) of 2008 (Arner, Barberis & Buckley 2015; Chiu 2017). How banks capitalise on these new opportunities and manage the threats they potentially impose will be central to strategy going forward, especially if they want to survive the competitive environment of tomorrow (Rossi 2017).

Although technology has been integrated into banking product and services offerings for the best part of the past three decades, it was initially limited to the automation of back-office operations (Masocha, Chiliya & Zindiye 2011). It has, however, dramatically challenged this notion as the sales and specifically client-facing environment has seen a dramatic uptake in the use of technology. This is driven by the desire of clients to seek 'experiences' and use technology when dealing with their banks (Cairns 2017). Technology has therefore revolutionised the way the modern economy functions and is set to do this at an exponential rate going into the so-called fourth industrial revolution (Schwab 2015). One only has to realise that the speed of current technologically related breakthroughs and disruption is unprecedented in history and does not discriminate against country nor industry – it is pervasive and evident in entire systems including production, management and governance (Schwab 2015). Not to be part of it is not to be part of society.

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For this reason, technological disruptors in the financial services industry (referred to as Fintech) have revolutionised the playing fields for banks and resulted in their redefining what they offer, how they offer it, and to whom they offer it. The strategic direction banks adopt over the next decade will be important, therefore, to ensure that they stay relevant and competitive (Weichert 2017). This article investigates the challenges facing South African retail banks driven by the Fintech revolution and provides insights into how they are strategically adapting.

Background

In 2005 Hedley et al. (2005:6) stated that 'non-traditional competitors (potentially) have the resources, superior value proposition, technological savvy and customer goodwill to wipe out traditional banks altogether in the near future'. Referring to this as an 'intriguing notion', they put forward three reasons why this might in fact not turn out to be the case: firstly, regulatory scrutiny would discourage such competitors from entering the fray; secondly, banks have the necessary networks and specialist skills at their disposal which would essentially negate any competitive pressures from these new entrants; thirdly, security and privacy is something that traditional banks offer their clients that these competitors are unable to provide. In 2018 these non-traditional competitors have revolutionised the environment that banks function within. Emerging technological breakthroughs such as AI, 3D printing, humanoid robotics, autonomous vehicles, nanotechnology, biotechnology, quantum computing, mobile Internet, self-learning algorithms, drones, holograms, and predictive analytics (Dapp 2015; Schwab 2015) are busy revolutionising the financial services industry. As things currently stand, it can be argued that this so-called Fintech environment is the beginning of a new period that will redefine how banks operate. For example, research suggests that technological breakthroughs will become integral to how society operates on a daily basis and banks will have to adapt or face possible extinction (Chen et al. 2017; Yeoh 2016). Furthermore, due to offering reduced cost banking solutions and encouraging disintermediation, banks will need to increasingly adapt their strategy to partner with Fintech companies to provide banking solutions (Arner et al. 2015; Bunea, Kogan & Stolin 2016; He et al. 2017). The 'bank of the future' is therefore one that needs to be compatible with the technological solutions that Fintech offers, but to an extent that is unprecedented in history.

Although the use of technology in banking is not new, the importance and extent of it has grown significantly in the past decade. Non-traditional competitors with strong technology-driven offerings have entered the traditional banking environment to 'disrupt' traditional modes of financial technology solutions (Dapp 2014). These Fintech competitors provide a plethora of complex offerings ranging from digital payments solutions and information services to simpler savings and deposit-taking products, online banking facilities, multi-channel advice, securities trading, and

financial software (Dapp 2014). Their influence in the banking world has also grown substantially in recent years. Schueffel (2016) provides evidence that the search popularity on Google for the term 'Fintech' has increased significantly since 2011 on the back of the GFC. A further study conducted in 2016 found that no US bank holding company surveyed mentioned Fintech as a competitive risk in any of their respective annual Securities and Exchange Commission reports prior to 2016 (Bunea, Kogan & Stolin 2016). So, although banks have used technology in their day-to-day operations for several decades, the notion of Fintech transcends the typical applications of technology in present-day banking. The purpose of this article is therefore not to argue that banks are increasing the use of technology per se, but rather to investigate how the new and advanced types of technologies that have never before been integrated into banking are changing the strategic landscape for banks. Given the unique regulatory requirements that banks have to comply with and the ramifications of the GFC, the impact of investigating the impact of Fintech cannot be overstated, especially regarding how they are strategically addressing the competitive challenges it poses. If regulators know how banks are responding to Fintech, they are better positioned to regulate the environment that these disruptors are entering. For this reason, the article investigates what South African retail banks are doing to strategically address Fintech. A non-positivist paradigm is adopted in which qualitative judgements will be made based on the retail strategies of the major South African retail banks, namely ABSA,¹ First National Bank (FNB), Nedbank, Standard Bank and Capitec Bank.

Literature review

A new operating context

Regulatory considerations

With the events of the GFC of 2008, regulators, both domestically and internationally, have redefined the 'boundaries' emanating from predominantly technology-driven activities impacting directly on the day-to-day operations of banks. This has placed pressure on regulators because as Carrel (2014) suggests:

[one of the] regulators' main challenges [is] to define regulatory boundaries for the financial institutions to operate and control their risks while allowing enough freedom for them to propose and innovate. (p. 233)

Because of this, banks are innovating not only their mode of interaction, but also the mix of products and services in order to redefine their bank-client relationships in a fundamentally new way. They have also had to work actively on perceptions regarding trust and how fairly they are seen to maintain bank-client relationships (Moin, Devlin & McKechnie 2015; Roy, Devlin & Sekhon 2015). As perceptions of risk escalate

1. Due to the selling off by Barclays Bank plc of Barclays Africa shares and the reduction of a controlling stake in the bank in 2017, the so-called 'separation strategy' (at the time of writing) aims to disassociate Barclays from the ABSA brand. As of 2018, Barclays Africa will be known as ABSA Group Limited. For purposes of this article, reference will be made to ABSA.

from the client's point of view, trust in the bank-client relationship diminishes (Järvinen 2014).

Moreover, regulators are placing more pressure on banks to realign their organisational culture to be in the interests of their clients. Market conduct regulation packaged under the auspices of 'treating customers fairly' has become increasingly more important post GFC, especially to eradicate any tendencies towards moral hazard and conflicts of interest (Höbe 2015). Also, due to the proliferation of information in the public domain, cybersecurity and the protection of client information is seen as a serious risk facing banks in the technology era. Insurers in the US, for example, are providing insurance against cyberattacks in a market estimated to already be worth \$2.5 billion in 2017 (McWaters & Galaski 2017). The insurer American International Group (AIG) estimated that in 2017 the cyberinsurance industry grew at a rate close to 30% per annum (Camillo 2017). Cybersecurity, and especially the protection of proprietary client information, is therefore a vitally important regulatory priority. This client information is central to the ability of so-called Fintech companies to identify patterns and trends via big data analytics and offer technology-based solutions on a mass scale. If the information is not protected by regulatory reforms, trust in the financial system will be eroded and contribute to systemic risk concerns.

