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The impact of the Covid-19 pandemic on digital transformation within South African technology start-ups

Cebile Khumalo

WITS Business School

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DECLARATION

I Cebile Khumalo declare that this research report entitled ‘The impact of the Covid-19 pandemic on digital transformation within South African technology start-ups’ is my own unaided work. I have acknowledged, attributed, and referenced all ideas sourced elsewhere. I am hereby submitting it in partial fulfilment of the requirements of the degree of Master of Business Administration at the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.

Cebile Khumalo

Signed at Johannesburg on 30th April 2021

Name of candidate	Cebile Khumalo
Student number	1526829
Telephone numbers	0716340585
Email address	dumakuc@gmail.com
First year of registration	2020
Date of proposal submission	31 October 2020
Date of report submission	30 April 2021
Name of supervisor	Zhuwao Patrick and Kambidima Wotela

ABSTRACT

In 2020 the world got faced with the coronavirus (COVID-19) pandemic, which brought upon changes that affected many organisations. This study investigates how Covid-19 affected the digital transformation for technology start-ups within the fintech industry.

In achieving the objective, the study followed a qualitative approach and interviewed 15 business owners, managers and executives from different fintech companies. The key findings of the study is that fintech companies are digitally matured organisations and had implemented digital initiatives as a result of Covid-19, and these initiatives will be sustained moving forward and set a new trend for the fintech industry.

The study has concluded that the Covid-19 pandemic accelerated the digital transformation of technology start-ups within the fintech industry through numerous digital transformation initiatives that were implemented.

This study recommends that further research should be done on finding interpretative models and frameworks that could be used to evaluate digital transformation within technology start-ups.

DEDICATION

“Finish what you started”

This study is dedicated to family, my two amazing daughters (Zenani Khumalo and Asante Khumalo) for their heartfelt unconditional love that carried me through this research paper. Lastly my husband Nkanyiso Khumalo for his unwavering support and enduring this journey with me till the finish line. Your support made this journey much more bearable. Thank you for believing in me.

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1 INTRODUCTION TO THE RESEARCH

1.1 Background and context

This research aims to investigate the impact of the COVID-19 pandemic on the digital transformation of technology start-up companies in South Africa. However, before getting to the research conceptualisation (Section 1.2), we briefly introduce the terms and concepts that we have used in conceptualising this research in Section 1.1.

The research conceptualisation section provides for the research problem statement (Section 1.2.1) and consequently the purpose of this research (Section 0) as well as the research questions (Section 1.2.3).

The delimitations and assumptions of the research study are in Section 1.3 while we discuss the significance of the research study in Section 1.4.

1.1.1 The Covid-19 Pandemic

In 2020 the world got faced with the coronavirus (Covid-19) pandemic (Lone & Ahmad, 2020), which required the reduction of face-to-face contact between people as part of the preventative measures (Lone & Ahmad, 2020). To fight the spread of the virus, the South African government introduced nationwide lockdown measures which mandated all people to stay at home (Olsen et al., 2020).

This caused severe societal and economic restrictions as well as an enormous surge in digitization (Dannenberg, Fuchs, Riedler, & Wiedemann, 2020). The lockdown measures caused many businesses to shut down and put economies worldwide at high risk (Ashraf, 2020). Business were presented with a unique situation that has no documented equivalent in the entrepreneurship literature (Kuckertz et al., 2020).

According to Bong et al. (2020), the nature of the pandemic coupled with the speed of transmission required more stringent lockdown measures to be imposed by the government to prevent a collapse of the healthcare system. For many organisations, the lockdown meant that they could not have their employees on site but most importantly they also could not trade with their customers as usual (Ashraf, 2020).

Kaushik and Guleria (2020) notes that organisations were forced to find ways in which they could access their customers remotely and keep their business operations running in order to remain operational.

1.1.2 Technology start-ups – fintech companies

Technology start-ups

Moogk (2012) defines a technology start-up as an institution designed to create a new product or service under conditions of extreme uncertainty. Santisteban and Mauricio (2017) observes technology start-up to be a small start-up companies birthed with a technology mindset. This means that fundamentally a technology start-up is a provider of a technology-based service or product. These companies are at the fore front of innovation and hight tech services (Santisteban & Mauricio, 2017).

Technology start-ups in developing economies addresses local problems in any sector of the economy through creative technologies and solutions (Prashantham & Yip, 2016).

Fintech companies as technology start ups

According to Micu and Micu (2016) fintech companies are technology start-ups that implement financial technology dedicated to the operations of the financial services. Sharma (2016) defines financial technology (fintech) as computer programs and other technology used to support or enable banking and financial services. Iman (2016) adds that financial technology companies are generally start-ups founded with the purpose of disrupting incumbent financial systems (Iman, 2016).

These technology start-ups called fintech companies are ones that use innovative financial solutions enabled by technology enabling a phenomenon whereby financial services meets technology (Puschmann, 2017). These technologies include, mobile apps dedicated to trading, proving new methods for the clients to manage their accounts, providing innovative use of new payment methods. (Micu & Micu, 2016).

These technology start-ups have created an industry (known as the fintech industry) within financial services that is dedicated to the innovation of products and services provided by financial services companies (Micu & Micu, 2016). The fintech industry

is composed of companies aiming to make the delivery of financial services more efficient (McAuley, 2015).

The technology start-ups within the fintech industry will be the primary subject and focus of this study. As explained by Micu and Micu (2016) that fintechs provide innovative technology to enable consumers in making payments during any purchase. Furthermore customer behaviour in financial services was impacted given the restrictions placed by the Covid-19 lockdown (Billore & Billore, 2020). It is for this reason that this study has chosen to investigate the impact of the Covid-19 pandemic on digital transformation on technology start-ups within the fintech industry.

1.1.3 Digital transformation

Digital transformation is a process whereby digital technologies are being used to create disruptions in organisations (Vial, 2019). It is being used as tool that triggers strategic responses from organisations that seek to alter their value creation paths to their customers (Vial, 2019). Therefore digital transformation involves the transformation of key business operations and it affects the way products and services are being delivered (Matt, Hess, & Benlian, 2015).

Digital transformation is a tool used by organisations to turn interactions, communications, business activities, and business models into (more) digital ones (Soto-Acosta, 2020). This is done by using digital technologies such as the internet, mobile connectivity, cloud computing, big data, machine learning, artificial intelligence (AI), blockchain, Internet of Things (IoT), robotics, smart manufacturing, predictive and data analytics and other new digital technologies that keep emerging (Soto-Acosta, 2020).

During the nation lockdown period most organisations were forced to use these digital technologies in order to remotely gain access to their customers and employees (Ashraf, 2020). This study will seek to understand the impact of Covid-19 on the digital transformation within technology start-ups focusing on fintech's.

1.2 Research conceptualisation

1.2.1 The research problem statement

In a vastly digitizing world, organisations need a strategy that is enabled by digital transformation (Westerman, 2018). A digital strategy cuts across all departments of an organisation, it has been observed that organisations across industries, from financial services to manufacturing to pharmaceuticals are using digital technologies to gain competitive advantage (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). This means organisations need to shift their focus, look beyond just systems and technologies as being digital because this might narrow the broader objective of an organisation run by a well harmonized digital strategy.

Westerman, Bonnet, and McAfee (2014) notes that organisations must have a digital strategy as a tactical initiative to compete. This is to help them survive and thrive in the new, digitally empowered global economy. A digital strategy sets the tone and direction of where the organisation is going. Ross, Beath, and Sebastian (2017) notes that a great digital strategy provides direction and enables business leaders to lead digital initiatives within organisations.

According to Yeow, Soh, and Hansen (2018) the organisation's technique of aligning their digital strategy internally and externally is just as crucial. Alignment may be even more challenging today as contemporary organisations, in response to environmental dynamism and digital innovations, undergo tremendous changes in their operational and strategic models (Yeow et al., 2018). This implies that digital strategy alignment is essential and has serious implications because it is not just about aligning the IT strategy with business strategy, instead it is a continual process of aligning the organisation with its market objectives.

Pavlou and El Sawy (2010) studied how organisations can use a dynamic capabilities methodology for dealing with highly turbulent environments with unexpected storms. They come up with an improvising technique that organisations can use as an alternative in dealing with unprecedented times (Pavlou & El Sawy, 2010). By being spontaneous, be able to quickly prototype, reconfigure what is at hand and improvise to address unpredictable environments (Pavlou & El Sawy, 2010).

In 2020, with more than three billion people in isolation, the status of digital transformation is switching from an amenity to a necessity (Beaunoyer, Dupéré, & Guitton, 2020) Beaunoyer et al. (2020) explores the digital inequality gap that digital inequalities were already existing, yet the Covid-19 crisis is exacerbating them dramatically and this puts organisations in a risky state. Moreover, just like any other company across the world (Ashraf, 2020), South African fintech companies were brutally affected by the Covid-19 pandemic (Fu & Mishra, 2020).

In summary, the research problem statement looks at investigating how Covid-19 has affected the digital transformation journey of technology start-up with specific focus on the fintech industry.

1.2.2 The research purpose (aim and objectives)

The purpose of this study is to investigate the impact of the Covid-19 pandemic on the digital transformation of technology start-ups, focusing on the fintech companies in South Africa.

It intends to provide concrete reflections within the context of fintech companies, on whether and how the Covid-19 pandemic accelerated or decelerated their digital transformation within the industry.

The worldwide lockdowns induced by the Covid-19 pandemic forced fintech companies to adapt and change their business processes and ways they interact with their customers (Liguori & Pittz, 2020). With most sectors of the economy closed and restrictions on the movement of people, businesses had to change the way they conduct their operations (Fu & Mishra, 2020). Due to this change, this research seeks to understand what impact (if any) the pandemic had on these organisations' digital transformation journey.

This study seeks to find answers on how the lockdown and the no contact measures imposed as preventative measures of Covid-19 affected the fintech companies' digital transformation journey.

1.2.3 The research questions

The research purpose is to uncover how Covid-19 has impacted the digital transformation of technology start-ups within the fintech industry. In seeking to fulfil this purpose, the below research questions have been derived to ensure the purpose is fulfilled.

Research Question One - What impact did Covid-19 have on the digital transformation journey for technology start-ups in the fintech industry?

In order to understand the impact of Covid-19 on the digital transformation journey of technology start-ups in the fintech industry, we first needed to understand the participant's perception of their digital transformation journey. This was informed by what Kane, Palmer, Phillips, and Kiron (2015) did in their study when they measured digital transformation by asking participants to rate their organisation on a scale of 1 to 10, 1 being 'Not at all close' and 10 being 'Very close' to an ideal organisation fully transformed by digital technology. This is the reason why the first research question is: What impact did Covid-19 have on the digital transformation journey for technology start-ups in the fintech industry?

Research Question Two - Were there any digital initiatives put in place within the organisations as a direct response to Covid-19?

In assisting us to understand how Covid-19 impacted the digital transformation journey of technology start-ups in the fintech industry, we also needed to understand what digital transformation initiatives were implemented as a response of Covid-19. Vial (2019) gives us the understanding that the more digital transformation initiatives the organisation employs, they further their digital transformation journey. Hence the second research question is: Were there any digital initiatives put in place within the organisations as a direct response to Covid-19?

Research Question Three - Are these initiatives mostly likely to be sustained going forward?

In order to understand the transformative impact of the digital transformation initiatives implemented, we needed to understand whether these digital transformation

initiatives are only for a specific period of time or will be sustained going forward. Kane, Palmer, Nguyen-Phillips, Kiron, and Buckley (2017) gives the assurance that digital transformation is achieved when organisations use digital initiatives to transform their organisations. Hence the third and last question is: Are these initiatives mostly likely to be sustained going forward?

1.3 Delimitations and assumptions of the research study

Mitchell and Jolley (2010) defines delimitations as boundaries imposed by researchers on their specific scope of study. This research seeks only to find the impact of Covid-19 on the digital transformation journey of business during the lockdown. It will not evaluate the effectiveness (or not) of an organisation's digital initiative prior to Covid-19 or as a respond to Covid-19. This study will not evaluate whether the digital transformation journey in place will provide an advantage to the organisation in future. It will not venture to understand whether the digital transformation initiatives were effective or not.

The study will only look at the period of the Covid-19 pandemic whereby the ways of doing business had to change. The context will only focus on the technology start-ups within the fintech industry operating in South Africa.

Assumptions

The assumption was that all participants were who they said they were and held the positions declared on this study as business leaders within their respective organisations in corporate South Africa. Even though all the organisations the participants represented were known and verified, it was further assumed that participants shared their knowledge and experiences in a truthful and transparent manner. Lastly, the fundamental assumption was that all participants' s organisation were somehow affected by the Covid-19 pandemic and through this shared experience, during the process of data collection it was assumed that participants will share their personalised experiences openly and honestly on how the Covid-19 pandemic affected their organisations digital transformation.

