

Monetising big data in South African financial services

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Abstract

Big data has grown to be an influential element in society impacting both individuals, governments and businesses. As its impact has accelerated on the corporate world, it was prudent to comprehend the effect that big data will have on these organisations.

The purpose of the study was deliberate in its attempt to establish an understanding of the factors which influence an organisations ambition to monetise its big data assets. The study focused specifically on South African based entities operating within the financial services industry. With an increasingly digital financial market, big data contributes to improving revenue, increasing market share along with improving customer experience resulting in creating additional business value. The qualitative research process used semi-structured interviews, established a set of principle findings, detailing seven key factors which can influence an organisations data monetisation plan.

These findings were categorised into factors that are internal to the organisation suggesting that with appropriate tactics executive leadership can control or influence these factors. Some factors are external to the organisation to which senior management has limited control but can respond to these factors through a coordinated strategic approach.

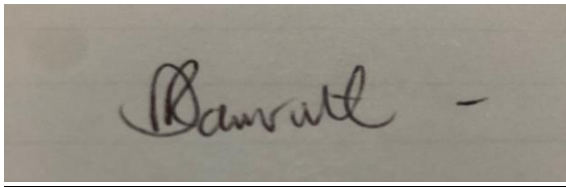
The research provides a suggestion to senior executives with an overview of these factors and recommendations localised to the South African financial markets on how to respond to each of the factors.

KEYWORDS

Big data, monetisation, data driven decision making, competitive advantage, leadership, organisational culture.

Declaration

I, Desmond Ramruthan declare that this research is my work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the Master of Management in Digital Businesses in the field on Digital Business at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other university.

A photograph of a handwritten signature in dark ink on a light-colored surface. The signature is cursive and appears to read 'Desmond Ramruthan' followed by a short horizontal line.

Name: Desmond Ramruthan

Signature: _____

Signed at Fourways, Johannesburg

On the 25th day of 2022

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LIST OF ACRONYMS

POPIA	Protection of personal information act
JSE	Johannesburg Stock Exchange
FSR	Financial Sector Regulation
www	World wide web
IOT	Internet of things
CAGR	Cumulative annual growth rate
VRIO	Valuable, rare, imitable, organised resources
RBV	Resource based view
KPI	Key performance indicators

CHAPTER 1. INTRODUCTION

1.1 Introduction

The explosion of big data in the digital age is the foundation for organisations to extract value from it. Some organisations have learnt to monetise their big data assets. This research paper focused on understanding the factors that enable the monetisation of key big data assets within financial institutions in South Africa.

1.2 Background of the study

Data can transform business and create new growth opportunities for companies that can harness the insights from big data (Brodie, 2015). Big data has effectively transformed organisational business models and their subsequent products and service offerings (Rialti et al., 2019). Insights from data have enabled companies to better understand their client and provide tailored products and services suited for their needs. The companies which grasp the art of understanding data and then making data a key business asset will lead their respective industries and outlast their competitors in a more dynamic business world (Parvinen et al., 2020). Large technology businesses including Google, Facebook, Amazon, and Netflix accept that data is needed to analyse and then provide personalised client offerings (Oka et al., 2017). By monetising their data assets these organisations have therefore created large well established, profitable brands. South African financial institutions can learn from these companies and then subsequently motivate their own companies on their quest to monetise their data assets.

It is therefore crucial that businesses must understand and then try to monetise their data assets to enable a competitive business advantage in a digital globalised environment. There are foundational factors within every organisation that are required to enable a business to monetise its data. These principles need to be distinguished and then enabled to ensure that firms can create a workplace environment that can then effectively monetise their data assets.

1.2.1 The South African Financial services sector

The financial industry is a large and well-established sector that has, in general, been well-respected in the country. The industry is dominated by the traditional big four banks, namely ABSA, First National Bank, Standard Bank and Netbank to which we could also add Capitec bank and Investec bank (Prinsloo & Roopnarain, 2021). Although the banking industry specifically, is dominated by the big six banks, there are various other well-known institutions such as the Johannesburg Stock Exchange (JSE), Allan Gray, Discovery, and Liberty. There are also many financial organisation start-ups as well as other established telecommunications organisations such as Vodacom and MTN who have ventured into the finance industry hoping to diversify their revenue. According to Warren (2018) the rise of these new financial start-ups, commonly referred to as Fintech's will drastically change the South African financial industry with their data-driven approach. To be able to respond to ever-changing consumer demand, financial organisations must adapt so to remain relevant in an extremely competitive environment.