These regulatory developments suggest that the environment facing banks has changed dramatically and, importantly, placed increased pressure on regulators to enforce compliance. In the context of this study, the challenge will be to what extent disruptors will be held accountable to the same regulations and compliance requirements as banks are, especially when they start behaving more like banks (Lee 2017). Even if, as Treleaven (2015) suggests, technological disruption creates unprecedented opportunities to reform regulation in the financial services industry, regulators will still have to ensure that trust in a sound regulatory environment is maintained so as to avoid escalating systemic risk and potential economic crises. This risk is acknowledged by the South African Reserve Bank (SARB) who emphasise especially the interconnected and contagion implications of poor regulatory oversight as the adoption of Fintech increases (SARB 2017). Put simply, the increasingly integrated and complex use of technology in ways unprecedented in the past cannot be allowed if the soundness of the banks themselves is not simultaneously ensured.

Changing consumer behaviour

Due to the ubiquitous nature of information on the Internet, clients are more informed about and resultantly more demanding of personalised banking solutions. This is especially prevalent among younger consumers who do not know a world without the Internet and smart devices. The millennials (those born between 1980 and 2000) in particular exhibit dramatically different buying patterns and consumption expectations than older generations such as the baby boomers (KPMG 2017). They are also increasingly

averse to interacting with a bank, especially via a branch, and rely heavily on their smart technology-driven devices (Höbe 2015). A study in the US found that 75% of millennials would prefer using financial services from PayPal, Amazon or Google as opposed to a bank, one-third would be prepared to switch banks in the next 90 days, 53% think that all banks are the same, and, rather comically, 71% were more willing to get root canal surgery at their dentist than interact with a bank (Kadlec 2014). Consumer behaviour and the demands it places on banks has revolutionised product and services offerings. At the heart of this is the use of technology by a generation of clients who cannot imagine a world without it.

Another interesting phenomenon that has arisen in these technologically driven times is how consumers consume goods and services – they are less willing to 'own' them and would prefer to merely have access to using (or 'renting') them. Music and movies, for example, are streamed via the Internet instead of purchasing the physical CD or DVD (Dapp 2015). Apple also offers the option to 'rent' access to its full music library without actually owning the songs and this is done through cloud technology for a nominal monthly fee. Ownership does not accrue as the consumer effectively only rents the use of the music. This alternative business model allows goods and services to be shared (think also of Uber or Airbnb) and forms part of the so-called 'sharing economy' (Dapp 2015:5). A resultant paradigm shift has emerged: from the ownership of to the use of, which suggests that clients will become increasingly less loyal to service providers if they are not seen to facilitate tailor-made products and services in real time. Research suggests that if banks do not ensure seamless transactions in real time, clients are more inclined to move to another bank (or non-bank) as competition for clients is rife (Weichert 2017). In essence, therefore, if banks are to adapt, they need to become enablers of rather than providers of banking products and services due to non-traditional competitors offering similar or even better products and services. This thinking is central to strategically preparing for the disruption posited by the Fintech revolution.

What is Fintech?

Although it may seem that the marriage of finance and technology (into 'Fintech') only came to the fore in recent years, the earliest reference to it dates back to 1972 where it was defined as 'an acronym which stands for financial technology, combining bank expertise with modern management science techniques and the computer' (Bettinger 1972:62). Fintech companies provide digital financial ecosystems that are able to collect vast amounts of data and derive economies of scale and multi-stakeholder participation (Mok & Saha 2017). In doing so, banks have in recent years realised not only the importance of these ecosystems, but also the need to engage and partner with these companies (Dapp 2014). The digital ecosystem business model is characterised by strong sales and earnings growth driven by an innovative and cost-effective environment and has brought into question

the viability of traditional operating models adopted by banks (Dapp 2015). A study conducted by PwC (2017) found that approximately 82% of financial services providers expected to increase their partnerships with Fintech companies before 2022. The benefit for both bank and Fintech company is therefore mutual: the bank partners with a company that provides innovative and noticeably cheaper and more efficient banking solutions (be it product-, service- or process-related), and the Fintech company benefits by earning a revenue for offering the service, while simultaneously gaining access to a large client base on whom to test their innovative theories and models (PwC 2017). These Fintech companies have, therefore, revolutionised the playing fields in which not only banks, but financial institutions in general operate.

With the advent of Fintech companies the regulatory environment has been equally challenged and raises concerns whether or not regulators will be empowered to adequately regulate them (McWaters & Galaski 2017; Weichert 2017). Due to many of them being venture capital start-up companies, it seems that they will indeed escape the regulatory net applicable to banks (Arner et al. 2015), at least in its current form. This is a major concern for regulators. What makes matters more complex is that the world of Fintech is not static and there is already evidence of alternative applications of technology into so-called wealthtech, insuretech and regtech. The latter, for example, is 'the use of technology to address regulatory and compliance requirements more effectively and efficiently' and may include electronic-based know-your-customer facilities, improved fraud monitoring, and automatic clearing registries (Arner, Barberis & Buckley 2016). These regtech proposals are intended to improve operational efficiencies and at the same time reduce compliance costs (Arner, Barberis & Buckley 2016). Technology is therefore being applied not only on the sales side of the banking transaction, but also on the regulatory and compliance side. This raises new opportunities for banks, but at the same time additional risks, especially in terms of Fintech partners not falling into the regulatory net. Fintech therefore offers opportunities to both banks and Fintech companies, but hinges on a sound functioning banking industry. If an integrated Fintech-driven environment is not suitably captured by regulators, systemic risk implications come to the fore that can threaten the stability of entire economies. This must be avoided at all costs.

Typical applications of Fintech

The use of technology in finance is applied in several ways. Below follows a discussion on the major applications thereof.

The use of big data and analytics

According to SAS (2017):

Big data is a term that describes the large volume of data – both structured and unstructured – that inundates a business on a day-to-day basis. [The] primary value from [it] comes not from

the data in its raw form, but from the processing and analysis of it and the insights, products, and services that emerge from [this] analysis.

In its raw form the data in itself is, therefore, meaningless and the value lies in what can be extrapolated from it. Banks will thus need to adapt to expected future trends as opposed to merely addressing current trends, similar to the approach adopted by the global package delivery company UPS who use data to be prescriptive (that is, forward-looking) as opposed to being merely descriptive or predictive (which would typically be associated with being static and historical-based). Where, they argue, typical big data methodologies acquire information which results in knowledge, their data architecture goes beyond this to fostering 'wisdom' and ultimately 'clairvoyance'. This, in their view, has revolutionised how they service clients as their predictive analytics hopes to one day predict future problems and solve them before they become operationally significant (Dix 2014). The use of big data suggests that the potential benefit to the bank is that it identifies opportunities before competitors become aware of them: pre-empting opportunities will therefore be more effective than merely being proactive.

Moreover, technology facilitates innovation which enables banks to provide customised and differentiated banking solutions to clients (Höbe 2015). In fact, data analytics and mobile devices were seen globally by banks in 2017 to be the most important technical areas of investment in the coming 12 months (PwC 2017). Algo-banking, for example, analyses the financial information of markets and customers to customise financial advice and product recommendations, supposedly more efficiently than any human (Frost & Sullivan 2016). Due to being privy to client information, banks are also able to link clients to service providers such as retailers, airlines and hotels. This Internet of Things (IoT) enables banks to become part of every part of a client's life (Oracle 2015). Big data and its associated analytics are therefore seen to be crucial to understanding and pre-empting the behaviours of the client of tomorrow.