1.4 Significance of the research study

For organisations to stay competitive and handle the transformation brought about by digitization, they must invest in activities that will create or improve their technological capabilities (Dranev, Frolova, & Ochirova, 2019). This means that markets where organisations operate in are becoming more and more competitive, enabled by many advances including technology. It is significant for organisations to stay alert and empower their business functions through digital initiatives (Dranev, Frolova, & Ochirova, 2019).

Savey, Daradkeh, and Gouveia (2020) suggests that fintech companies must have a clear advantage through digital transformation. Since fintech companies are seen as key actors in accelerating innovations (Micu & Micu, 2016), their success remains key to the growth of the economy.

Digital transformation through technological innovations, as considered by Hanna and Knight (2012) is a key enabler of socio-economic development. Ruggieri, Savastano, Scalingi, Bala, and D'Ascenzo (2018) further imply that at the cornerstone of a technology start-up must be innovative technologies that allows the business to run digitally. This means that the organisation's possibility to create sustainable value to their customers starts from digitizing their business processes to drive efficiency, thus the importance of this study.

This study is significant since it looks at how Covid-19 has affected digital transformation during the period where organisations were faced with the global crisis. This means that in observing the impact brought by Covid-19, the study will create awareness on how organisations should handle their digital transformation strategies during any pandemic that requires no human interaction. Furthermore, the consequence of having technology start-ups that do not attend to the processes of digitizing their businesses might be a threat to the survival and staying competitive. This means through turbulence times like Covid-19 these organisations may not be able to survive and thus slows South African economic growth.

2 LITERATURE REVIEW

This chapter has three broad objectives; namely to understand the research problem, to identify the knowledge gap, and to develop a framework for interpreting the research findings.

Specifically, in section 2.1, we detailed the research problem which looks at investigating how Covid-19 has affected the digital transformation journey of technology start-up with specific focus on the fintech industry.

Section 2.2, we review literature on similar studies that have investigated the impact of the Covid-19 pandemic on digital transformation in different context. These studies are the work of Butu et al. (2020), Priyono, Moin, and Putri (2020) and Agostino, Arnaboldi, and Lema (2020).

With information arising from section 2.2, we identified and detailed attributes that are key to this research which are: strategy, tasks, culture, people, and structure. This is detailed in section 2.3.

Section 2.4 details a framework that we will use to interpret the research findings. It is a framework for understanding digital transformation developed by Kane et al. (2017) grouping companies into varying stages of digital transformation from early to developing to maturing.

The last section 2.5 provides a succinct summary and concludes the literature review.

2.1 Research problem analysis

This section of the literature review on the research problem gives a detailed understanding of the concepts under investigation in this research. It also further highlights the links that have already been found amongst these concepts.

The problem statement which looks at investigating how Covid-19 has affected the digital transformation journey of technology start-ups with specific focus on the fintech industry. In reality, an organisation might have adopted a particular direction for driving digital transformation in their organisation, however with Covid-19, they

might have pivoted to move in a different direction regarding their digital transformation. This study seeks to bring that understanding.

The key elements of this problem statement, namely digital transformation and Covid-19 are discussed below.

2.1.1 Digital Transformation

According to Karagiannaki, Vergados, and Fouskas (2017) digital transformation is a process whereby the organisation undergoes change in the way they have been doing business. It encompasses change in thinking, using new business models and incorporating digital and emerging technologies in the creation of products and services (Karagiannaki et al., 2017).

This implies the transformation of the organisation as a whole. Digital transformation is a complex undertaking for any organisation since it has the potential to substantially reshape a business and its associated operations (Matt et al., 2015). Digital transformation involves the transformation of the whole organisation from organisational structures to processes, products and services offered to customers (Matt et al., 2015).

Further crystallising this, Main, Lamm, and McCormack (2018) underscores that digital transformation is not only about technology however it is about how an organisation can provide products and services better using technology.

In identifying some of the forces driving digital transformation Westerman (2016) identifies automation, data and resource fluidity which matches tasks to people who can perform them the best, be it inside or outside the organisation. Main et al. (2018) on the other hand, suggests connectivity, data intelligence, automation, cybersecurity and innovation as some of the digital enablers that could help organisations drive digital transformation. For incumbent organisations across industries, digital transformation will require reorganising the IT organisation and position it for better delivery of digital products to avoid being disrupted by innovative start-ups (Karimi & Walter, 2015).

Digital Transformation has been found to have a relationship with digital strategy. Nadeem, Abedin, Cerpa, and Chew (2018) finds that digital strategy is the blueprint that can lead to digital transformation when executed effectively.

Peppard and Ward (2016) suggests that digital transformation is the recycling concepts which were there and present them as new. They suggest that a digital strategy is an emerging convenient label for what has been called the IS and IT Strategy. When building a digital strategy for the organisation, it is important to know how the technological capabilities of the organisation will be leveraged together with the information and organisational systems (Peppard & Ward, 2016).

In making a case for digital strategy, Ross et al. (2017) does not deviate from the definition provided by Peppard and Ward (2016) in defining digital strategy as a business strategy that takes advantage of digital technologies.

Westerman (2018) concurs with Ross et al. (2017) in that a digital strategy is a business strategy enabled by digital technology. In making this point clearer, Westerman (2018) even suggests that organisation do not need a digital strategy but rather a better business strategy enabled by digital technology. In this way, focus is less on the technology enabling the strategy but rather the business strategy itself.

Mithas, Tafti, and Mitchell (2013) defines digital strategy as the extent to which a firm engages in any category of IT activity. Further evolving this definition, Mithas et al. (2013) suggests that a digital strategy is a fusion of IT and business strategy.

Aligned with these, Kane, Palmer, Phillips, and Kiron (2015) argues that a digital strategy should be less about the technology but more about how the organisation reconfigures itself to take advantage of the information enabled by these technologies.

Mithas and Lucas Jr (2010) find that the pillars of a digital strategy are: (i) synchronise IT and business, (ii) govern IT effectively and (iii) manage IT with discipline. However, Mithas and Lucas Jr (2010) suggests that these pillars are interconnected.

According to Kane, Palmer, Phillips, Kiron, and Buckley (2015) businesses that were maturing in their digital transformation have been able to integrate digital technologies to ensure the transformation of how their business works. The strength of a digital strategy does not lie in the underlying technology but rather how organisation's

integrate these technologies to their organisational processes to transform how they do business (Kane, Palmer, Phillips, Kiron, et al., 2015).

For a digital strategy to be beneficial for the organisation and provide a sustained competitive advantage Ross et al. (2017) argues that an organisation needs to decide on the kind of digital strategy it would want to follow; (i) a customer engagement focused strategy (market development) or (ii) a digitised solutions strategy (product development). They posit that a customer engagement strategy offers superior and personalised customer experienced that entrench loyalty while a digitised solution strategy focuses on enriched products and services that deliver new value for customers.

Main et al. (2018) on the other hand, also advise similar in that they suggest three broad digital strategies for organisations. (i) using digital technologies to improve the existing business model (market penetration); (ii) using digital technologies to create new revenue streams (market development); and (iii) using digital technologies to operate beyond the boundaries of the existing business (diversification).

An organisation with a clearly defined and implemented digital strategy can expect increased experimentation which leads to increased innovation with business impact (Kane et al., 2017). These organisations are faster, more flexible and distributed, and have a different culture and mindset than traditional organisations (Kane, Palmer, Phillips, Kiron, & Buckley, 2018).

Digital transformation also offers organisations the ability to transform their business models (Karagiannaki et al., 2017). Some of the characteristics of these new digitally enabled business models include; (i) increased cross-functional collaboration in the production of the value proposition; (ii) strengthened relationships with customers; and (iii) better management of resources partnerships (Delmond, Coelho, Keravel, & Mahl, 2017). These digital business models do have a positive impact on the organisational performance (Hildebrandt, Hanelt, Firk, & Kolbe, 2015).

Moreover, Remane, Hanelt, Wiesboeck, and Kolbe (2017) finds a link between organisational performance and digital transformation. They posit that the impact will differ by industry by organisation. Yeow et al. (2018) suggests the that the alignment between the business teams and technology teams that is brought by digital

transformation does have a positive impact on organisational performance. This makes a clear case for digital transformation in any organisation.

2.1.2 Covid-19

The Covid-19 pandemic is a massive global health crisis Bavel et al. (2020) that required a multi-disciplinary response to curb the spread because of its contagiousness and deadliness (Mahato, Pal, & Ghosh, 2020). Due to some of the measure put in place to curb the spread of the virus Fletcher and Griffiths (2020) make the observation that digital transformation has become mandatory for all organisations across industries.

However Soto-Acosta (2020) cautions that not all digital initiatives are transformational. Consistent with the definitions discussed from Karagiannaki et al. (2017) and Matt et al. (2015), Soto-Acosta (2020) notes that digital transformation is not simply applying digital technologies to change something in the business, it is about a transformation of the business in its entirety.

Because of the transformational nature of digital transformation, organisations have been implementing digital transformation initiatives at their own pace (Kudyba, 2020). However, the Covid-19 pandemic has introduced disruption to many organisations, accelerating the implementation of digital transformation since businesses could not meet the demands of customers digitally (Kudyba, 2020).

Highlighting the transformation that occurred in education institutions as an example, Soto-Acosta (2020) notes that although electronic learning had been there before the Covid-19 pandemic, however due to the restrictions put on the movement of people, the pandemic has accelerated digital transformation in these institution. Agrawal (2020) notes a similar impact of Covid-19 on the healthcare sector in that Covid-19 had a catalytic impact on digital transformation in that sector.

According to Kane, Palmer, Phillips, Kiron, and Buckley (2016) most business leaders recognise that their organisations are not adequately prepared for the industry disruptions that are expected to come with digital transformation. However, due to the Covid-19 pandemic, organisations have had to accelerate their adoption of digital transformation (Soto-Acosta, 2020). Given the acceleration in digital transformation found by Soto-Acosta (2020) this study sought to understand whether a similar

phenomenon has been observed in the South African context of technology start-ups in the fintech industry.

2.1.3 Technology start-ups – Fintech companies

Technology start-ups are defined as those born with a technology mindset (Santisteban & Mauricio, 2017), mastering the use of technology to deliver value to their clients (Moogk (2012). These companies are found in a multiplicity of industries and for the purposes of this study – we will be interested in those in financial services.

Within financial services, these technology start-ups are known as fintech companies. Their aim is to implement technologies to better the products and services offered by financial services organisations (Micu & Micu, 2016).

This use of technology in place of the traditional way of doing things may result in the disruption of operations within the financial services industry. Fintech companies are seen as disruptors which has prompted traditional financial services institutions to partner with or buy these fintech companies outwrite in order to ensure they do not get disrupted but rather disrupt themselves (Iman, 2016).

These fintech companies disrupt by bring new ways of adding value to consumers but leveraging prevailing consumer trends (Puschmann, 2017). The also harness the latest developments in technology to offer financial service products and services in a more efficient and cost effective manner (Puschmann, 2017).

2.2 Research knowledge gap analysis

This section of the literature review will give insights into the research knowledge gap. It will evaluate studies similar to this one and highlight how this study will add to the body of knowledge.

2.2.1 Studies under review

Butu et al. (2020) aimed to investigate the impact of Covid-19 on the consumer buying behaviour of fresh vegetables from local suppliers in Suceava County, Romania. Priyono et al. (2020) analysed how small to medium businesses (SMB) in Indonesia transformed their business models using technology as a response to Covid-19. While

Agostino et al. (2020) examined how Covid-19 accelerated digital transformation within public service delivery in Italy.

These studies are similar in that they were evaluating the impact of Covid-19 on digital transformation for consumers, small businesses and the public sector which is similar to the aim of evaluating the impact of Covid-19 on digital transformation for start-ups as noted in this study. This study seeks to understand how the digital transformation journey of technology start-ups in the fintech industry was impacted by Covid-19.

The above highlighted studies are also similar to one another in that digital technology and the use thereof during Covid-19 is also investigated. Where these studies differ is in the context. Butu et al. (2020) evaluated the impact of Covid-19 on digital transformation in the Romanian vegetable supply and sale while Priyono et al. (2020) was interested in evaluating the impact of Covid-19 on digital transformation in SMBs in Indonesia. Lastly, Agostino et al. (2020) focused on evaluating the impact of Covid-19 on digital transformation in public sector in Italy. This study is interested in evaluating the impact of Covid-19 on digital transformation for technology start-ups focusing on fintech companies in South Africa.

2.2.2 Research Methods Used

Butu et al. (2020) used a quantitative research strategy, Priyono et al. (2020) used qualitative research strategy while Agostino et al. (2020) followed a mixed strategy approach. The differences in approach mainly have to do with the context of the study and the available data collection points in each context. Because of the different research strategies adopted, the population size, data collection, processing and analysis and results presentation all differed between the studies in question. These differences are discussed below.