1.3 Problem statement

The digital age or the fourth industrial revolution has induced a business environment in which traditional business operating models are disrupted through the increased influence of technology (Pousttchi & Hufenbach, 2014). Technology, however, can also enable businesses to create new business opportunities. Ghasemaghaei et al. (2017) suggest information and communication technology will enable business agility, which is the capability of organisations to first acknowledge, interpret and then respond to both risks and opportunities which may impact their businesses. Information technology and more specifically big data are further contributing to business agility which Brodie (2015) suggests will fundamentally transform businesses and society in general.

Intuitively, it makes a compelling argument that financial companies in South Africa understand their big data assets and how they can transform their organisations. According to Singh and El-Nasser (2018), for firms to utilise big data, they first need to understand big data to enable these companies to master this organisational asset. This big data journey however requires a strategic response by senior leaders in the organisation to ensure that value is derived from their data assets as sufficient skills, budget and technology infrastructure needs to be prioritised (Reuben, 2019).

Traditionally, big data was seen as an operational function with its core purpose used to store information collected in computer systems. In the digital age, however, the researcher suggests that data and analytics should be a business priority. Various factors that enable a data-driven environment within the organisation and these are important factors that can cultivate new growth for the

company. It is, therefore, crucial for executive management to understand the principles which foster a data-driven philosophy that can consequently enable data monetisation.

The extent to which data monetisation in South African financial organisations is not well understood therefore there is a requirement to improve the awareness of this subject. The study will focus on organisations in South Africa within the financial services industry. The research findings will guide these companies on how to nurture a data environment that will enable data monetisation.

1.4 Research questions

1.4.1 Main research question

What are the various factors which can foster a culture to enable data monetisation within financial companies within South Africa?

1.4.2 Research sub-questions

1. Factors that can impact South African financial services companies to monetise their big data assets.
2. Is big data a core component of the overall corporate strategy at financial services companies?
3. What role can leadership play in a financial organisations ambition to monetise its big data assets?

1.5 Scope of the research

The researcher focused on organisations that are categorised as businesses that operate in the South African financial markets. The Financial Sector Regulation (FRS) Act gives a mandate to the Prudential Authority to regulate the South African financial sector which includes organisations such as banks, insurance organisations, financial institutions, and larger conglomerates as well as any other financial market infrastructures (Resbank, 2021). The scope of the study covered Standard Bank, First National Bank, Strate (Pty) Ltd, Nedbank and the Johannesburg Stock Exchange (JSE). Three participants participated based on their experience within financial services organisations. They had requested that their organisations and role remain anonymous.

These financial organisations formed the basis of this research paper as all these businesses are well established and influential in their respective niche industries. All the organisations are public traded companies that are listed on the JSE whilst Strate (Pty) Ltd is not listed.

CHAPTER 2. Literature Review

2.1 Introduction

Big data and the explosion of the volume of big data produced, can be attributed to the accelerated and widespread use of the internet over the past twenty years. (Laurila et al., 2013). More recently, however, the extensive adoption of the smartphone coupled with the large number of social media applications installed on these smartphones have considerably raised the volume of big data which is being produced. (Shaw, 2015). The internet along with the many social media platforms produces petabytes of big data, mainly unstructured in its format from every single search, tweet, and other social media post (Lee, 2017).

According to Deighton (2018) data has the potential to transform the wider society along with positively changing the entire planet if these data assets are used correctly and on a global scale. Syed et al. (2013) claim that data has significant transformative capabilities as it lays the basis for new growth opportunities aligned to differentiation and innovation. The following quote substantiates the importance of big data: "Data may be to the twenty-first-century economy what oil was to the 20th, a hugely valuable asset essential to economic life" (Deighton, 2018, pp. 69).

The concept of data monetisation, which is the core concept of the research paper, is an organisation's ability to derive financial value from big data is a sometimes-misunderstood term and this may be why most organisations don't

achieve data monetisation (Fred, 2017). According to Oberer and Erkollar (2018), crucial to the achievement of data monetisation, is a supportive leadership structure who can comprehend the importance of big data to an organisation's success. Senior leadership needs to be at the strategic forefront of guiding the organisation through the data journey to enable the data transformation (Cortellazzo et al., 2019).

There needs to be key principles or themes that must be evident in South African financial companies for them to benefit from their big data assets. Stevens (2017) suggests that there is great value to be extracted from organisations big data and the subsequent insights to support business decisions. There is however limited research done around industries specific to South African financial companies. Contextualising the impact, role and function of data to an industry such as the financial markets will provide an important frame of reference for companies within this sector. The literature review will concentrate on the concept of data and simplify the understanding of the subject as well as explore the common themes which are linked to the subject.