Automation and digitisation

Structural digital changes will predominantly apply to products and services that are easily standardised and can be automated due to their repetitive, routine and predictable nature (Dapp 2014). Bersin (2016) suggests that one of the most fundamental changes that technology, and in particular the automation and digitisation of products and services, brings to the fore is the design of organisations. This implies an organisational structure that is flatter, focusing less on function and more on teams that are more empowered, talent that is mobile, an organisational culture that is shared, and leadership that is more hands-on. Ultimately, the benefits gained from the use of technology will be geared towards a more user-friendly environment for clients (Dorfleitner et al. 2017).

The use of technology does, however, have the potential to replace humans in the delivery of banking products and services. A study conducted at Oxford University (Frey & Osborne 2013:38) predicts that approximately 47% of jobs in the US will be 'automatable over some unspecified number of years, perhaps a decade or two'. The study contends that jobs related to office and administrative support, sales and services, and the construction industry are at a particularly high risk of being computerised due to their relatively low reliance on human social intelligence. This social intelligence refers to typical work-related tasks such as negotiation, persuasion, empathy, emotions, and the ability to respond intelligently in a manner that emulates 'common sense' (Frey & Osborne 2013:27). Jobs that require a high degree of creativity (such as fashion designers), perception and manipulation (such as surgeons) also have a low probability of being automated.

The notion that computers will replace humans in banks is becoming more prevalent by the day. The use of robo-advisers, for example, is raising concerns for employment prospects, especially in emerging markets given their ability to replace unskilled labour (World Economic Forum 2017). Although their use seems to be the next logical step in using algorithm-based technology, banks must be careful to ensure that clients are indeed willing to be assisted by such virtual assistants (Mok & Saha 2017) as this will redefine the interactive nature of the bank-client relationship. This in turn has very real implications for both the size of the staff complement and the number of physical branches manned by humans.

Emerging technologies

Emerging technologies such as blockchain, cryptocurrencies, biometrics, and AI are seen to be vitally important areas of investment by both Fintech companies and large financial institutions. As of 2017, 77% of Fintech companies expected to adopt blockchain in their processes or production systems by 2020 (PwC 2017). Due to blockchain (and similar distributed ledgers) being decentralised, there are reduced costs and a built-in disincentive to commit fraud due to changes being scrutinised by the entire network (Arner et al. 2015). This raises alternative opportunities for regulators to gather information from banks both directly and instantly in order to ensure compliance in real time (He et al. 2017). By implication, regulatory reporting as it is currently done may become a thing of the past.

Furthermore, although cryptocurrencies (such as Bitcoin) offer a low-cost payment method that is accessible, anonymous and unregulated (Frost & Sullivan 2016), they raise regulatory concerns (Dorfleitner et al. 2017). Case in point, the CEOs of both Nasdaq and Bank of America recently raised their trepidations regarding the lack of regulation for cryptocurrencies, especially with regard to encouraging illicit criminal behaviour due to the anonymity involved (Keller 2018).

Banks are also experimenting with the use of biometrics to activate credit cards through smart card technologies (KPMG 2017) and identify clients through fingerprint scanning (Arner et al. 2015). Voice, face, handwriting and touchscreen keystroke recognition are further examples of this technology and, coupled with location-based identification, will reportedly reduce client fraud going forward (Centre of Excellence in Financial Services 2017). Recent research suggests that voice recognition is more than three times more accurate than typing (Bersin 2016). Moreover, Dapp (2015) indicates that banks are even experimenting with biometric technologies such as hand vein scans and gait identification. There are also risks to using biometrics, however, for example, it could cause 'data theft' where fingerprints are replicated through high quality, high-resolution photographs (Arner et al. 2015). Cyberattacks also threaten the safekeeping of not only biometric data, but also that related to personal and financial information of clients (Camillo 2017). As a result, cyberattacks reduce the trust in banks and also stifle innovation and have serious implications for the effectiveness of regulators to ensure stability in financial systems (He et al. 2017). As long as the use of biometrics does not violate human rights and banks are able to secure private information, it seems to be integral to how banks will identify clients in the future.

Furthermore, AI relies heavily on biometric technologies to identify clients and offer tailor-made advice through the use of big data and self-learning (World Economic Forum 2017). Robotics and AI effectively 'derive patterns used to predict behaviour ... and in the end mimic human judgement in automated decisions' (He et al. 2017:10). Robo-advisers are expected to become the norm when interacting with clients, especially with regards to investment advice on passive investment and diversification strategies (Dorfleitner et al. 2017). The complex algorithm-based technologies essentially allow machine learning by estimating the risk appetite of investors and identifying investment opportunities (Centre of Excellence in Financial Services 2017). Virtual reality will also be used to promote social learning through simulations and gamification (Bersin 2016).

Banks are also providing apps as a means to interact more socially with clients. Although US banks were quick to adopt Web 2.0 technologies and capitalise on the social network dynamic of interaction, South African banks were initially slow in the uptake (Bagley, Mothlala & Razack 2013). However, a 2016 study indicated that banking-related apps are the third most downloaded by South Africans behind social networking and instant messaging apps (Columinate 2016). The ability of clients to access information quickly was also cited as the most important factor driving the use of apps. Ideally, banks want to provide a seamless integration between socially driven technology-based behaviour and banking and to do this, they need to provide platforms that are totally integrated in the social media environment (Dapp 2015). As an example, suppose a client transfers money via an app on the phone while chatting on social media – this is

TABLE 1: The number of branches, automated teller machines and clients for the big South African banks.

Bank	Number of branches					Number of ATMs					Number of retail clients [†]				
	2015	2016	% difference	2017	% difference	2015	2016	% difference	2017	% difference	2015	2016	% difference	2017	% difference
ABSA	784	774	-1	730	-6	9216	8885	-4	8919	+0.4	9.4	8.8	-6	8.7	-2
FNB	723	676	-7	645	-5	4978	4641	-7	4360	-6	7.2	7.7	+7	7.8	+1
Nedbank	1143	786	-31	613	-22	3840	4052	+6	3948	-3	7.4	7.4	0	7.9	+7
Standard Bank	647	641	-1	640	-0.2	5651	5564	-2	5550	-0.3	11.6	11.8	+2	10.6	-10
Capitec Bank	668	720	+8	796	+11	3418	3705	+8	4024	+9	7.3	8.3	+14	9.0	+8

[†], Number of clients were measured in millions.

Note: Integrated reports and fact sheets were used for the respective banks. The automated teller machines (ATMs) for Standard Bank refer only to those owned by the bank and include automatic notes acceptors. All figures for 2017 are for period ending June 2017.

Source: Please see the full reference list of this article Coetzee, J., 2018, 'Strategic implications of Fintech on South African retail banks', *South African Journal of Economic and Management Sciences* 21(1), a2455. <https://doi.org/10.4102/sajems.v21i1.2455> for more information.

TABLE 2: Selected strategic value propositions relating to Fintech by the South African retail banks.