Butu et al. (2020) targeted the population in the area of Suceava in Romania while Priyono et al. (2020) used the population of Indonesian SMBs, in the manufacturing section with varying degrees of digital technology maturity using the polar sampling technique while Agostino et al. (2020) used a population of state museums in Italy.

With regards to the research instrument used, Butu et al. (2020) used a questionnaire with sixteen questions. Priyono et al. (2020) used semi-structured interviews together

with observation as a data collection instrument while Agostino et al. (2020) observed the social media posts and did follow up semi-structured interviews.

As part of the data collection process, Butu et al. (2020) disseminated the questionnaire via social media and email. Priyono et al. (2020) conducted semi-structured interviews with key informants in the SMBs chosen from early March 2020 to mid-July 2020. Moreover, the researchers carried out field visits to do observations. The interviews were recorded, and consent obtained from the participants. The length of the interviews was in the range of 30 min to just over 2 hours (Priyono et al., 2020).

Agostino et al. (2020) collected data from the publicly available social media posts of 100 state museums made between February 2020 and March 2020. The researchers tracked the number of posts, number of followers and post interactions across Facebook, Instagram and Twitter. They also collected the data needed from interviews with the directors and curators of the museums.

2.2.3 Data Analysis Used

Butu et al. (2020) used Microsoft Excel, PSPP – a open source SPSS software and R Programming to process and visualise the data. Priyono et al. (2020) and Agostino et al. (2020) do not provide insights on how they dealt with data processing in their respective studies.

Butu et al. (2020) analysed their data in accordance with the hypothesis of the study and their argumentative-narrative sketch. In their argumentative-narrative sketch in figure 1 below, Butu et al. (2020) look at the social determinants (age, gender, etc.), coupled with behaviour before the Covid-19 crisis and how that behaviour is impacted by the Covid-19 crisis and how that has fuelled the digital transformation. The main objective of their narrative sketch was to understand the possible determinants of the sociocultural context of the consumer buying behaviour before the enforcement of the Covid-19 induced lockdown (Butu et al., 2020).

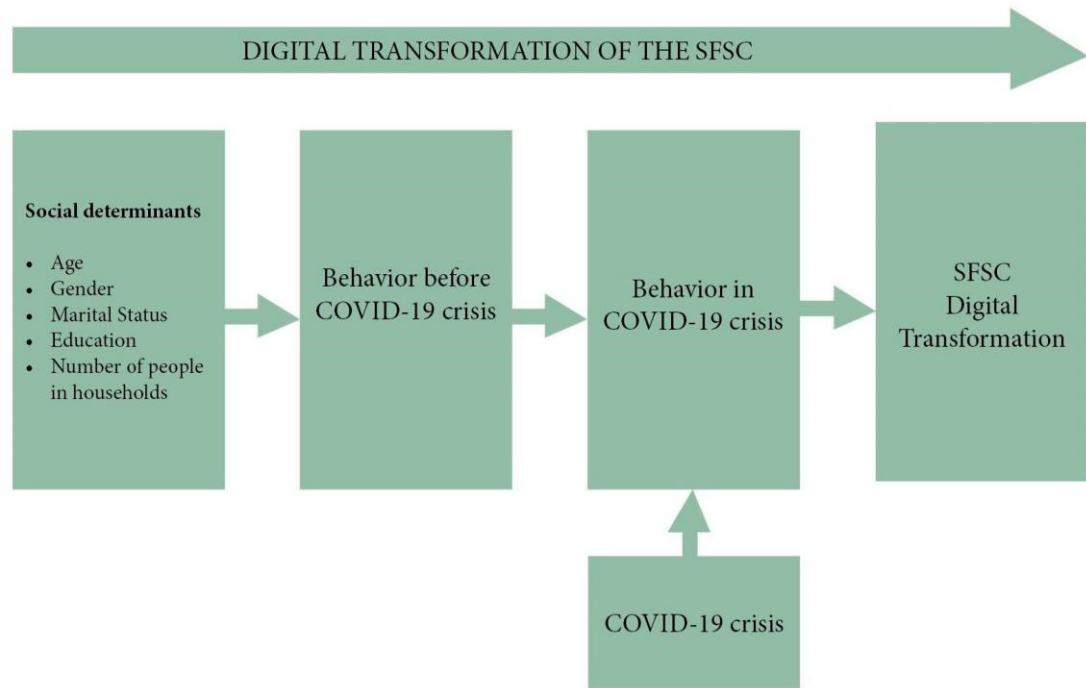


Figure 1: The narrative-argumentative sketch from (Butu et al., 2020)

Butu et al. (2020) analysed the social demographics of their participants including where they stayed, age, education, etc. They analysed key factors of consumer buying behaviour and generated a biplot based on gender for the multivariate correspondence analysis of the sociodemographic data and purchase of fresh vegetables directly delivered from local producers before the enforcement of the lockdown (Butu et al., 2020).

According to Butu et al. (2020) by analysing the influence of the socio-demographic factors on the consumer buying behaviour before lockdown, several relevant features were highlighted and used for outlining the profile of the consumer. They have also done further analysis on other variables in order to achieve the objectives of the study which was the investigation of the impact of Covid-19 crisis upon the consumer buying behaviour of fresh vegetables.

Due to the research strategy, the analysis approach taken by Priyono et al. (2020) is vastly different to the one adopted by Butu et al. (2020). Priyono et al. (2020) adopted an inducto-deductive approach to data analysis with their focus being on theory development as explained by Eisenhardt (1989) in the study on building theories from

case studies. The interviews were transcribed verbatim and triangulated to ensure validity (Priyono et al., 2020).

Priyono et al. (2020) carried out the data analysis using grounded theory as guided by Bamford (2008) in three steps. First, they conducted open coding whereby they documented all the codes relevant to the research topics (Priyono et al., 2020). Next, Priyono et al. (2020) performed axial coding wherein the digital actions undertaken by the SMBs were identified and categorised into different levels. Lastly, they conducted selective coding and focused on the key themes by analysing the interplays between the key themes (Priyono et al., 2020). The study by Agostino et al. (2020) did not shed much light on the data analysis processes undertaken. The way in which the empirical results were presented again differs between the studies mainly due to the research strategies conducted.

2.2.4 Findings Uncovered

Butu et al. (2020) finds that in the Covid-19 era, selling organisations must embrace digital payment methods like mobile point of sale systems. Sellers must implement the latest digital technologies to be used for placing online orders and in parallel implement innovative marketing and distribution (Butu et al., 2020). Another key finding made by Butu et al. (2020) is that the digital transformation of SMBs has the potential to have a positive effect for the Romanian economy.

Priyono et al. (2020) found that digital transformation of SMBs does not necessarily involve radical business model transformation. Priyono et al. (2020) found that there is no one size fits all solution which means that organisations need to design their customized digital transformation path to survive the impact of Covid-19. Priyono et al. (2020) found the paths as (i) accelerating the transition toward a more digitalized organisation; (ii) digitalizing sales to ensure the organisations' survival; (iii) finding digital partners to reach the market. The choice of transformation path an organisation should take would differ by a number of factors including digital maturity (Priyono et al., 2020).

Agostino et al. (2020) found that Covid-19 has acted as an accelerator for digital transformation in public service delivery. They find that new transformational skills will be key to dealing with this new normal (Agostino et al., 2020).

There exist similarities in the findings of the three studies under review. They find that in the contexts they investigated, Covid-19 did accelerate and/or force organisations to implement digital initiatives which will aid in the digital transformation of the organisation.

Priyono et al. (2020) notes the limitation that the study was conducted only specific to a particular area. Priyono et al. (2020) notes that the study cannot be generalizable and suggests that future research should use a survey that will cover various industries. While Agostino et al. (2020) notes no limitations.

2.2.5 Summary and conclusion

From this section of the literature review, we gain insights into where the knowledge gap exists for future research. What emanates from Butu et al. (2020) , Priyono et al. (2020) and Agostino et al. (2020) as evaluated in this section, is that there is a need to further understand the impact of Covid-19 on digital transformation in other countries within different industries. This research will evaluate the impact of the Covid-19 pandemic on digital transformation within technology start-ups in the fintech industry and furthermore add to the existing body of knowledge within this area.

2.3 Qualitative attributes key to the research

Kane et al. (2016) found that although digital strategies driving digital transformation in organisations differ by industry and individual circumstance, digitally progressive organisations share important characteristics: They engage in rapid experimentation, take risks, invest in their own talent, and value soft skills in leaders more than they do technical knowhow (Kane et al., 2016). This gives an indication of the variables to be used in the research to understand the extent of digital transformation in an organisation.

Expanding on these Kane et al. (2016) crystallise (in figure 2) the variables found in a digitally transformed organisation which would help measure the extent of digital transformation in an organisation.

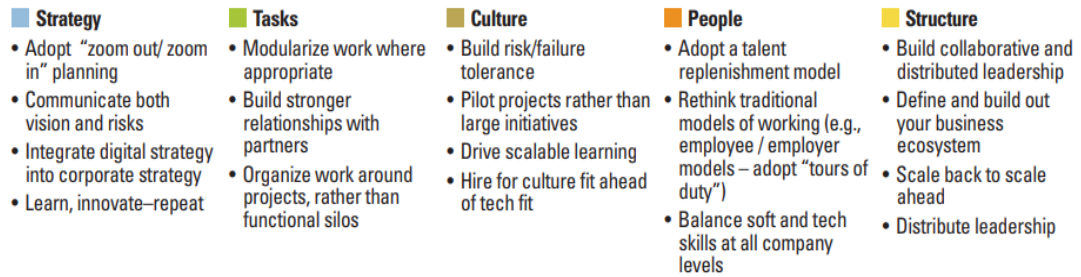


Figure 2: Attributes of a digitally mature organisation adapted from Kiron et al. (2016)

2.4 Framework for interpreting research findings

This research study seeks to understand how Covid-19 impacted the digital transformation journey of technology start-ups within the fintech industry. To guide in the understanding of the change in digital transformation, the model created by Kane, Palmer, Phillips, and Kiron (2015) has been relied upon to give an understanding of how the digital transformation has been impacted.

When developing the model, Kane, Palmer, Phillips, and Kiron (2015) asked participants of their survey to imagine an ideal organisation transformed by digital technologies and capabilities that improve processes, engage talent across the organisation, and drive new and value-generating business models. This would be an ideal organisation that has advanced in its digital transformation. Kane, Palmer, Phillips, and Kiron (2015) then asked participants to rate their organisation on a scale of 1 to 10, 1 being ‘Not at all close’ and 10 being ‘Very close’ to this ideal organisation. 1-3 were categorized as Early; 4-6 were categorized as Developing; and 7-10 were categorized as Maturing (Kane, Palmer, Phillips, & Kiron, 2015). Below is a graphical representation of the model.

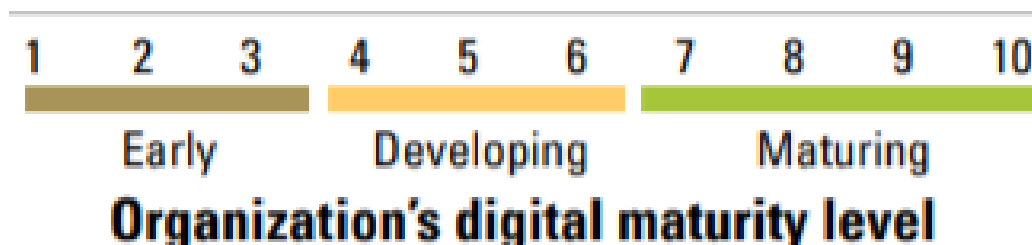


Figure 3: Framework for understanding digital transformation by Kane, Palmer, Phillips, and Kiron (2015)

Expanding on the model for understanding digital transformation developed by Kane, Palmer, Phillips, and Kiron (2015), Kane, Palmer, Phillips, Kiron, et al. (2015) created a model depicting the different organisational characteristics and comparing how those evolve as the organisations moves through its digital journey from early to maturing. These different organisational elements: barriers, strategy, culture, talent development and leadership are discussed in sections 2.4.1 up to 2.4.5. The sub-section 2.4.6 discusses the strengths and weaknesses of the model while the last sub-section 2.4.7 summarizes and conclude section 2.4.