2.2 Big data

While big data can be considered a modern, contemporary term, its foundation as a concept was first identified during the middle of the twentieth century when the first mainframe technologies were introduced by IBM and other technology companies (Lee, 2017). According to Khalil et al. (2013), these mainframe computers were essentially supercomputers that had the capabilities to manage

large, complex applications which therefore produced significant quantities of big data. Due to the high cost of these mainframe computers and thus the limited reach of the technology, data was a relatively unknown concept due to the slow growth it achieved (Campbell-Kelly et al., 2018).

Song and Zhu (2017) postulate that the development of information technology systems along with the digital transformation of society has assisted in the changing point of view of big data. According to Lee (2017), big data as a concept was nurtured due to the widespread emergence and then adoption of the world wide web (WWW). Its appearance, however, as a widespread business concept has rapidly expanded over the past decade from around the early years of the new millennium (Song & Zhu, 2017). Research suggests that the swift and extensive use of the smartphone coupled with the considerable number of new social media application, has accelerated the big data phenomenon (Syed et al., 2013; Shaw, 2015).

Big data can be described as large, complex data structures traditionally found in intricate database systems which are increasingly difficult to maintain and comprehend (Syed et al., 2013). Lopez-Robles et al. (2019) describe big data as institutional assets stored in databases that require intelligent tools to analyse large and complex data sets. It can be described as a large collection of information that is produced from computer-based technologies as well as business and social applications (Lee, 2017). The definition of big data may have varying definitions but at its core, it can be considered as a collection of information.

Big data analytics however is a much broader classification of data. Akter et al. (2016) describe big data analytics as the capabilities needed to provide insights to enable the business to become a leader in its industry. Additionally, Akter et al. (2016) describe the big data capabilities as the understanding of the big data infrastructure, organisations personnel who are skilled and competent and the governance of data. Executive management however needs to devise a suitable big data strategy that is aligned to the corporate strategy which will enable the big data strategy to succeed (Singh & El-Kassar., 2018). Big data can be categorised into 2 major themes namely unstructured and structured data (Syed et al., 2013).

Structured data is characterised as data entries or records which are stored in a predetermined format usually in rows and columns that are typically found in a structured database (Syed et al., 2013). According to Khan (2015), structured data sets are therefore the traditional methods of data storage that are used to collect information such as names, dates, addresses of customers that are captured in both legacy and modern business applications. Structured data will invariably continue to play a pivotal role in the data monetisation strategies of organisations although when complemented with insights from unstructured data, they will collectively drive business value (Lee, 2017)

On the other hand, unstructured data make up the most of big data currently and is defined as a variety of data entries or records which lack forms of standardisation (Syed et al., 2013). These unstructured data require vast amounts of capacity for storage as they include videos and image files, photographs, social media posts, messages on chat platforms and data inputs

from the internet of things (IOT) sensors (Lee, 2017). According to Eberendu (2018), unstructured data gained a twenty-five percent cumulative annual growth rate (CAGR) from twenty fourteen to twenty nineteen and is expected to grow significantly more in the future years. Unstructured data will ultimately be the area of big data in which significant value will also be generated for businesses provided they can make sense of the large volumes of data (Eberendu, 2018).

Big data can further be defined as the following five dimensions, namely volume of data, the velocity of data, variety of data, variability of data and the complexity of data (Kshetri, 2014; Lopez-Robles et al., 2019). These five dimensions of big data require data to be managed throughout the data process from data storage and preparation which can then enable data scientists to produce meaningful and reliable insights (Ardagna et al., 2021).

These characteristics can be explained as the veracity of data refers to the potential inconsistencies and subsequent accuracy of data, more specifically data quality which can be compromised due to the sheer volume of large data (Ghasemaghaei & Calic, 2019). Further, the variety of data describes the structured and unstructured nature of big data which can emerge from various data sources (Alharthi et al., 2017), and the velocity of data refers to the speed of accumulation of big data which can be collected from multiple sources (Alharthi et al., 2017). Furthermore, volume of data refers to the vast amount of data that has proliferated in the digital, cloud-based environment in which most businesses operate (Syed et al., 2013). Finally, the value of data is of no commercial use to organisations if they do not extract economic benefit therefore organisations must

make sense of the volume, variety, velocity, and veracity of data to generate the business value of data (Birch et al., 2021).

Data science is another terminology used commonly in the field of big data. According to Song and Zhu (2017), data science can be defined as the multi-disciplinary field which warrants using mathematics, statistics, database, and business expertise to extract business value from big data. This field of big data includes the development of predictive and prescriptive statistics which are aligned to business objectives to which the organisation is trying to respond (Provost & Fawcett, 2013). In simple terms, data sciences facilitate businesses to make big data understandable and eventually valuable to these organisations (Song & Zhu, 2017).