Bank	Key strategic value propositions
ABSA	We [ABSA] are building a scalable, digitally-led business
FirstRand	Provide digital platforms to deliver cost-effective and innovative transactional propositions to its customers
Nedbank	Building a more digital, agile and competitive Nedbank
Standard Bank	We understand the scale of disruption that is currently sweeping through the financial services industry
Capitec Bank	Encourage virtual money management by providing value adding Internet and mobile banking functionality

Source: Please see the full reference list of this article Coetzee, J., 2018, 'Strategic implications of Fintech on South African retail banks', *South African Journal of Economic and Management Sciences* 21(1), a2455. <https://doi.org/10.4102/sajems.v21i1.2455> for more information.

seamless, quick and real-time and epitomises what Fintech companies claim as adding value to banks.

Research design

This study adopts a non-positivist paradigm focusing on a qualitative research design. This approach seeks contextual understanding of the underlying phenomenon (Belal, Abdelsalam & Nizamee 2015), which in this case is to investigate the strategic approaches of the major retail banks in South Africa given their adoption of Fintech. When adopting a qualitative design, it is important to ensure that the methods are unbiased and trustworthy (Morse, Olson & Spiers 2002). As such, the sampling frame was the five major South African retail banks namely ABSA, FNB, Nedbank and Standard Bank and more recently Capitec Bank, which has aggressively increased its market share in recent years (Businesstech 2017a). These banks represent the retail banking environment in South Africa. When Investec Bank is included, the banks account for more than 90% of retail deposits in South Africa (Nhundu 2016). However, due to Investec focusing exclusively on the high net worth affluent market as opposed to the retail banking market, it was omitted from the study. For this reason, the five banks depicted in Table 1 are by far the most representative of the South African retail banking market. Sampling bias is, therefore, reduced.

The information on how banks deal with Fintech was sourced primarily from the annual reports and websites of the respective banks. This ensured that the source documents were trustworthy and from the banks themselves where strategy is clearly provided (Coetzee & Crous 2016). By assessing the strategy reports of the banks in their respective annual reports, qualitative judgements were made based on the strategic approaches adopted that corresponded to the

literature review on Fintech. More specifically, statements and references made by banks were assessed where specific mention was made of the strategic impact that Fintech has on their operating environment and which future plans are being put in place. By applying this research design, greater insight is gathered with regard to the strategic responses by South African retail banks to Fintech.

The strategic response of South African retail banks

The extensive and integrated use of technology will become a norm

All of the banks have embraced the technology revolution. So much so that it has become part of their strategic direction over the next few years. Table 2 provides key strategic value propositions that they have put forward reflecting the role of technology over the coming years.

Table 2 indicates that the environment facing South African banks cannot be entered into without having information technology (IT) at the centre of operational strategies. Key strategic drivers such as economies of scale, efficiency, cost reduction, innovation, competitiveness and simplicity are inherent to the value propositions that IT evidently brings to the fore. The FirstRand Group, for example, prides itself on being innovative and specifically disruptive through the use of technology. By the end of 2017, approximately 8% of total sales were digital-related and a key driver of growth (FirstRand Group Ltd 2017). Furthermore, Nedbank (2017:30) states that 'the digitisation of banks means that technological developments take centre stage in banking' and ABSA, through its 'separation strategy' will explicitly focus on integrating technology in a new strategic path post Barclays (Barclays Africa Group Ltd 2017a).

Banks will be competing aggressively against non-traditional Fintech disruptors

The banks also realise that disruption by both traditional and non-traditional competitors especially in the supply chain is threatening their survival. As Standard Bank puts it (2016a:19), 'to prove our relevance in an increasingly digital world, we are actively embracing disruption and innovation, and working with innovation partners to deliver better value for our clients'. ABSA further regards the disruption of Fintech companies as a key operational risk impacting

competitiveness (Barclays Africa Group Ltd 2017a:16). This disruption and especially the innovation it brings with it should not, however, be at the expense of ensuring simplicity in product and service offerings. Capitec Bank reiterates this (2017:15): 'new products will continue to have the same foundation of simplicity and affordability as our other products'.

As of the first quarter of 2018, several Fintech disruptors were imminent in the South African retail banking industry:

- TymeDigital, a subsidiary of the Commonwealth Bank of Australia, was planning to become the first full-service digital bank in South Africa to provide affordable and accessible online banking services. Explicitly focused on disrupting the South African banking industry by offering cheap and technology-based banking services, the bank has strategic partnerships with Pick n Pay and Boxer stores to operate Money Transfer. The bank also emphasises the importance of educating its client base of the benefits of using online-only banking facilities.²
- A former CEO of FNB is in the process of starting a new bank called Bank Zero which functions solely through an app on smart devices and offers no physical branches. The bank will not initially provide credit but will focus on transactional services with the purpose of launching an aggressive low-fees strategy aimed at attracting both retail and business clients. This in itself will be an opportunity for major disruption as business clients are traditionally charged very high fees by banks.³
- Discovery Bank is an attempt by insurance house Discovery to enter the retail banking industry in South Africa. Due to its having a substantial client base in its insurance business, it plans on launching a full-service banking platform to these clients and providing the services through digital channels (Businesstech 2018). With many clients having their medical aid and insurance at Discovery, it provides a golden opportunity for the new bank to poach banking clients from, especially, the 'big four'.

The business model of Capitec Bank can also be regarded as being disruptive as it purposefully differentiates its strategy from that of the big four. Where the latter are all trying to reduce the number of physical branches, Capitec is intentionally increasing theirs. It also does not try to differentiate between clients, striving rather to treat them all the same. For example, where the other banks have loyalty programmes, Capitec does not have one, stating (Thomas 2018:9): 'we have no plans to introduce a loyalty programme and will never have one in which a very small proportion of customers gets most of the benefits'. PostBank is a further example of a disruptor as it provides affordable banking services through the post office branch network. The client reach is therefore extensive and poses a real threat to client acquisition in terms of its physical branch network especially in the remote areas of South Africa.⁴

2. See <https://tymedigital.co.za>

3. See <http://www.bankzero.co.za>

4. See <https://www.postbank.co.za>

The technology-based skill sets of staff will become essential

The dynamic and exponential growth in the use of technology in banking services has placed pressure on banks to employ staff with the requisite skill sets. Not only must staff be able to stay abreast of the latest developments in technology, they also need to identify new and innovative solutions that will enable a bank to remain competitive. As such, the ability of staff to analyse data is expected to become a 'mandatory core competency' of professionals across the board (Tableau 2017:12).