	EARLY	DEVELOPING	MATURING
Barriers	<i>Lack of strategy</i> More than half cite "lack of strategy" as a top-three barrier	<i>Managing distractions</i> Nearly half indicate "too many competing priorities" is a top-three barrier, "lack of strategy" still a challenge for one-third	<i>Security focus</i> Nearly 30% cite security as a top-three barrier; managing too many competing priorities remains a top concern for 38%
Strategy	<i>Customer and productivity driven</i> Approximately 80% cite focus on customer experience (CX) and efficiency growth	<i>Growing vision</i> CX and efficiency growth; over 70% cite focus on transformation, innovation and decision making	<i>Transformative vision</i> Over 87% cite focus on transformation, innovation and decision making
Culture	<i>Siloed</i> 34% collaborative; 26% innovative compared to competitors	<i>Integrating</i> 57% collaborative; 54% innovative compared to competitors	<i>Integrated and innovative</i> 81% collaborative; 83% innovative compared to competitors
Talent Development	<i>Tepid interest</i> 19% say their company provides resources to obtain digital skills	<i>Investing</i> 43% say their company provides resources to obtain digital skills	<i>Committed</i> 76% say their company provides resources to obtain digital skills
Leadership	<i>Lacking skills</i> 15% say leadership has sufficient digital skills	<i>Learning</i> 39% say leadership has sufficient digital skills	<i>Sophisticated</i> 76% say leadership has sufficient digital skills

Figure 4: Digital Transformation framework from Kane, Palmer, Phillips, Kiron, et al. (2015)

2.4.1 Organisational Barriers to Digital Transformation

Using the digital transformation model from Kane, Palmer, Phillips, and Kiron (2015), Kane, Palmer, Phillips, Kiron, et al. (2015) finds several obstacles to digital transformation and these obstacles differ depending on the organisation's digital maturity level.

Lack of strategy and lack of management understanding is amongst the top obstacles in organisations still early in their digital transformation, while lack of prioritization and inadequate tech skills are impeding companies still developing in their digital transformation journey (Kane, Palmer, Phillips, Kiron, et al., 2015).

Cyber-security issues become increasingly top of mind for organisations in maturing phases of their digital transformation while barriers such as insufficient tech skills and prioritization also feature as barriers (Kane, Palmer, Phillips, Kiron, et al., 2015). Below is a graphical representation of these barriers.

	Early	Developing	Maturing
Top Barriers by Maturity Stage	1. Lack of strategy	1. Too many priorities	1. Too many priorities
	2. Too many priorities	2. Lack of strategy	2. Security concerns
	3. Lack of management understanding	3. Insufficient tech skills	3. Insufficient tech skills

Figure 5: Top Barriers by Maturity Stage adapted from Kane, Palmer, Phillips, Kiron, et al. (2015)

2.4.2 Organisational Strategy for Digital Transformation

Organisations start their digital transformation journey with a strategy aiming to increasing efficacy and improving customer experience and engagement (Kane, Palmer, Phillips, & Kiron, 2015). At the early stage the organisations mainly talks about implementing digital initiatives but does little implementing (Kane et al., 2017).

As organisations move to developing in their digital transformation journey, improving business decision making become another added objective (Kane, Palmer, Phillips, & Kiron, 2015). Digital initiatives support certain business objectives, but are not core to the business strategy (Kane et al., 2017).

According to Kane, Palmer, Phillips, and Kiron (2015) when an organisation is at a maturing phase of their digital transformation journey, the strategy for digital transformation goes further to include improve innovation and transforming the business as a whole.

This is further lamented by Kane, Palmer, Phillips, Kiron, et al. (2015) where they note that digital transformation strategy at maturing organisations goes beyond the technology and targets innovation, decision making and transforming the whole business. For maturing organisations, digital initiatives are a core part of the business strategy (Kane et al., 2017).

2.4.3 Organisational Culture enabling Digital Transformation

According to Kane, Palmer, Phillips, and Kiron (2015) organisational culture is critically important to effectively leveraging digital technologies in the workplace. Kane, Palmer, Phillips, Kiron, et al. (2015) notes that a culture conducive to digital transformation is a hallmark for digitally maturing organisations.

Early-stage organisations' siloed culture creates challenges when trying to generate new ideas and implement digital initiatives that drive digital transformation (Kane, Palmer, Phillips, & Kiron, 2015). Digitally maturing organisations are more likely to use cross-functional teams to implement digital initiatives when compared to early-stage organisations (Kane, Palmer, Phillips, Kiron, et al., 2015).

Early-stage organisations lack the willingness to experiment and take risks which was observed to be a strong culture in organisations at that are maturing in their digital transformation (Kane, Palmer, Phillips, & Kiron, 2015). According to Kane, Palmer, Phillips, Kiron, et al. (2015) digitally maturing organisations are considerably less risk averse than their peers and to encourage a culture of risk taking, leaders must lament that failure is a valid outcome

What sets maturing organisations apart is their ability to ramp up digital experiments yielding an organisational wide impact (Kane et al., 2017). Experimentation is at the heart of digital maturity (Kane et al., 2018).

For organisations to mature in their digital transformation, they will have to change their cultural mindset to increase collaboration and risk taking (Kane, Palmer, Phillips, Kiron, et al., 2015).

2.4.4 Talent Development as an enabler for Digital Transformation

According to Kane, Palmer, Phillips, and Kiron (2015) another factor distinguishing the most digitally mature organisations from the least is the development and training of digitally savvy talent. Early-stage organisations do not provide their employees with resources and opportunities to obtain the right skills to take advantage of digital trends (Kane, Palmer, Phillips, & Kiron, 2015)

Maturing digital organisations do not tolerate skills gaps and are able to build the necessary skills to capitalize on digital trends (Kane, Palmer, Phillips, Kiron, et al., 2015). Kane, Palmer, Phillips, Kiron, et al. (2015) laments how early-stage organisations are missing a critical skill of being able to conceptualize how digital technologies can impact the business. They are also unable to adapt quickly to change which is a critical skill needed in digital transformation (Kane, Palmer, Phillips, Kiron, et al., 2015).

According to Kane et al. (2017) digitally maturing organisations are far more confident than are others about having sufficient digital talent in their workforce. Instead of asking employees to be secretive about their work, some of the digitally maturing organisations are encouraging employees to be active on platforms and communities where they can share ideas and learn new skills from experts in other organisations (Kane et al., 2017). Kane et al. (2017) finds that the employees are more likely to stay in that organisation where learning is stimulated and organisations that do not develop their talent are likely to see their employees jump ship to their digitally maturing peers.

Kane et al. (2018) notes that digitally maturing organisations are doing considerably more to help their employees develop the skills they need to compete whereas employees in early-stage and developing stage organisations are not satisfied with how their companies are helping them prepare for the changes necessary for working in the digital environment.

Another key finding of Kane et al. (2018) is that employees from digitally maturing organisations are getting their digital skills development from on the job training rather than formal studies. Digitally maturing companies have been able to successfully combine individual learning experiences and a corporate culture which creates a sweet spot for learning.

2.4.5 Leadership in Digital Transformation

There is an increased expectation that leaders lead digital transformation initiatives from the front and by example (Kane, Palmer, Phillips, Kiron, et al., 2015). Employees in digitally maturing organisations are comfortable with their leaders ability to understand digital trends and technologies (Kane, Palmer, Phillips, Kiron, et al., 2015). Employees in early-stage and developing organisations however doubt that their

leaders possess the sufficient elementary skills needed to drive digital transformation (Kane, Palmer, Phillips, Kiron, et al., 2015).

Kane et al. (2016) note that digitally maturing companies place value on digital leadership strongly. Employees in digitally maturing companies note that leaders need to have the ability to steer the organisation through business model change (Kane et al., 2016). It is therefore an important skill in digital leadership. Interestingly, Kane et al. (2016) also note that hierarchical leadership structures need to be simplified to foster greater digital transformation.

According to Kane et al. (2017) digital maturity does not develop accidentally or as a result of a quick fix but rather it is achieved through commitment, investment and leadership. Digitally maturing organisations set realistic priorities and commit time and resources to make digital maturity happen (Kane et al., 2017).

Digitally maturing companies are more likely to be pushing decision-making authority down into lower levels of the organisation to create an environment for effective execution in a digital environment (Kane et al., 2018).

2.4.6 Strengths and weaknesses of the model

The model by Kane, Palmer, Phillips, and Kiron (2015) was developed as a result of a survey of more than 4,800 business executives, managers and analysts from organisations around the world. The study is conducted annually and captured insights from individuals in 129 countries and 27 industries and involved organisations of various sizes (Kane, Palmer, Phillips, & Kiron, 2015).

The model is as a result of a study on organisations of various sizes and might not be fully applicable to technology start-ups in the fintech industry in South Africa.

2.4.7 Summary and conclusion

This chapter of the research paper started by analysing the research problem which is that there has been changes brought by the Covid-19 pandemic on how organisations work however it is not clear how these changes impacted the digital transformation of technology start-ups in the fintech industry in South Africa.

The chapter went further to study the work of Karagiannaki et al. (2017), Matt et al. (2015) and Main et al. (2018) highlighting how digital transformation is an organisational wide change enabled by technology. This means that organisations that have implemented an organisational wide change are more advanced in their digital transformation journey. Understanding this assisted in fulfilling the aims of this study in how Covid-19 has impacted digital transformation of the organisations.

The technological drivers for the digital transformation include automation, (Westerman, 2016) increased connectivity, data intelligence, cybersecurity (Matt et al., 2015) while a digital strategy is instrumental to digital transformation (Nadeem et al., 2018).

The knowledge gap sub-section of this review crystalized how more work still needs to be done in understanding the impact of Covid-19 on technology start-ups within the fintech industry in South Africa.

We discussed the framework to be used for interpreting the research finding and also discussed its strengths and weakness.

3 RESEARCH STRATEGY, DESIGN, PROCEDURE AND METHODS

In Section 1.2.3 we have posed three questions that this research report intends to answer—that is, ‘What impact did Covid-19 have on the digital transformation journey for technology start-ups in the fintech industry?’, ‘Were there any digital initiatives put in place within the organisations as a direct response to Covid-19?’ and ‘Are these initiatives mostly likely to be sustained going forward?’

We have since reviewed literature and developed an interpretative as well as conceptual framework that will guide the choices of techniques we will use. This chapter identifies and describes research approach, design as well as procedure and methods employed in this research to collect, process, and analyse the empirical evidence.

Broadly, this chapter has three objectives; namely, to identify and describe the research strategy (Section 3.1), the research design (Section 3.2), as well as the procedure and methods (Section 3.3). The chapter also describes the reliability and validity measures (Section 3.4) that this research applies to make it credible as well as the technical and administrative limitations of the choices we make (Section 3.5).

3.1 Research Approach and Strategy - Qualitative

Research strategies exist in enabling the researcher to integrate different mechanisms in a logical and unambiguous manner to effectively address the research problem (Neuman, 2007). In investigating how Covid-19 has affected the digital transformation journey of technology start-up with specific focus on the fintech industry, research approaches and strategy were identified.

Research approach

Neuman (2014) identified and described five research approaches as (i) Positivism (ii) Interpretative social sciences (iii) Critical social science (iv) Feminist (v) Postmodern. He further notes that these research approaches can imply one of the three methodological strategies which are quantitative, qualitative, and mixed approaches.

Though given Neuman's narrative, the researcher followed Creswell and Creswell (2017) whether they note the three methodological approaches as the fundamentals of the research strategy. These strategies are quantitative, qualitative and mixed approaches and they hold significant positions in the field of research (Arghode, 2012). Creswell and Creswell (2017) describes the qualitative reaches methods as an approach for exploring and understanding the meaning of individuals or groups ascribe to a social or human problem. Using this definition, groups of technology executives and entrepreneurs who's businesses were impacted by the Covid-19 pandemic were interviewed for this study.

This study followed the qualitative method approach whereby it involved emerging questions as a way of collecting data from participants. Data was further analysed inductively building from particulars to general themes and the researcher further made interpretations of general meaning of data. The chosen research approach was also influenced by the reasons that the data collected through the qualitative approach is not imprecise or deficient but very meaningful (Neuman, 2007). This was because the research aimed to obtain the rich and meaningful conversations and encourage participants to share their in-depth views relating to the impact of the Covid-19 pandemic on digital transformation for their organisations.

Neuman (2007) notes that when a researcher gathers qualitative data, they document real life events, they observe people's behaviours. According to Pathak, Jena, and Kalra (2013), qualitative approach is used to understand people's beliefs, experiences, attitudes, behaviour, and interactions which ultimately generates non numerical data. Using both these narratives, this study used the qualitative approach to extract the experiences of business leaders within technology start-ups focusing on fintech companies.

Kane et al. (2017) followed the qualitative approach to extract answers from participants. Their main aim was to gain insight on how employees viewed their organisations from a digital transformation perspective. Later Kuckertz et al. (2020) used a mixed approach where the qualitative approach was used to get in-depth insights from participants and the quantitative was used to reach a much bigger population spread over 40 countries. Butu et al. (2020) followed a both quantitative

and qualitative strategy to understand the impact of the Covid-19 pandemic upon the consumer's buying decisions.

Thus, as mentioned above, this study followed qualitative research method to gain insight on how business owners, senior managers of South African technology start-ups in the fintech industry views the impact of Covid-19 on their organisations.

In gathering the data, this study used an approach of holding interviews using the Microsoft Teams meeting platform whereby the meeting were recorderd and kept for further analysis. As noted by Neuman (2007) when a researcher gathers qualitative data, they record what participants say with words, gestures and tone. These were then kept as hard evidence for closer scrutiny of the data.

3.2 Research design and Methodology

According to Creswell and Creswell (2017), research designs are types of enquiry within qualitative approaches that provide specific direction for procedures in a research study. These enquiries include procedures for data collection, analysis and writing (Creswell & Creswell, 2017). Becker, Bryman, and Ferguson (2012) submits that the fundamental principle of a research design is to guide the way that a researcher collects and analyse data. The design of the research must further ensure that the data collected successfully addresses the research problem logically and as unambiguously as possible (Kirshenblatt-Gimblett, 2006).

For this study, the researcher adopted Creswell and Creswell (2017) where characteristics of two designs were applied over the five qualitative research designs identified by Creswell and Creswell (2017). These were; (i) The narrative research which is defined as the design of inquiry from the humanities in which the researcher studies the lives of individuals (Riessman, 2008) (ii) Phenomenological described as a design of inquiry coming from philosophy in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants (Padilla-Díaz, 2015) (iii) Grounded theory is described as a design of inquiry which the researcher derives a general, abstract theory of a process grounded in the views of participants (Ramalho, Adams, Huggard, & Hoare, 2015) (iv) Ethnography described as a design of inquiry in which the researcher studies the shared patterns of behaviours

and actions of an group in a natural setting over time (v) Case studies design of inquiry in which the researcher develops an in-depth analysis of a case

Phenomenology is a research design in which the researcher attempts to build the essence of an experience from the participants (Creswell & Creswell, 2017). Groenewald (2004) notes that on the phenomenological research design, the researcher is concerned with understanding social and psychological phenomena from the perspectives of people involved through a certain lived experience. This means a researcher constructs a rich and detailed description of a certain phenomenon or a common lived experience amongst the participants. Using this narrative, In this study the researcher examined the Covid-19 pandemic and applied the phenomenology research strategy. The pandemic was used as a central phenomenon that was lived by business leaders within the fintech industry. The study observed the experiences of the participants that were impacted by Covid-19 in the fintech industry by collecting the data in a form of their views on how the pandemic impacted their digital transformation journey.

The purpose of phenomenological research design was to explore and discover how the central phenomenon of Covid-19 impacted the digital transformation for the fintech companies. The researcher learned from the experiences of others to answer the research question “How has Covid-19 affected the digital transformation journey of participants?”

Although phenomenological research design has been prevalent in the psychological, education and philosophical fields, the characteristics of phenomenology held true for field of business management as followed by this research. While Lauterbach (1993) observed a phenomenology of a shared experience of mothers who have lost their babies in late pregnancy, In this study the researcher applied the method of enquiry to obtain reflections from business leaders and meaning from their Covid-19 pandemic experience in the context of digital transformation .

The participants were business leaders from different technology start-up companies, and the researcher interviewed a convenient sample of 15 participants to reflect on their personalised experience around the lived, shared experience of the Covid-19

pandemic. Next the researcher finally analysed the data and arrayed participants statements on paper and collapsed them into meaning units called broader themes.

In order to obtain valuable and different views around digital transformation, Kane et al. (2017) conducted a study that was based on interviews with managers, thought leaders and executives. Thus, this research has followed the interview-based design whereby participants from key positions in different South African technology start-ups in the fintech industry provided insights on how their organisations digital transformation journey was affected by Covid-19. The data collected from the interviews was used to formulate a basic idea on how Covid-19 affected digital transformation in different technology start-ups in the fintech industry.

3.3 Research procedure and methods

This section documents the actual procedure and the methods employed in this research to collect, collate, process, and analyse empirical evidence. Broadly, we detail the data and information collection instruments (Section 3.3.1), the target population and sampling of participants (Section 3.3.2), the ethical considerations during the research process (Section 3.3.3), data and information collection process and storage (Section 3.3.4), data and information processing and analysis (Section 3.3.5) as well as the background description of the participants who provided empirical evidence for this research study (Section 3.3.6).

3.3.1 Research data and information collection instrument

A research data collection instrument is the instrument that the research will use to collect data from the participants (Wotela, 2017). This study followed a semi structured interview schedule approach. The questions asked to the participants have been attached in Appendix A.

There are 3 broad questions covering this study as illustrated by Appendix A. The first question “How would you rate your organisation’s digital transformation prior to the Covid-19 Pandemic?” engages the participant to reflect on the state of their digital maturity prior to the Covid-19 pandemic. The objective of this questions was to create a basis of a benchmarking process as to let the participant explain where they are today

given the Covid-19 pandemic compared to where they used to be. This question was structured to stimulate the participants thinking on how they used to be.

Given the context from the first question, the second question “Were there any digital initiatives put in place in your organisation as a direct response to Covid-19? Please highlight these initiatives.” was positioned at the heart of understanding how exactly the participants organisation responded to the pandemic digitally. The objective of this question was to explore and understand what if any was the response imposed by the participants organisations to all the preventative measures imposed the pandemic. This question further explored the specific initiatives that were taken by each organisation.

The third question worked with the assumption that each organisation represented by the participant in this study have implemented some kind of initiative to respond to the pandemic. The question “Are these initiatives mostly likely to be sustained in your business going forward?” aimed to understand what the futuristic digital transformation journey of each organisation will look like after responding to the pandemic.

3.3.2 Research target population and selection of participants

3.3.2.1 Research target population

“Target population is a specific collection or universe of many cases or several units, elements or objects such as people, firms, institutions, organisations, places, cities, regions and countries as well as employees or members of a particular firm, institution, organisation, city or region” (Malhotra, Birks, & Wills, 2010, pg 239). Goodenough and Waite (2012) defines population as the whole set of members of the group being studied. This paper has been conducted on technology start-ups within the fintech industry operating in South Africa.

Kane et al. (2017) in their digital maturity research paper used the target population of business executives, managers, and analysts from different organisations around the world. Their aim was (i) To understand the challenges and opportunities associated with the use of digital technology (ii) The insights of this target population contributed to a richer understanding of the data, (iii) Because the views came from both

executives, managers and business analysts, they were diverse enough to gain insight on how employees view digital maturity of their organisations.

Thus, the population for this research has been business executives from technology start-ups within the fintech industry operating in South Africa together with their managers.

3.3.2.2 Sampling participants from the target population

Goodenough and Waite (2012) defines a sample with a small group chose to take part on a study. Malhotra et al. (2010) and Wotela (2017) notes that sample size is the number of cases to be selected, or actually selected, from the target population to participate in the study.

For this study, the snowballing sampling technique has been used whereby we asked one interviewed business leader to recommend other business leaders to partake in the study. Finally, 15 participants were interviewed from different technology start-ups within the fintech industry.

3.3.3 Ethical considerations

Ethical Issue - Confidentiality

The information shared by the participants is confidential company information, such that, if it were to get into the hands of competitors, might reveal trade secrets.

Mitigation

As such, the raw data collected has been handled with care and sensitivity. It is stored in a cloud-based storage that will be accessed by a password known to the researcher. The data is presented in a way that endeavours not to identify the individual participant.

Ethical Issue – potential conflict of interest

A conflict of interest might arise where the participant might belong to a company that is doing business or might do business with the company where the researcher works this might force participants to feel coerced to participate in the study.

Mitigation

Participants were made aware that participation in the study is strictly voluntary and the participant can terminate the interview at any point. Participants were alerted that this research is not linked to the researcher's work.

Ethical Issue: Data Security

The raw data is being stored electronically on a password access-controlled cloud storage for security and ethical reasons. No other person has access to the data besides the researcher.

3.3.4 Research data and information collection process

Conducting interviews is one of the most important data gathering tools in qualitative research (Adomavicius, Bockstedt, Gupta, & Kauffman, 2008). The semi structured interviews have been deemed appropriate because they provide ways of capturing extremely rich data by allowing the informed opinions of industry experts to be captured (Adomavicius et al., 2008).

The semi structured interviews allow the participants to be asked the same question within a flexible framework (Longhurst, 2003). Thus, to begin the data collection process, the semi-structured interviews were conducted in a virtual format. This was also to allow the open questioning of participants which allows the extraction of in-depth information capturing. The participants account of their experiences is the primary source of data.

3.3.5 Research data processing and analysis

The data processing and analysis was done using a framework developed by (de Casterlé, Gastmans, Bryon, & Denier, 2012) since they underscore that qualitative data analysis is complex and can pose many challenges for the researcher hence they developed their framework. de Casterlé et al. (2012) offer 10 stages which have been used in the data processing and analysis process. These steps have been used in this research and have been highlighted in the figure below.

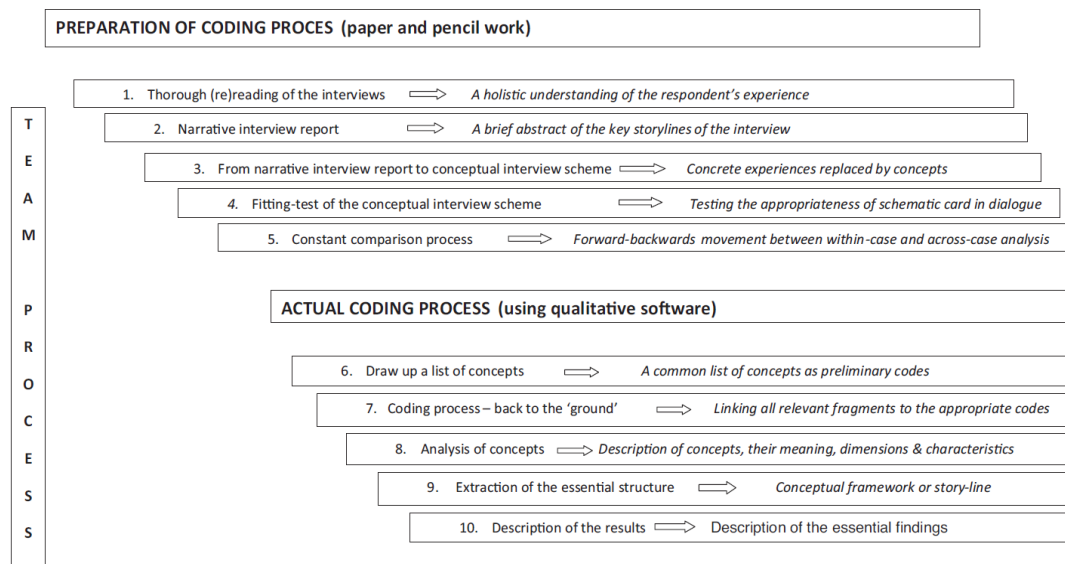


Figure 6: Research data processing and analysis process by de Casterlé et al. (2012)

Using the above framework has assisted in overcoming some of the pitfalls which qualitative researchers have been found to do. According to de Casterlé et al. (2012) these pitfalls are:

1. Over-reliance on software packages
2. Work overload due to line-by-line approaches
3. Coding using preconceived framework
4. Failure to retain the integrity of each participant's story
5. Not exploiting the full potential of the data

The use of the framework by de Casterlé et al. (2012) has ensured that this study minimizes the risk of encountering the above challenges.

3.3.6 Description of the research participants

The research participants are from diverse backgrounds within the fintech companies. In order to validate the data interviews were conducted with Founders/Co-Founders of fintech companies, Senior Managers in fintech companies as well as professional staff working in the fintech companies.

This has ensured that a wide range of views are heard about the fintech company in order to adequately understand the impact of Covid-19 on that particular fintech

company. Executives and Senior Managers of a fintech company might hold a similar view whereas the middle management and professional staff working in the fintech company might hold a differing view to that of senior management. If the views are the same across the organisation, that would legitimize the data even more, ensuring greater reliability.

3.4 Research strengthens—Dependability and Truthfulness

Truthfulness of data can be characterized as trustworthiness, rigor and quality in qualitative research paradigm (Golafshani, 2003), and therefore it is imperative to measure how truthful the data is in a study (Lynch, 1983). This means that in order for the data collection process to be considered valid for this study, the information gathered must accurately match what the research is intended to do or answer as part of the research question (Winter, 2000).

When assessing the truthfulness of data, the researcher was interested in achieving authenticity from the participants in gathering the information. Authenticity means offering a fair, honest, and balanced account of social life from the viewpoint of the people who live it every day (Neuman, 2014). The researcher captured an inside view that participants had and provided detailed account of how the participants encountered the Covid-19 pandemic

This study aimed to ensure that most of the quality criteria for qualitative research are met which are (i) indicating the research process, (ii) empirical foundation, (iii) coherence and relevance (Jenner, Flick, von Kardoff, & Steinke, 2004). In achieving this, Creswell and Creswell (2017) notes that qualitative dependability is one of the strengths of the qualitative research and is based on determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of the study.

In ensuring the dependability of data, the researcher measured consistency by recording the interviews consistently from each participant. This data collection process was conducted with trustworthiness authenticity, and consistency.

Furthermore, the researcher transcribed the recorded interviews word to word, from the participants mouth to the transcription booklets. Additionally, Triangulating data sources was used in this study. Creswell and Creswell (2017) explains triangulating data as a method of using multiple sources of data to enhance the credibility and dependability of data in a research study. In this study, each participant came from a different fintech company as a way to obtain diverse views.