Nedbank, for example, places a lot of emphasis on the changing nature of skills required from staff to deal with:

... robotics process automation, user interface design (UI), user-experience design (UX), social media client services, digital innovation, cyber- or digital security, data security, data mining, predictive risk analytics and client experience management. (Nedbank Group Ltd 2017:34)

Standard Bank regards the skill set required by staff to face digitisation and automation as a major concern going forward. They proactively strive to improve human capital by offering specialised skills development and learning programmes, partnering with universities to develop IT curricula, and upskilling, redeploying and exposing staff to new business models and thinking in the technology space (Standard Bank Group Ltd 2016a). They place a high premium on empowering staff suitably to address the rigours of the technology age to: 'provide access to advanced technology and tools that support the future world of work and fulfil the promises we make to our clients' (Standard Bank Group Ltd 2016a:60). ABSA (Barclays Africa Group Ltd 2017a:4) highlights the threat posed by cyberattacks and the need for staff with the 'expertise to defend against the threat landscape'. The bank also recognises the competition for scarce skills in IT, data analytics and risk management as a key market driver both now and in the near future (Barclays Africa Group Ltd 2017a:14). For example, in recent years ABSA invested in critical skills in technology, digital, data and cyber security platforms by hiring 843 professionals. Of these, 71 focused solely on cyber security and 91 on data analytics (Barclays Africa Group Ltd 2017b:39). Similarly, the FirstRand Group increased its spend on skills development by almost 240% in 2017 from 2015 levels (FirstRand Group Ltd 2017:9) and due to Capitec focusing on simplifying banking and doing so cheaply for retail clients, the bank recruits staff who have 'the ability to interact constructively and support clients' to 'empower clients to structure solutions according to their preference[s]' (Capitec Bank Ltd 2017:36).

More efficient (and fewer physical) distribution channels

As a key performance indicator for its strategic focus, Nedbank is optimising branch floor space through digitisation to ensure smaller and more efficient branches (Nedbank Group Ltd 2017). As they put it, they will 'continue

to innovate and roll out digital branches to enable clients to migrate to digital channels and empower our staff with digital tools to serve clients' (Nedbank Group Ltd 2017:47). By implication, this means that by using technology, banks are reducing their relative reliance on brick-and-mortar distribution channels as evidenced for the four-year period 2012 to 2015 where the number of branches by the big four banks fell by 5% from 3005 to 2862 (Tarrant 2016).

As indicated in Table 1, the big four have all reduced their respective number of branches, with only Nedbank marginally increasing the number of ATMs and the rest decreasing. This is a major strategic shift from previous years where branches and ATMs increased substantially in an attempt to increase opportunities to interact with clients (Coetzee 2009). The opposite is happening now. Nedbank, for example, has indicated that by the year 2020 they intend reducing the number of branches to 82% of 2017 levels (Nedbank Group Ltd 2017:73). And, although they have reduced the number of staffed outlets, they have introduced 336 digitally focused 'branch[es] of the future' (Nedbank Group Ltd 2015). In November 2017 Nedbank launched a self-service digital branch called 'NZone' offering an interactive wall, a virtual reality area, a secure video kiosk to interact with bankers and free Wi-Fi. This branch not only exposes clients to new technology-based products, but also acts to inform and 'prepare clients for the future of banking' (Khumalo 2017).

Although Capitec (Capitec Bank Ltd 2017:12) focuses on increasing 'out of branch transacting' (i.e. transactions through digital channels), it is the only bank that has an explicit strategy to increase the number of physical branches – by 50 a year (Capitec Bank Ltd 2016). This is due to the focus to increase market share, and especially to make the bank the primary bank for as much as 25% of retail clients by 2020 as they conduct up to five times more transactions than those with multiple bank accounts (Capitec Bank Ltd 2017). From all accounts, though, the banks are reducing the number of physical branches in favour of digital channels.

Client migration to cheaper and more technology-focused digital channels

Following the drive to reduce expensive brick-and-mortar distribution channels, banks are intentionally migrating clients to cheaper and more technology-driven digital platforms. This so-called 'relationship banking paradox' (Coetzee 2016) suggests that the banks are moving towards a remote interaction strategy and have embraced technology in the bank-client relationship. For example, ABSA acknowledges that technology has 'redefined transactional banking' and places emphasis on an 'intelligent relationship' that integrates 'data, insights-driven solutions and human interactions' across all channels in the bank-client relationship (Barclays Africa Group Ltd 2017b:35). As with all the banks, electronic or digital channels attract a pricing model that encourages and rewards customers more favourably. Standard Bank indicates that the number of clients in South Africa is 'static' and results in a hugely

competitive market for clients with increasingly more digital-based habits (Standard Bank Group Ltd 2016b:38) and Nedbank acknowledges the role that technology is playing in disrupting the traditional dynamics of the bank-client relationship. By migrating clients to digital channels, banks will use branches to offer advice and also self-service facilities to clients. The branch will not be the primary channel of interaction and will have an underlying purpose to migrate clients to cheaper digital channels.

The pervasive use of technology is also expected to become more prominent. For example, Nedbank (Nedbank Group Ltd 2017:37) is incorporating facilities such as intelligent depositor devices, video banking, quick-chat banking, self-service kiosks, robo-advisers, virtual reality, a grab-and-learn wall and facial recognition into their digital branches. Cloud computing, big data and analytics, blockchain, AI, biometrics and quantum computing are also expected to become inherent to bank strategy (Capitec Bank Ltd 2017; Standard Bank Group Ltd 2016b). Compared to 2016 levels, FNB indicates that digital transactions increased by 88% in 2017 driven primarily by banking app volumes increasing by 68% and mobile device volumes increasing by 20% (FirstRand Group Ltd 2017:52). In order to operationally support these Fintech applications banks are, for example, rationalising internal IT systems (Nedbank Group Ltd 2017:37), offering a multi-channel and device approach (Barclays Africa Group Ltd 2017b:39), reducing the total square metreage of branches without any material change in the number of branches (Standard Bank Group Ltd 2016a:67) and even selling and simultaneously financing mobile devices such as cellphones and tablets (FirstRand Group Ltd 2017:56). These responses strongly suggest that the use of Fintech applications will drastically alter both how banks interact with clients and also the operational platforms to enable the use of the applications.

Implications of the study

The integration of technology into financial services has the potential to radically change the nature of distribution channels (Masocha et al. 2011) as well as to redefine banks from being providers of banking services to enablers of banking services. The findings of this study indicate this. South African banks are realising not only that the status quo cannot be maintained, but also that failure to embrace the technological revolution will be to their detriment. Moreover, due to technology reducing both the switching costs for clients and the barriers to entry for disruptors (Bersin 2016), failure to adapt will severely impede survival. All the South African banks have realised this and have aggressively focused on upskilling their staff to have the requisite skill set to deal with the digital era.

The banks indicate that technology is in the process of radically changing how they interact with clients. Traditional brick-and-mortar branches are becoming less of a long-term option, at least in their current format where human interaction remains a dominant feature. Offerings and client

interaction will become increasingly more integrated with automation, digitisation, smart devices and virtual interaction. In a more extreme case, interaction will be through the use of robotics and virtual reality. Branches are thus expected to become smaller and there will be fewer of them due to their high fixed costs. In fact, with Fintech competitors such as TymeDigital and Bank Zero relying solely on digital platforms to interact, retail banks will be forced to aggressively migrate clients to digital channels in order to compete. The bank-client relationship will therefore in all likelihood be defined along remote interaction dynamics, especially among the younger, more technology-savvy generation.

Having said this, human interaction will not disappear altogether as it remains pivotal to promote trust and relational commitment between the parties in a banking relationship (Johns 2012). The banks themselves also acknowledge that personal interaction remains important and in branches, where this primarily occurs, the format and design will change rather than become totally obsolete. Several banks in the US for example are experimenting with new ways to use branches to attract clients. Umpqua Bank offers smaller-sized branches that host social activities ranging from yoga classes to Oktoberfest-style parties where beer and pretzels are served. Similarly, Capital One has opened several 'café branches' that offer all the typical amenities of a coffee shop while consulting a personal banker (Wack 2017). Opportunities such as these must be investigated suggesting that, as things currently stand, the exact structure and nature of a branch is realistically a work in progress. What is clear however is that it will be fundamentally technology driven and experimental in design.