3.5 Research weaknesses—technical and administrative limitations

The study has narrowed the research population to technology start-up in the fintech industry in South Africa. It looks at employees who understands the evolution of the digital transformation within an organisation and what impact Covid-19 had. The narrowing of context to South African might limit the study to similar views that are only coming from South Africa. Looking at the nature of the Covid-19 pandemic, it affected most technology start-ups across Africa and the world, therefore interviewing some participants outside of the borders might be interesting and give different views to measuring, comparing, and contrasting the impact of Covid-19 on digital transformation.

This study has not looked at other factors like the actual execution of the digital transformation strategy during Covid-19. This is a research weakness because knowing how well or how bad the impact was during the Covid-19 pandemic provides a more meaningful addition to the body of knowledge. Knowing this measure would also guide upcoming technology start-ups on how a digital transformation strategy can be executed.

This study has not evaluated the factors influencing the effectiveness of various digital transformation journeys for different fintech companies. This is a research weakness because knowing how effective were some fintech companies over the others during the Covid-19 pandemic would enable technology start-ups by giving them factors that influences an effective digital transformation strategy.

4 PRESENTATION OF RESEARCH RESULTS

This chapter outlines the key findings obtained from the data that was collected. The data was collected from participants based on the population criteria discussed above. Tables and exhibits are included for ease of presentation and comparison of the results.

As in the study by Shongwe (2017) in presenting the data for this study, participants confidentiality has been ensured through the use of pseudonyms to indicate participants, with the use of P1 to indicate the first participant interviewed and P15 the last participant interviewed.

The first section 4.1 presents the companies each participant represented during the interview process. Second sections 4.2 present the data obtained from the first research question which was obtaining the digital maturing of the organisations. Section 4.3 presents data from the second questions which observes the initiatives the organisations put in place as a direct response to the Covid-19 pandemic. The last section 4.4 presents data from the third research question which was asking the sustainability of the digital initiatives post the Covid-19 pandemic.

In presenting the research data, it should be noted that all participants consented to their views being used as part of this research paper.

4.1 Participants' organisations

The participants from different technology start-ups within the fintech industry were requested to share their views in answering the research questions. Below are organisations details from which the participants came from.

Participant	Position	Industry	Company/Main Business Activities
Participant 1	Director	Fintech	Company that provides technology to processes card payments in a secure way
Participant 2	Managing Director	Fintech	A company that provides payments solutions to help customers meet challenges, enabling them to manage cash
Participant 3	Managing Director	Fintech	Fintech that provides payment gateway and enables businesses to accept online payments
Participant 4	Deputy CTO	Fintech	Company that provides digital payments for SMEs
Participant 5	Head of Expansion	Fintech	Fintech company that provides card machines and online payments
Participant 6	Chief Executive Officer	Fintech	Fintech company that provides augmented reality technology payments
Participant 7	Head of Business Development	Fintech	Fintech that provides technology for cross border money transfer
Participant 8	Marketing Director	Fintech	Company that provides advertising platform for fintech companies
Participant 9	Manager	Fintech	Company that provides secure card payment solutions
Participant 10	Head of Strategy and Development	Fintech	Company that provides technology for mobile money
Participant 11	Managing Director	Fintech	Fintech company that provides lending solutions to consumers
Participant 12	Managing Director	Fintech	Company that provides technology to displace cash in formal and informal retail environments

Participant 13	Managing Director	Fintech	Provides mobile payment solutions app that's transforming mobile transactions between businesses and app users
Participant 14	Chief Information Officer	Fintech	Payments company that provides transaction processing solutions that deliver results.
Participant 15	Chief Information Officer	Fintech	Fintech focusing on designing and developing digital banking and insurance solutions for the future

Table 1: Table of participants and company description

4.2 Presentation of empirical results

When measuring digital transformation, Kane et al. (2017) asked participants to “imagine an ideal organisation transformed by digital technologies and capabilities that improve processes, engage talent across the organisation, and drive new value-generating business models.”

Using this as a measuring guiding principle, Participants were asked to rate their organisation’s digital transformation journey using the scale from early, developing up to matured.

In summary, a lot of participants highlighted that their companies had reached digital maturity. These fintech companies were deemed to have been created with a digital mindset which is where they gained their competitive advantage. They note that Covid-19 accelerated their digital transformation journeys even further, because they had to implement initiatives which were only planned for later years.

4.2.1 Digital Maturity

In answering the question of digital maturity, below are some of the responses from the participants that were noted.

- **Digital transformation Journey prior to Covid-19**

Participant P4 said their organisation's digital transformation journey is developing. "I would say that we are developing primarily because we are a small player in the industry so there is still a lot of work, we need to do from a digital transformation perspective". Though they highlight that their company is a fintech company that has been founded with a digital mindset and their value proposition stems from being digital transformed, but Covid-19 has presented a lot of opportunities for them to grow digitally.

On the same question, participant P6 suggested that their company is in between early and developing. "Though we provide the 4th industrial revolution technology, augmented reality e-commerce platform and various digital wallet payment solution to retail, I think internally there is still a lot of work to be done to take the way we work to be fully digitally transformed". These participants have a coherent message on how they view their digital maturity prior to the Covid-19 pandemic. Participant P6 further highlighted that their internal operations, the way they work with co-workers is not fully digital. They still need to adapt to the new ways of work and employ certain technologies in order to be agile and innovative. Even though they provide the latest technology to different sectors, but Covid-19 made them realise they need to work more efficiently and digitally.

Participant P7 notes their digital transformation journey is developing but still early. as their business is a WhatsApp enabled wallet, offered to migrants staying in South Africa, they utilise these wallets to purchase services back home for their beloved families. "This wallet platform is something new in the market" Participant P7 further submitted that Covid-19 laid bare what they already knew they needed to change. "Normally we onboard migrants into the platform in-person". The lockdown meant they could not onboard any migrant into the platform traditionally as they should, and therefore they had to find digital ways to bring new business and keep their company afloat. "I would say our digital transformation journey is early and needs to develop quickly to stay in business".

- **Digital Transformation Journey after Covid-19 started**

Participant P1 indicated that their digital transformation journey was matured prior to the pandemic. This is primarily guided by the nature of their business as they provide financial technology to the financial institutions across the world. With this however, during the Covid-19 pandemic it was noted that they did put a lot of focus and attention on products within their organisation. “We needed to leverage the newer technologies more because we've been getting an increased demand from our clients. So, Covid-19 definitely has accelerated some of the work that we have been doing in the organisation”.

The response highlighted by participant P2 was that their digital transformation journey is matured. “We provide core banking software services to customers and core banking is based on world class technology”. The participant further noted that their company was rated the third largest fintech in the world in 2020 and everything that they do is software and technology, so their journey is extremely mature. They note, “when Covid-19 started we started seeing a lot of smaller products being implemented in the market” This demonstrated a market being more competitive meaning they needed to respond to the change.

Responding on digital maturity, participant P3 said they are in the financial technologies sector, so their digital transformation journey is mature “because we provide and use technology”. Their internal operations are done digitally and mostly of their products and services are based on digital technology. “Our product is e-commerce processing payments, so it is all in the digital world”. “The way our customers consume our product is not entirely digital though, we rely heavily on transaction being done through a physical card” After Covid-19 started they noticed a decline in transactions because of the lockdown. The participant further highlighted that during the hard lockdown they had to work from home and all they had to do was to take home all the working equipment and it was very easy given that all the remote working technologies were already in place. They mention that, MS Teams and Zoom were the platforms they use internally for collaboration.

Participant P5 says their digital transformation journey is matured. “In principle I would say we are a digitally matured company”. Their company itself provides technology that supports other businesses to be digitally matured which made them to consider their organisation to be completely digitally transformed through both their

service offerings and internal operations. Asked the same question, Participant P8 says their organisation is at the top of digital. “Covid-19 had no impact on us from a digital transformation perspective, we are the heart of digital transformation”. The participant highlighted that the lockdown that was put in place as a preventative measure to the Covid-19 pandemic did not affect the company at all, however they had a huge role to play in the society by providing them the latest and relevant information digitally.

Participant P11 went as far as saying “Our company has been ready for this type of a pandemic like Covid-19 for the past 6 years, we have been using digital channels to connect with our customer since inception”. However, there were divergent views as well. Participant P14 noted that though they are a fintech and consider themselves digitally matured, but their business is an ATM business that focuses on the physical movement of cash. The participant suggests “During the lockdown people were not moving around, they were not drawing cash, there were no conferences and gathering where we could place our mobile ATMs, so us being digital didn’t really help us during the lockdown.

In summary, a lot of participants highlighted that their companies had reached digital maturity. These fintech companies were deemed to have been created with a digital mindset which is where they gained their competitive advantage. They note that Covid-19 accelerated their digital transformation journeys even further, because they had to implement initiatives which were only planned for later years.

4.2.2 Digital Transformation Initiatives

The participants were asked to reflect on initiatives that were put in place within their organisations as a direct response to Covid-19. They were asked to name these initiatives and further state which part of their digital transformation journey was impacted. Below are some of the themes that were gathered.

Digital Financial Technology Access For SMME

Commenting on digital transformation initiatives, Participant P5 highlights that the organisation needed to ensure that all small businesses that use their card devices to process card payment transactions were provided with digital means to process transactions.

“During Covid-19, there was a lot of online shopping that took place and we quickly had to play in that space by equipping our customers with technology” This meant that their customers who have a physical card payments technology could not continue operating their business.

“We had a mix of digital sales channels; in person sales channels to service customers and had our own retail stores in across the country. So, what ended up happening during Covid is that we had to close all our retail stores because of the lockdown, and everything had to go digital”, explained Participant P5.

Participant 3 noted that “it was very very very busy for us during Covid-19. Everything was accelerated from a payment’s perspective. Since consumers were forced to go and buy online there was a percentage rise of 22% from a tradition use of card of 4%”. This participant echoes that digital financial technology access needs had risen during Covid-19.

Participant P4 commented on SMMEs and how their company became a technology enabler for small businesses. “Fintech became a means to support other businesses. One of our clients based in East Africa relied very heavily on us during Covid-19 to make payments to millions of famers and their employees, and we had to provide the payments digitally which was the first for farmers”. For this company it meant their customers were forced to go cashless and this is fundamentally one of the ways of digitizing the payment industry.

Another different perspective of digital technology access was brought up by Participant P6 when they highlighted that as a fintech that enables other business to thrive in their respective sectors, they had gone to many customers to pitch ideas that enable them to provide digital experience to their customers. “With Covid-19 most business took a knock including ours, the pandemic gave me and my team a lot of ideas from a digital transformation perspective. It accelerated a lot of ground-breaking, forward, and out of the box thinking from a solutioning perspective. I would say there was a lot of ideation, digital transformation accelerating ideas formulation for different businesses to thrive in their respective sectors”.

Participants highlighted that as Fintech companies, they had to enable a cashless society, which was forced during Covid-19 due to the lockdown.

Internal Operations Including Working from Home

It was noted that not all organisations were ready for a work from home scenarios which ultimately affected how they normally work. Participants felt that their organisations were not digitally ready. “We had to cope with working from home, having children and not having any help and having to working very long hours so the work life balance had to be managed” said Participant P3.

Participant P5 echoes this by saying “although it was exciting at first but came with a lot of challenges like work-life balance”. Working from home seemed to be destructive for most participants

Digital Financial Inclusion

Digital financial including refers to offering digital financial services to those who were previously excluded from the formal financial system (Arunachalam & Crensil, 2020). Participants highlighted that the digital financial inclusion narrative within the fintech space to some degree accelerated during Covid-19 through all the initiatives that were implemented to support the small business and those who did not have access to digital payments.

Participant P4 says financial inclusion was shifted to a high-speed gear. “The policy makers across Africa started reducing transactions fees in some countries or maybe increase the limit of amounts that people could transfer across borders or domestically because they were trying to bring people into the fold of financial inclusion and support money transfer during Covid-19”. Other participants further agreed that most financial institutions in South Africa thrive for financial inclusion and the lockdown accelerated the fostering of digital financial inclusion.

Cyber Security

Participants highlighted that as the online shopping was taking an uptake, so did the risk of cybercrime. As financial technology providers, most of their organisations had to put in place security measures that ensured that cybercrime was prevented.

“One of the key things is that when the pandemic started a lot of businesses had to go online and there was a big demand in online payments and with that came a huge risk.

There was a huge risk element because also the criminals were also going online so our customers invested heavily in cybersecurity in order to make sure that we are resilient, and we are not caught by the cybercriminals that also went online. So as a direct response to that we had to strengthen our digital defences from a cybersecurity point of view which further accelerated us from a digital transformation point of view” said Participant P1 Adding to this and they had to strengthen security from the data centres point of view. “It was very important for our organisation to know that where data was sitting it was 100% secure”.

Participant P8 highlighted that cybercrime was at its peak during Covid-19. The organisations already had technology that deals with security which was very reliable however they could see from their analytics the failed attempts of unauthorized users.

“There were a lot of projects that were started during Covid-19 and because we deal with money there were a lot of risks” – highlighted participant P7. Commenting on this Participant P2 says most projects they had to start during Covid-19 meant that they had to access the banks on-premise systems remotely. This came with a huge risk because banks deals with highly protected information and the data is highly secured, this is done due to the nature of their business.

Innovation

During the Covid-19, the financial services industry was enabling contactless and cashless transactions through different innovative technologies (Sahay et al., 2020). There was a lot of innovative initiatives that were highlighted during the data collection process.

Participant P5 notes that “there were other solutions that came up in the market for example, you could use your mobile phone and you could use the QR Code, and you could pay on your mobile phone so that you are not touching stuff in the store”.

For Participant P5 Covid-19 meant that they must be innovative. They also highlighted a lot of partnerships with smaller businesses who were penetrating the payments industry. “We saw for an example, an increase in the use of food delivery companies which were around before, but they were not doing much.” These partnerships were enabling innovation.

Participant P1 highlights that during Covid-19 they saw a lot of innovation including technologies that were already there in the market but not being used. Customers started using things like chatbots on their websites which has been there before. Their customers started launching new products during Covid-19. “In the South African market, you would have seen FNB launched their digital card, Discovery Bank launched one as well” said Participant P1. It was noted that as a direct response to the lockdown, banks wanted to be relevant to their customers.

Commenting to this, Participant P7 notes that they had to completely change their business model. “We had to quickly run a digital marketing plan in order to survive during Covid-19, we had to take a 180-degree turn”. Though the company knew that at some point they had to go digital with their marketing, Covid-19 made them bring this strategic objective forward to 2020.

In summary, the organisations had to implement some form of digital transformation initiative as a response to Covid-19. These initiatives included spanned through the organisations impacting internally and external facing processes. There was a lot of adjustment that employees needed to do as they embraced the new normal. During the interviews, it was noted by most participants that during Covid-19, they had to ensure that their customers were able to use the financial technology in a remote way.

4.2.3 Sustainability of Digital Initiatives

Participants were asked to give their views on whether all or most digital initiative that were implemented during Covid-19 were likely to be sustained post Covid-19. Below are some of the answers.

Digital outlook for Fintech’s post Covid-19

Commenting on this, Participant P3 noted that “there is no going back, and any organisation with a growing digital strategy would not go back to where they were before Covid-19. Looking at the fintech space, we should always be digital. We should always be in the forefront of digital”.

“The biggest lesson we noted during Covid-19 was that we needed to be digitally ready and be able to identify all the opportunities presented by the Covid-19” said Participant

P4. Participants echoed the fact that Covid-19 presented a lot of opportunities for fintech companies to flourish in creating a future world of payments.

Participant P6 pointed out that most fintech's who were able to thrive during the pandemic were those using the newest technologies like chatbots and robotic process automation. Echoing this Participant P7 said, "for us to survive Covid-19, we had to use social media in order to reach our target market and this will be how we do marketing going forward".

Participant P1 pointed out that the initiatives accelerated their digital transformation journey. "from where we are sitting, Covid-19 did help accelerate the world in terms of digital probably by 5-10 years, in terms of the consumption of digital will it continue like that? Yes definitely, there has been a behavioural shift.

The future of fintech looks digital, though several challenges remain. Participant P2 said "people still want to use cash and buy stuff from each other, especially in South Africa. They see instant value in doing this and this then raises challenges in trying to fully digitise the payment world. But yes, this has set a foundation for where we should be".

Participant P5 said "absolutely, I think Covid-19 has accelerated a lot of our operations and product consumption digitally. And I think in a grand scheme of things these are mostly here to stay". Furthermore, Participant P6 said "the initiatives implemented during the Covid-19 pandemic has set a stage, I don't think this was a phase at all, I think the fintech SMME are going to continue innovation within the online shopping space".

Participants agreed that digital transformation is the foundation for all business to move to new era of the fourth industrial revolution. Covid-19 just accelerated this mindset.

In summary, the participants highlighted that the digital initiatives implemented as a response to Covid-19 will be sustained in the fintech industry. These capabilities that have been developed have set a new started for the industry which has leap-frogged the industry.

4.3 Summary of Key Findings

What impact did Covid-19 have on your digital transformation journey?

A finding of this study is that technology start-ups in the fintech industry are digitally matured organisations. The rationale that emerged from the participants for this was that: (i) These organisations operate in an environment where they provide technology to their customers. (ii) They create products and services geared towards servicing other businesses (business to business) and they also provide products and services directly to consumers. (iii) These organisations are born with a digital mindset. They are created using newer technologies with limited use of legacy technologies.

Prior to the start of the Covid-19 pandemic, it was noted that fintech organisations were not paying attention to their digital transformation in great detail. They were busy implementing digital initiatives to further advance their digital transformation however these initiatives would often take the backseat for more profitable initiatives that had to be implemented.

After the Covid-19 pandemic had started, the study observed that fintech organisations observed an acceleration on their digital transformation. This was because they started digitizing some internal manual processes like new employee onboarding, induction, etc. for the business operations to continue.

During the same period after the Covid-19 pandemic had started there was a lot of reprioritization of work and projects that needed to be undertaken. Some of the projects that were planned for later in the years had to be brought forward. This also meant that they had to change their project delivery and move from the waterfall project management methodology to the agile methodology as part of the new ways of work.

This study found that after the Covid-19 pandemic started, the fintech organisations had to change their culture and the ways in which they worked. It appeared that there was an acceleration in collaborating digitally. The key thing that came out was that meeting remotely in order to maintain the human interaction element that had been missed because of the lockdown was crucial. This meant that they had to meet virtually for drinks, fireside chats, and social chats like sharing how the lockdown experiences have been. This worked not only internally but also in collaborating with partners and

customers This came out to be a huge acceleration of digital collaboration as these companies believed it will yield to effectiveness.

It was noted that organisations saw decreases in their transactions volumes resulting in decreased revenues for transactions done in the face-to-face environment during the Covid-19 period. These organisations had to quickly start new projects that allowed consumers to pay seamless online. Starting new projects enabled by newer technology also meant that they needed to bring in highly skilled employees to deliver projects quickly.

Another finding on this research question of digital maturity was that, after Covid-19 started, there was an increase in the usage of newer technologies within ecosystem. The technology start-ups within the fintech industry observed an acceleration in digital transformation from their consumers as well. Customers started using tools like chatbots on their websites to communicate with them which were not being using before. Some participants noticed more websites visits of which customers used to find more information about their service offerings. This means that internally what was previously an office desk chat had to be on either email, MS Teams chat, Slack etc. and externally what was previously a call centre call was a chatbot chat.

Were there any digital initiatives put in place in your organisation as a direct response to Covid-19?

A finding of this study was that there was transformation on digital channels and websites. It was noted that there was a huge upsurge on consumers purchasing online and the fintech companies had to ensure responsive payment technology is ready for the consumers to use. This meant that they needed to upgrade their websites and put additions technology in order to give users a seamless user experience.

While there was an upsurge of online purchase activities, another finding was that the fintech companies were highly concerned about security. This made organisations start new projects and put measures in place in order to ensure that consumers are safe from a cybersecurity point of view which encompasses the collection of technologies, processes, and structures designed to protect the network, systems, and data from attack.

It was found that during the Covid-19 period, organisations had to pivot and adopt the innovative ideas for their business transformation. This included things such as: robotics process automation technologies to automate some of their processes. The common innovative initiative was automating things like sales order creation and automating merchant onboarding creation. Merchant onboarding is when a fintech company brings onboard a new customer either, small business owner or church owner etc., into the platform where they will be able to make online transactions.

Another finding noted was that new partnerships strategy had to be developed. As most small business closed, fintech companies saw a need to start initiatives of partnering with SMMEs in different industries and enabling them to make digital transactions. These small business owners included food delivery companies, salons, etc.

Organisations in the fintech industry identified new markets to tap into during Covid-19 that were previously not serviced as noted by this study. While the world was under lockdown, fintech companies in the cross-border payments environment saw an opportunity to expand into more markets as regulations became relaxed.

One of the findings was on product development initiatives that had to be initiated. The fintech start-ups noted that Covid-19 presented them with opportunities like adding new features on their products and services they offer. For example: when users fill a merchant onboarding form to register themselves to obtain digital payment facilities, the functionality like prepopulated fields was added in order for a quick process and therefore quicker turnaround time.

Are these initiatives mostly likely to be sustained in your business going forward?

The key finding on this research question is that the digital initiatives made by the technology start-ups in the fintech industry during the Covid-19 pandemic will be sustained moving forward. These have set the stage and created industry trends that will be lasting. This means most technology start-ups will continue being digital to ensure they are ready for any future pandemic that may arise.

5 DISCUSSION OF THE RESEARCH FINDINGS

This section presents the discussion of the research findings. The purpose of this chapter is to discuss the findings of the study anchored on the literature reviewed.

The problem that this study seeks to address is how Covid-19 has affected the digital transformation journey of technology start-up with specific focus on the fintech industry.

To bring a solution to the problem and provide insights on how Covid-19 affected technology start-ups in the fintech industry regarding their digital transformation journey, it was important to then ask the question: what impact did Covid-19 have on your organisation's digital transformation journey? The discussion on the findings to this question are discussed in section 5.1.

Adding to the solution and providing further insights, section 5.2 discusses the findings on whether there were any digital initiatives put in place as a direct response to Covid-19. While the last section, 5.3 contributes to the solution by discussing the findings on whether the digital transformation initiative put in as response to Covid-19 will be sustained for fintech businesses.

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6.1 Research Question One

What impact did Covid-19 have on your digital transformation journey?

In seeking to answer the above question, we had to gain an understanding of what a fintech company is and what value do these companies add in the industry which they operate. We also had to gain an understanding of digital transformation and what a digitally transformed organisation ought to be. A model developed by Kane, Palmer, Phillips, and Kiron (2015) and further extended by Kane, Palmer, Phillips, Kiron, et al. (2015) has been relied upon.

The model from Kane, Palmer, Phillips, Kiron, et al. (2015) discusses features of companies in different phases of digital transformation. These features are grouped into six being (i) organisational barriers to digital transformation (ii) organisational strategy for digital transformation (iii) organisational culture enabling digital

transformation (iv) talent development as an enabler for digital transformation and (v) leadership in digital transformation. For the purposes of this discussion, we will be looking at organisational strategy, culture and talent development.

6.1.1 Core to business strategy

From the literature we uncovered that fintech companies as those dedicated to the innovation of products and services provided by the financial services companies (Micu and Micu (2016)). The fintech companies aim to make the delivery of financial services more efficient through the use of technology (McAuley, 2015). While Puschmann (2017) summarizes that fintech companies provide innovative financial solutions enabled by technology enabling a phenomenon whereby financial services meets technology.

Using the model from Kane, Palmer, Phillips, and Kiron (2015) where in they classify a company's digital transformation as early-phase, developing and mature/maturing, Kane et al. (2017) finds that digitally mature companies are one that have technology powered capabilities as a core part of their business strategy. They found that for digitally maturing organisations, technology typically is not simply an add-on to existing processes and practices but instead forms a central part of the value-chain (Kane et al., 2017)

This study is that fintech companies are digitally matured. This happened even before the Covid-19 pandemic started. This study found that fintech companies provide technology services either on a business-to-business or business-to-consumer business model.

This study found that after the Covid-19 pandemic started, the fintech companies saw an increased use of the digital technologies they provide to their client. They saw more website visits and increased use of their digital tools and processes.

Agostino, Arnaboldi, and Lema (2021) notes that the COVID-19 pandemic has acted as an accelerator of digital transformation in the public service delivery. Furthermore, the restrictions introduced by COVID-19 forced firms to adapt to a technology-intensive operational model (Kudyba, 2020).

The finding of this study are consistent with the definitions from Micu and Micu (2016), (McAuley, 2015), and Puschmann (2017) in that the fintech companies researched as part of this study have technology and digital transformation at the core of their business model. They rely on these capabilities to give them the competitive advantage in the marketplace and are key to their value proposition.

These findings are also consistent to the model from Kane, Palmer, Phillips, and Kiron (2015) as these fintech companies fit the definition of what Kane et al. (2017) classifies as digitally mature companies. These fintech companies have technology as a central pillar of their business model and value-creation activities.

What emerged from the data was not surprising because it is consistent with the definitions of fintech companies found in the literature and the findings also find expression in the model used to interpret the data.

In answering the problem statement, it emerged from the data that as a direct result of Covid-19, these fintech companies saw an increased use of the technological capabilities they provide to clients. This is an important finding which directly answers the research question and provides a solution to the research problem.