Furthermore, the wealth of information banks have on clients will allow them to profile and segment clients beyond mere biographical and financial information to include medical and even health-related financial solutions. If one considers that ABSA, FNB, Nedbank and Standard Bank are all part of larger holding companies that have some exposure in either health care or insurance, it holds true that big data and the Fintech solutions attached to that will allow banks to provide banking solutions that are not merely reactive, but pre-emptive – that is, to open up and capitalise on opportunities before competitors become privy to them. This is because the banks will be able to profile clients more accurately and use predictive analytics to better address financial needs, be they specifically banking-related or generally financial-services related. Although the window of opportunity may be short-lived until competitors offer similar solutions, at the heart of this will be a seamless financial offering where the bank is effectively an enabler of banking solutions as opposed to being a provider of one. This has manifested itself in banks not only engaging strategically with Fintech companies, but also entering into strategic partnerships with, for example, retailers and supermarkets.

Finally, a very real concern is how Fintech companies will be regulated. The SARB must provide clear guidelines to both Fintech companies and banks as to how they will need to comply with existing regulatory and legislative requirements.

Failure to do this can result in very real systemic implications that puts the stability of the banking industry at risk. This must be avoided at all costs, especially given that technology is fundamentally intended to improve the lives of clients. In order to assess current developments in Fintech, an inter-governmental Fintech working group that includes the SARB, the Financial Services Board (renamed to the Financial Services Conduct Authority in 2018), National Treasury and the Financial Intelligence Centre was established in 2017 (South African Reserve Bank 2017). At the time of writing, the SARB Fintech Unit had also been established to monitor in particular the financial, operating and systemic risks posed by Fintech. Of note is the specific mention that the unit had been established 'to develop the capacity to understand [*the*] risks (and benefits) of Fintech' (SARB 2017:38), suggesting that a comprehensive understanding of Fintech and its implications are still a work in progress for the regulator.

Summary

This study identified several strategic responses that will dominate the way South African retail banks conduct themselves in the future. Due to the exponential growth in technology and the constant drive to innovate to stay competitive, the skill set of staff not only to stay abreast of the latest developments in the technology space, but also to innovate and offer new solutions is more important than ever. The skill set for the 'typical' banker of the future is therefore not the same as that of the banker of the past. Furthermore, the migration of clients to digital platforms will dominate interaction policy. Clients are more technology savvy and less loyal in the traditional sense as they are becoming increasingly more likely to use solutions that are seamless and convenient, through either a bank or a non-bank. Discrimination between these two is becoming increasingly blurred in the view of today's client. The traditional shape and design of distribution channels are also under threat in favour of cheaper and more efficient technology-based channels. The way that banks interact with clients in the future will therefore not be the same as the way they interacted with them in the past. Furthermore, new competitors that are not traditional are coming to the fore. They challenge conventional thinking when it comes to banking and integrate technology at the heart of their operations. Finally, the SARB will need to ensure that they implement a comprehensive and stringent regulatory framework that captures the potential systemic risk of bank failure due to the risks posed by Fintech companies functioning in the banking domain.