6.1.2 Culture

Kane et al. (2016) find that agility and nimbleness are amongst the key features of an organisation in the digitally maturing phase of their digital transformation. Added to this is the culture of cross-functional collaboration. Digitally maturing companies use cross-functional teams to execute (Kane, Palmer, Phillips, Kiron, et al., 2015) while early-stage companies remain siloed (Kane, Palmer, Phillips, & Kiron, 2015). Kane, Palmer, and Phillips (2019) asserts that digitally maturing companies depend on a culture of cross-functional collaboration between teams to advance their innovation efforts.

This study found that after the Covid-19 pandemic started, it accelerated the digital transformation journey of these fintech companies. They had to quickly pivot their processes of employee onboarding and customer acquisition to use digital technologies such that these processes can be done remotely without physical interaction.

This study found that cross-functional team collaboration also accelerated after the pandemic started. The employees were organised in project teams spanning different departments in order to achieve a set project objective leading to increased innovation outputs.

The culture adopted by these fintech companies mirrors that of organisations in a digital maturing phase of their digital transformation. The ability to quickly pivot processes to enable remote working point to a culture of nimbleness and agility. As found by Kane et al. (2016) these behaviours point to digitally maturing organisations which was not surprising.

The culture of cross-functional collaboration found by this study was to be expected from digitally maturing organisations. As explained by Kane et al. (2019) these are the cultural attributes to be expected of digitally maturing organisations. What was surprising is how this collaboration increased even though employees were working remotely and not in the office together.

This increase in cross-functional collaboration points to an acceleration in digital transformation during Covid-19 which further sheds light in the impact of Covid-19 on the digital transformation journey of these technology start-ups in the fintech industry.

6.1.3 Talent Development

Kane, Palmer, Phillips, Kiron, et al. (2015) found that organisations in a digitally maturing phase of their digital transformation do not tolerate skill gaps. These organisations build skills within the organisation in order to capitalize on digital trends (Kane, Palmer, Phillips, Kiron, et al., 2015).

Kane et al. (2016) points out that digitally maturing organisations are more likely to provide employees with the opportunities to develop the needed digital skills than are early-stage organisations. Managers are committed to developing employee skills based on both the company's needs and the employee's career goals Kane et al. (2016).

This study found that fintech companies had to bring in new skills into the organisation that would assist in the delivery of the new projects in order to respond to the demands to digitize their processes.

It was interesting that the fintech companies interviewed had to bring in talent needed to execute on the digital initiatives needed to respond to the Covid-19 pandemic. This does not align with the findings of Kane, Palmer, Phillips, Kiron, et al. (2015) and Kane et al. (2016) who lament that digitally mature organisations develop the needed talent internally instead of bring it in from outside sources.

However, this study did not specifically seek to understand the talent development of fintech organisation, and the impact Covid-19 had on talent development. This points to an opportunity to for researchers to shed further light on this.

6.2 Research Question Two

Were there any digital initiatives put in place in your organisation as a direct response to Covid-19?

6.2.1 Adaptability

Companies in the early-stage of their digital transformation are unable to adapt quickly to change which is a critical skill needed in digital transformation (Kane, Palmer, Phillips, Kiron, et al., 2015). While agility and nimbleness are amongst the key features of an organisation in the digitally maturing phase of their digital transformation (Kane et al., 2016). This is important as Shevchuk, Kondrat, and Stanienda (2020) found that organisations in financial services had to deploy innovative digital initiative quickly as a response to Covid-19.

This is an indication of digital maturity as Kane, Palmer, Phillips, Kiron, et al. (2015) notes that cyber-security issues become are increasingly top of mind for organisations in maturing phases of their digital transformation.

This study found that fintech companies had to quickly reprioritize projects and scope of work to align to the realities presented by Covid-19. This is because with Covid-19, fintech companies began to see a huge upsurge in consumer's purchasing online which heightened cyber-security concerns for the fintech companies.

The fintech companies had to deploy additional technology to ensure that they would ensure that businesses could take other forms of payment outside of physical cash. If their customers used physical means of paying, they have to deploy technology to ensure that they could accept payments digitally.

The ability to reprioritize quickly and work on the new initiative showed that these companies were able to be agile, nimble and make decisions quickly which are all features of a digitally maturing organisations. As mentioned by Kane et al. (2016) agility and nimbleness are amongst the key features of an organisation in the digitally maturing phase of their digital transformation. This further confirms the earlier findings that the fintech companies are in the maturing phase of their digital transformation.

The fintech companies had to deploy additional digital technology to allow their customers to make remote payment. This further entrenched technology into the core business of the fintech companies. Kane et al. (2017) found that for digitally maturing organisations, technology typically is not simply an add-on to existing processes and practices but instead forms a central part of the value-chain.

The additional digital initiatives employed by the fintech companies further entrenched digital technologies into their core business advancing their digital transformation journey.

6.3 Research Question Three

Are these initiatives mostly likely to be sustained in your business going forward?

6.3.1 Disrupt traditional business models

According to Karagiannaki et al. (2017) digital transformation creates new business models incorporating digital and emerging technologies in the creation of products and services. These new business models have the potential to disrupt incumbent organisations who need to reorganise their IT departments in order to be better positioned to deliver and avoid being disrupted by innovative start-ups (Karimi & Walter, 2015).

Meiler (2020) has found that digital transformation is changing societies and helping them cope with the confinements imposed by Covid-19. These changes will have a lasting and transformational impact on societies (Meiler, 2020).

This study found that the digital initiative implemented will be sustained not only in the individual fintech organisations but in the fintech industry as a whole. This study has found that the fintech industry is setting a stage for the advancement of delivery of financial services and products challenging traditional incumbent financial services companies.

These findings are consistent with what we expect of fintech companies. Karagiannaki et al. (2017) notes that these fintech companies do use technology to create new business models which has the potential to disrupt traditional service providers.

With these changes brought about by Covid-19 being seen as having a lasting impact on the fintech industry as a whole, it is not surprising as these start-ups do set the industry trends.

7 SUMMARY, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

This study aimed to investigate how the Covid-19 pandemic impacted digital transformation within South African technology start-ups focusing on the fintech industry. This study's overall objective was to understand how the digital transformation of organisations was affected, it sought to find if the technology start-ups within the fintech industry implemented any digital transformation initiatives as a direct response to the Covid-19 preventative measures which was the lockdown and lastly the study sought to find out if these digital transformation initiatives will turn out to be sustainable digital transformation initiatives post the Covid-19 pandemic for various start-ups in the fintech space.

The previous section provided a discussion of the research findings emerging from participants. This section concludes the findings of this study. It will provide conclusions researched with findings reached. Furthermore, recommendations will be made and opportunities for future research.

7.1 Conclusions

It emerged that technology start-ups in the fintech industry are organisations that are born with a digital mindset with the use of newer technologies and limited use of legacy technologies. Using the model by Kane, Palmer, Phillips, Kiron, et al. (2015) this study has determined that technology start-ups in the fintech industry are considered digitally mature. This has raised the relevance of using the model by Kane, Palmer, Phillips, Kiron, et al. (2015) in evaluating the digital transformation of fintech companies.

Looking at the period when the Covid-19 pandemic had started, the study determined that some of the internal processes of technology start-ups were not fully digitized. It was noted through this study that the Covid-19 pandemic laid bare non-digitally transformed processes and that the Covid-19 pandemic encouraged the technology start-ups within the fintech industry to pay attention to some of the processes that were not digital. With this, the study concludes that the lockdown as a preventative measure of Covid-19 made these technology start-ups to accelerate their adaptation to the new

ways of work and collaborate more in a digital way empowered by technologies like MS Teams and Zoom.

This study concludes that during the Covid-19 period, technology start-ups dealt with cybercrime as a risk to their businesses. This study determined that security became a big concern in the fintech industry as their fundamental existence is processing financial transaction and therefore prone to cybercrime. This meant that during the lockdown, organisations had to find ways to strengthen the security technology to ensure secure digital transactions.

This study determined that the organisations experienced an increase in implementing innovative technology, this push came with an objective to develop their products and enter new markets. This determination led to the view that the Covid-19 pandemic accelerated the digital transformation for the technology start-ups in the fintech industry because they needed to continue business operations amidst the lockdown and stay competitive with their products.

This study determined that technology start-ups started several innovative initiatives including websites upgrade, chatbots, robotics process automation, digital marketing, social media marketing and mostly changed the ways they deliver projects from waterfall method to agile methodology during the Covid-19 period which was an indication of further digital transformation acceleration.

This study found that due to the lockdown, most fintech start-ups noticed a decrease in physical cash transactions and payments. It then emerged that companies had to innovate and use new technologies to provide their payment product and service digitally as compared to the physical card payments, thus developing their products offering.

During the Covid-19 pandemic technology start-ups within the fintech industry identified opportunities and penetrated new market as their growth strategy and a direct response to the lockdown. They used digital channels which included enrolling digital marketing campaigns on WhatsApp to reach new customers and to onboard new partners.

This study is that the digital transformation initiatives yielded financial inclusion. This strategic term was found to be a strategic objective for the fintech companies interviewed in this study. This means that the organisations want to bring the disadvantaged individuals to the digital banking solutions. This study determined that financial inclusion strategy was accelerated as most unbanked customers started to trust the digital world of payments.

The conclusion, this study has found that though the technology start-ups within the fintech industry are digitally matured, the Covid-19 pandemic accelerated their digital transformation initiatives. This was highlighted by the number of initiatives that were started as a direct response to the lockdown posed as a preventative measure of Covid-19. Moreover, the acceleration on digital transformation in the fintech industry will be sustainable post the Covid-19 pandemic and has set a trend in the industry. Lastly, the study found that the acceleration of digital transformation has also presented opportunities in the digital space within the fintech industry in South Africa.

7.2 Recommendations

As indicated in Chapter 1 that this study will contribute to the body of knowledge and can be used by business owners, managers, executives and ordinary employees to gain insights on how Covid-19 affected the digital transformation of technology start-ups within the fintech industry in South Africa. This section presents recommendations based on the findings of this study as described in the previous section.

Using the model by Kane, Palmer, Phillips, Kiron, et al. (2015) this study has determined that technology start-ups in the fintech industry are considered digitally mature. This has raised the relevance of using the model by Kane, Palmer, Phillips, Kiron, et al. (2015) in evaluating the digital transformation of fintech companies.

Future research could evaluate the relevance of the model on companies born digital like those in the fintech industry and provide recommendation on models that could be used to evaluate digital transformation within the fintech industry. These new models would shed light on whether there are other phases of digital transformation beyond the digitally maturing phase suggested by Kane, Palmer, Phillips, Kiron, et al. (2015).

This study found that as a strategic objective, fintech companies were seeking to further financial inclusion through the provision of digital financial services during the Covid-19 pandemic. Future research should be conducted to understand whether this objective was met given the digital initiative implemented by the fintech companies. The future research must measure how well the fintech companies did as they traverse through the crisis, meeting their strategic objectives and gaining a competitive advantage over their peers.

Equipped with the finding that during Covid-19, some organisation in the fintech space had to hire new talent to that implemented new technologies. Another recommendation would suggest a future study on talent management within fintech organisations. The study should focus on whether bringing talent versus growing talent within the organisation gives a competitive advantage. Kane et al. (2016) suggests that developing talent from within the organisation is a major feature of digitally maturing organisations. The proposed study would seek to (in)validate the finding from Kane et al. (2016).

This study focused on South African context, the future research should broaden the scope to other African countries, moreover, getting a much bigger audience that includes the banks to observe their view on how the Covid-19 pandemic affected the banking industry and the entire ecosystem of payments including the fintech industry.

With the increased risk on cybersecurity as found by this study, A suggestion for future research is whether this risk was real or perceived and actually measure the cybercriminal activity that occurred during the Covid-19 pandemic.

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Appendix A: Data collection instrument

Question 1: When measuring digital transformation, Kane et al. (2017) asked participants to “imagine an ideal organisation transformed by digital technologies and capabilities that improve processes, engage talent across the organisation, and drive new value-generating business models.” With this as an ideal:

1.1 How would you rate your organisation’s digital transformation prior to the Covid-19 Pandemic?

1.1.1 Would you say you are early, developing or maturing organisation in terms of digital transformation?

1.2 How would you rate your organisation’s digital transformation after the Covid-19 Pandemic started?

1.2.1 Would you say the pandemic accelerated, decelerated or had no impact on your digital transformation?

1.2.2 Would you say your organisation is early, developing or maturing in terms of digital transformation?

Question 2: Were there any digital initiatives put in place in your organisation as a direct response to Covid-19? Please highlight these initiatives.

2.1 How did these initiatives directly impact your customer engagement model (market development)?

2.2 How did these initiatives impact your products and solution (product development)?

2.3 How did these initiatives impact your ways of work and collaboration?

Question 3: Are these initiatives mostly likely to be sustained in your business going forward?

3.1 Do you see these initiatives also being sustained at an industry level moving forward?

3.2 Do you see these initiatives only being implemented only during Covid-19?