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References

- Arner, D., Barberis, J. & Buckley, R., 2015, 'The evolution of Fintech: A new post-crisis paradigm?', University of New South Wales Law Research Series, Paper No. 2015/047, viewed 04 March 2018, from <http://www.law.unsw.edu.au/research/faculty-publications>
- Arner, D., Barberis, J. & Buckley, R., 2016, 'FinTech, RegTech, and the reconceptualization of financial regulation', University of Hong Kong Faculty of Law Research Paper No. 2016/035, viewed 24 February 2018, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2847806
- Bagley, J., Motlala, K. & Razack, A., 2013, 'The bank of the future: Innovative solutions to meet the challenges of the new environment', *Bankseta*, viewed 22 April 2018, from https://www.bankseta.org.za/downloads/Bank_of_the_future.ALP_team1.pdf
- Barclays Africa Group Ltd, 2015, *2015 integrated report*, viewed 22 March 2018, from http://www.barclaysafrica.com/deployedfiles/Assets/Richmedia/PDF/Reports/2013/Barclays_Africa_Group_integrated_report_2013.pdf
- Barclays Africa Group Ltd, 2016, *GRI fact sheet*, viewed 22 March 2018, from <https://www.barclaysafrica.com/content/dam/barclays-africa/bagl/pdf/reports/2016/2016-gri-fact-sheet.pdf>
- Barclays Africa Group Ltd, 2017a, *2017 integrated report*, viewed 22 March 2018, from <https://www.barclaysafrica.com/content/dam/barclays-africa/bagl/pdf/results/annual/2017-integrated-report.pdf>
- Barclays Africa Group Ltd, 2017b, *GRI report*, viewed 22 March 2018, from <https://www.barclaysafrica.com/content/dam/barclays-africa/bagl/pdf/results/annual/2017-gri-report.pdf>
- Belal, A.R., Abdelsalam, O. & Nizamee, S.S., 2015, 'Ethical reporting in Islami Bank Bangladesh Limited (1983–2010)', *Journal of Business Ethics* 129(4), 769–784. <https://doi.org/10.1007/s10551-014-2133-8>
- Bersin, J., 2016, *Predictions for 2017: Everything is becoming digital*, Deloitte Consulting LLP, Research Report, viewed 12 January 2018, from <https://www2.deloitte.com/content/dam/Deloitte/at/Documents/about-deloitte/predictions-for-2017-final.pdf>
- Bettinger, A., 1972, 'Fintech: A series of 40 time shared models used at Manufacturers Hanover Trust Company', *Interfaces* 2(4), 62–63.
- Bunea, S., Kogan, B. & Stolin, D., 2016, 'Banks vs fintech: At last, it's official', *Journal of Financial Transformation* 44, 122–131, viewed 06 May 2017, from <https://static1.squarespace.com/static/573cd03245bf21cb7d553b00/t/57fbfde729687f1d95d5ee38/1476132328641/fintech.pdf>
- Businesstech, 2017a, *Battle of the banks: How SA's big five banks compare*, viewed 06 May 2018, from <https://businesstech.co.za/news/banking/182873/battle-of-the-banks-how-sas-big-five-banks-compare/>
- Businesstech, 2017b, *Which SA banks have gained and lost the most customers in the last year*, viewed 06 May 2018, from <https://businesstech.co.za/news/banking/197166/which-sa-banks-have-gained-and-lost-the-most-customers-in-the-last-year/>
- Businesstech, 2018, *Discovery is 'live testing' new bank capabilities as opening day nears*, viewed 06 May 2018, from <https://businesstech.co.za/news/banking/226535/discovery-is-live-testing-new-bank-capabilities-as-opening-day-nears/>
- Cairns, P., 2017, 'Is technology changing what banks do, or just how they do it? Fintech is putting more influence in the hands of customers', *Moneyweb*, viewed 26 March 2018, from <https://www.moneyweb.co.za/mymoney/is-technology-changing-what-banks-do-or-just-how-they-do-it/>
- Camillo, M., 2017, 'Cybersecurity: Risks and management of risks for global banks and financial institutions', *Journal of Risk Management in Financial Institutions* 10(2), 196–201, viewed 06 May 2017, from <http://www.ingentaconnect.com/content/hsp/jrmfi/2017/00000010/00000002/art00007>
- Capitec Bank Ltd, 2016, *Integrated annual report*, viewed 22 March 2018, from https://commondatastorage.googleapis.com/groovy-util-configobjectda72725/integrated_annual_report.pdf
- Capitec Bank Ltd, 2017, *Integrated annual report*, viewed 22 March 2018, from https://commondatastorage.googleapis.com/capitecbank-co-za/integrated_annual_report.pdf
- Carrel, P., 2014, *The handbook of risk*, Wiley Finance, Chichester.
- Centre of Excellence in Financial Services, 2017, *The impact of the 4th industrial revolution on the South African financial services market*, Centre of Excellence in Financial Services, viewed 26 March 2018, from <https://www.coefs.org.za/impact-4th-industrial-revolution-south-african-financial-services-market/>
- Chen, Z., Li, Y., Wu, Y. & Luo, J., 2017, 'The transition from traditional banking to mobile internet finance: An organizational innovation perspective - a comparative study of Citibank and ICBC', *Financial Innovation* 3(1), 1–16. <https://doi.org/10.1186/s40854-017-0062-0>
- Chiu, I.H.Y., 2017, 'A new era in fintech payment innovations? A perspective from the institutions and regulation of payment systems', *Law, Innovation and Technology* 9(2), 190–234. <https://doi.org/10.1080/10.1080/17579961.2017.1377912>
- Coetzee, J., 2009, 'Banking the unbanked in South Africa', *South African Journal of Economic and Management Sciences* 12(4), 448–461. <https://doi.org/10.4102/sajems.v12i4.188>
- Coetzee, J., 2016, 'Relationship Banking in South Africa', in J. Coetzee (ed.), *Bank Management in South Africa: A risk-based perspective*, pp. 95–124, Juta, Cape Town.
- Coetzee, J. & Crous, C., 2016, 'Integrated reporting in banking', in J. Coetzee (ed.), *Bank management in South Africa: A risk-based perspective*, pp. 179–195, Juta, Cape Town.
- Columinate, 2016, *Five years of South African digital banking insights: A trend report based on the 2012 – 2016 Columinate Digital Banking Satisfaction study*, Columinate, viewed 26 March 2018, from <https://www.columinate.com/wp-content/uploads/2017/02/Columinate-eBook-Five-Trends.pdf>
- Dapp, T., 2014, *Fintech – The digital (r) evolution in the financial sector*, Deutsche Bank Research, viewed 11 November 2017, from https://www.deutschebank.nl/nl/docs/Fintech-the_digital_revolution_in_the_financial_sector.pdf
- Dapp, T., 2015, *Fintech reloaded – Traditional banks as digital ecosystems*, Deutsche Bank Research, viewed 11 November 2018, from https://www.deutschebank.nl/nl/docs/Fintech_reloaded_Traditional_banks_as_digital_ecosystems.pdf
- Dix, J., 2014, 'How UPS uses analytics to drive down costs (and no, it doesn't call it big data)', *NetworkWorld*, viewed 02 March 2018, from <https://www.networkworld.com/article/2850874/big-data-business-intelligence/how-ups-uses-analytics-to-drive-down-costs-and-no-it-doesn-t-call-it-big-data.html>
- Dorfleitner, G., Hornuf, L., Schmitt, M. & Weber, M., 2017, *FinTech in Germany*, Springer, Berlin.
- FirstRand Ltd, 2016, *Annual integrated report*, viewed 22 March 2018, from <https://www.firstrand.co.za/InvestorCentre/Annual%20Reports%20Archives/FSR%20annual%20integrated%20report%202016.pdf>
- FirstRand Group Ltd, 2017, *Annual Integrated Report*, viewed 22 March 2018, from <https://www.firstrand.co.za/InvestorCentre/CurrentFSRannualreport/FirstRandannualintegratedreport2017.pdf>
- Frey, C.B. & Osborne, M.A., 2013, *The future of employment: How susceptible are jobs to computerisation?*, Oxford Martin School Oxford Martin Programme on Technology and Employment working paper 1314, University of Oxford, viewed 06 May 2017, from <http://www.oxfordmartin.ox.ac.uk/publications/view/1314>
- Frost & Sullivan, 2016, *Artificial intelligence, algo-banking, blockchain, cryptocurrencies and robo-advice form growth of Australian Fintech market*, viewed 11 November 2017, from <https://ww2.frost.com/news/press-releases/artificial-intelligence-algo-banking-blockchain-cryptocurrencies-and-robo-advice-form-growth-australian-fintech-market-says-frost/>
- He, D., Leckow, R., Haksar, V., Mancini-Griffoli, T., Jenkinson, N., Kashima, M. et al., 2017, *Fintech and financial services: Initial considerations*, IMF Staff Discussion Note SDN/17/05, June, viewed 26 March 2018, from <https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2017/06/16/Fintech-and-Financial-Services-Initial-Considerations-44985>
- Hedley, K., White, J., Petit dit de la Roche, C. & Banerjee, S., 2005, *The paradox of banking 2015: Achieving more by doing less banking*, IBM Institute for Business Value, viewed 22 August 2017, from http://www-935.ibm.com/services/multimedia/cn_zh_2015_banking_en.pdf
- Höbe, L., 2015, 'The changing landscape of the financial services', *International Journal of Trade, Economics and Finance* 6(2), 145–150. <https://doi.org/10.7763/ijtef.2015.v6.459>
- Järvinen, R.A., 2014, 'Consumer trust in banking relationships in Europe', *International Journal of Bank Marketing* 32(6), 551–566. <https://doi.org/10.1108/IJBM-08-2013-0086>
- Johns, R., 2012, 'Relationship marketing in a self-service context: No longer applicable?', *Journal of Relationship Marketing* 11(2), 91–115. <https://doi.org/10.1080/15332667.2012.682331>
- Kadlec, D., 2014, 'Why millennials would choose a root canal over listening to a banker', *Time*, viewed 22 August 2017, from <http://time.com/40909/why-millennials-would-choose-a-root-canal-over-listening-to-a-banker/>
- Keller, L.J., 2018, 'Cryptocurrencies pose a threat, must be regulated, CEOs say', *Bloomberg*, viewed 02 May 2018, from <https://www.bloomberg.com/news/articles/2018-04-27/crypto-coin-offerings-need-regulatory-oversight-nasdaq-ceo-says>
- Khumalo, K., 2017, 'Nedbank opens first digital-only branch', *Personal Finance*, viewed 17 April 2018, from <https://www.iol.co.za/personal-finance/nedbank-opens-first-digital-only-branch-11959803>
- KPMG, 2017, *Setting course in a disrupted marketplace: The digitally-enabled bank of the future*, viewed 22 March 2018, from <https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/04/setting-course-in-a-disrupted-marketplace.pdf>
- Lee, E., 2017, 'Financial inclusion: A challenge to the new paradigm of financial technology, regulatory technology and anti-money laundering law', *Journal of Business Law* 6, 473–498.
- Masocha, R., Chilya, N. & Zindiye, S., 2011, 'The impact of technology on competitive marketing by banks: A case study approach', *African Journal of Marketing Management* 3(3), 68–77.
- McWaters, R.J. & Galaski, R., 2017, 'Beyond Fintech: How the successes and failures of new entrants are reshaping the financial system', *World Economic Forum*, viewed 22 March 2018, from http://www3.weforum.org/docs/Beyond_Fintech_A_Pragmatic_Assessment_of_Disruptive_Potential_in_Financial_Services.pdf
- Moin, S., Devlin, J. & McKechnie, S., 2015, 'Trust in financial services: Impact of institutional trust and dispositional trust on trusting belief', *Journal of Financial Services Marketing* 20(2), 91–106. <https://doi.org/10.1057/fsm.2015.6>
- Mok, A. & Saha, R., 2017, 'Strategic risk management in banking', *Deloitte Inside Magazine*, viewed 22 March 2018, from https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/Banking/lu_inside_issue14_strategic_risk_management.pdf
- Morse, J.M., Olson, K. & Spiers, J., 2002, 'Verification strategies for establishing reliability and validity in qualitative research', *International Journal of Qualitative Methodology* 1(2), 13–22. <https://doi.org/10.1177/160940690200100202>
- Nedbank Group Ltd, 2015, *Integrated annual report*, viewed 22 March 2018, from [https://www.nedbank.co.za/content/dam/nedbank/site-assets/AboutUs/Information%20Hub/Integrated%20Report/2015/2015\(A\)_Nedbank_Group_Integrated_Report.pdf](https://www.nedbank.co.za/content/dam/nedbank/site-assets/AboutUs/Information%20Hub/Integrated%20Report/2015/2015(A)_Nedbank_Group_Integrated_Report.pdf)
- Nedbank Group Ltd, 2016, *Integrated annual report*, viewed 22 March 2018, from <https://www.nedbank.co.za/content/dam/nedbank/site-assets/AboutUs/InformationHub/IntegratedReport/2016/2016IntegratedReportA.pdf>

- Nedbank Group Ltd, 2017, *Integrated annual report*, viewed 22 March 2018, from <https://www.nedbank.co.za/content/dam/nedbank/site-assets/AboutUs/Information%20Hub/Integrated%20Report/2017/2017%20Nedbank%20Group%20Integrated%20Report.pdf>
- Nhundu, N., 2016, 'An overview of the prominent barriers to entry in South Africa's retail banking industry', *The CRED Quarterly Review*, viewed 01 July 2018, from <https://www.competition.org.za/review/2016/2/19/an-overview-of-the-prominent-barriers-to-entry-in-south-africas-retail-banking-industry>.
- Oracle, 2015, *Big data in financial services and banking architect's guide and reference architecture*, viewed 11 November 2017, from <http://www.oracle.com/us/technologies/big-data/big-data-in-financial-services-wp-2415760.pdf>
- PwC, 2017, *Global FinTech report 2017*, viewed 22 January 2018, from <https://www.pwc.com/jg/en/publications/pwc-global-fintech-report-17.3.17-final.pdf>
- Rossi, C., 2017, 'How behavioral economics can elevate strategic risk management', *CRO Outlook*, Global Association of Risk Professionals, viewed 22 January 2018, from http://www.garp.org/#!/risk-intelligence/all/all/a1Z1W000003rJJE?utm_source=weekinrisk&utm_medium=email&utm_campaign=weekinrisk&utm_term=article1
- Roy, S.K., Devlin, J.F. & Sekhon, H., 2015, 'The impact of fairness on trustworthiness and trust in banking', *Journal of Marketing Management* 1376(5), 1–22. <https://doi.org/10.1080/0267257X.2015.1036101>
- SAS, 2017, *Big data: What it is and why it matters*, viewed 22 November 2018, from https://www.sas.com/en_za/insights/big-data/what-is-big-data.html.
- Schueffel, P., 2016, 'Taming the beast: A scientific definition of fintech', *Journal of Innovation Management* 4(4), 32–54. <https://doi.org/10.2139/ssrn.3097312>
- Schwab, K., 2015, 'The Fourth Industrial Revolution: What it means, how to respond', *Foreign Affairs*, viewed 24 August 2017, from <https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution>.
- South African Reserve Bank, 2017, *Financial stability review*, 1st edn., Financial Stability Unit, SARB, Pretoria.
- Standard Bank Group Ltd, 2016a, *Annual integrated report*, viewed 22 March 2018, from http://annualreport2016.standardbank.com/downloads/Standard_Bank_AIR_2016_Full_annual_integrated_report.pdf
- Standard Bank Group Ltd, 2016b, *Report to society*, viewed 22 March 2018, from http://sustainability.standardbank.com/pdfs/Standard_Bank_Report_to_society_2016.pdf
- Standard Bank Group Ltd, 2016c, *Group analysis of financial results*, viewed 22 March 2018, from https://thevault.exchange/?get_group_doc=18/1488430817-SBK_FY16_Resultsanalysis.pdf
- Standard Bank Group Ltd, 2017, *Financial results for the year ended 31 December 2017*, viewed 22 March 2018, from https://thevault.exchange/?get_group_doc=18/1523863624-SBKFY17Resultsanalysis.pdf
- Tableau, 2017, *Top Ten Business Intelligence Trends for 2017*, Tableau Software, Seattle.
- Tarrant, H., 2016, 'Banks have been cutting branches for years', *Moneyweb*, viewed 17 April 2017, from <https://www.moneyweb.co.za/news/companies-and-deals/banks-have-been-cutting-branches-for-years/>.
- Thomas, S., 2018, 'The battle for customer loyalty heats up', *IMM Journal of Strategic Marketing* 1(1), 6–10, viewed 05 May 2018, from http://imm-gsm.s3.amazonaws.com/2018/SM_Magazine/1Quarter_May/mobile/index.html
- Treleaven, P., 2015, 'Financial regulation of FinTech', *Journal of Financial Perspectives* 3(3), 1–17.
- Wack, K., 2017, 'Seven banks vying to create the branch of the future', *American Banker*, viewed 22 August 2017, from <https://www.americanbanker.com/slideshow/seven-banks-vying-to-create-the-branch-of-the-future>.
- Weichert, M., 2017, 'The future of payments: How FinTech players are accelerating customer-driven innovation in financial services', *Journal of Payments Strategy & Systems* 11(1), 23–33, viewed 11 January 2018, from <http://content.ebscohost.com/ContentServer.asp?T=P&P=AN&K=122801024&S=R&D=bth&EbscoContent=dGJyMNLr40SeqLY4zOXOOLCmr0%2BepriSr6e4Sq6WxWXS&ContentCustomer=dGJyMPGnr0uvqbNluePfgex44Dt6fIA>
- World Economic Forum, 2017, *The Global Competitiveness Report 2017–2018*, WEF, Cologny, Switzerland.
- Yeoh, P., 2016, 'Innovations in financial services: Regulatory implications', *Business Law Review* 37(5), 190–196.