As the literature suggests there are many definitions associated with big data which are commonly used interchangeable however each term has a specific connotation associated with each term. There is however a common variable amongst these definitions namely, data. Data in its simplest form is widely recognised as a core revenue component of industries that are driving businesses progress (Lee, 2017). Big data as a concept has been circulating in organisations for many years yet it is only in recent years that businesses have started to appreciate the importance it has to their success or failure (Brodie, 2015). As businesses mature in their understanding of the transformational nature of big data, more focus on the allocation of budget and resources will be assigned by senior leaders, to extract business value (Singh & El-Kassar, 2018). This process of generating business value from big data will however require a

concerted and well-coordinated strategic effort from organisation leaders (Sow & Aborbie, 2018).

2.3 Possible sources of big data

There are vast amounts of data that is produced daily across a multitude of platforms from transactional systems, social media posts, videos, and photographs (Syed et al., 2013). Social media platforms such as Twitter for example create vast amount of data through a simple tweet that is first sent and then retweeted, commented on, and liked by the many followers of a particular person or organisation (Shaw, 2015). According to Gutierrez (2014), some banking clients can produce billions of data points daily continuously from mobile applications, smart devices and other touchpoints into banking and other financial client service products. These entry points into these financial organisations are creating the big data sets, stored in databases which can then be difficult for businesses to create value from the large volume of data sets. This volume of big data can therefore sufficiently rationalise as to why companies are investing in their big data strategies; however, evidence suggests that many of these organisations are not receiving the intended benefit associated with their investments (Ghasemaghaei & Calic, 2019).

The widespread adoption of smartphone and tablet devices have fundamentally changed the behaviour of society as the technology essentially provided billions of people with the functionality of a computer in a handheld device (Laurila et al., 2013). The rapid expansion of unstructured and structured data has predictably

increased by the various sources of big data which has been largely enabled through mobile data traffic on smartphones (Eberendu, 2018). According to Anshari and Alas (2015), the excessive use of the smartphone which has bundled the vast amount of both social and professional applications has proliferated the extensive volume of big data. As suggested by Laurila et al. (2013) the smartphone is more than just a smart device but an extension of a person's persona in an ever more connected digital world. This constant connection to the digital world is subsequently creating enormous data sets based on its constant connectedness to the internet. According to Eberendu (2016), unstructured data is now accountable for generating thousands of petabytes of data daily, however, progressive firms are acknowledging that there are monetising opportunities in these large complex datasets.

Extracting actionable insights from these large and complex datasets is however an obstacle that most firms struggle to overcome (Corte-Real et., 2019). Shaw (2016) claims that there is however extensive business value that can be mined from these large unstructured datasets produced from Facebook, Twitter, and other social media platforms. As suggested by Ukhalkar et al. (2020) the arrangement of big data in complex and sometimes different data sets in database systems adds to the complexity of deriving intended benefits. These databases across multiple different and desegregated information systems are in itself a difficult process to integrate the data of each database data to find potential insights value to a business (Khan, 2015).

According to Akter et al. (2016), the technical expertise comprised of database management, programming, mathematics, and statistics skills is needed to

unlock insights from these large and complex datasets comprising of the various sources of big data. Twitter, for example, can produce one hundred million tweets which are people observations and opinions which are generated on the platform and these sentiments can be monetised if they are first understood and aligned to business objectives (Shaw, 2016). The supposed lack of these technical capabilities, namely data scientists, who interpret these big data sets is contributing to the unfulfilled economic value derived from analysing the various sources of big data (Lee, 2015). The output of big data from social media to banking transactions will continue to increase thereby compounding already existing challenges in deriving benefits from big data (Gutierrez, 2014; Shaw, 2015; Syed et al., 2013).

2.4 Data and organisation success

Businesses are increasingly relying on data to drive their decision making and are gradually learning how to maximise the value of their data assets (Couldry & Powell, 2014). According to Akter et al. (2016), eighty-seven percent of businesses believe that data will transform industries whilst eighty-nine percent of companies believe that if firms do not adopt data responsive strategies, these companies risk losing their market share to more data competent businesses. These findings are further supported by Corte-Real et al. (2019) which indicates that in the current digital age, data can be categorised as to be so influential that it can be the difference between organisational success aligned to profitability and business failure. The vast volumes of structured as well as unstructured big

data from the various digital platforms are creating purposeful opportunities for firms that can monetise for these data assets (Shaw, 2015). As claimed by Ukhalkar et al. (2020) the thousands of zettabytes of data that are produced on an hourly basis is a complex database of information however if leadership provides clear strategic investment there are numerous opportunities to create business value. According to Sow and Aborbie (2018), it would be advisable for senior leadership to first acknowledge the importance of big data and then create the organisation culture to produce a data-driven culture. This form of investment must be sincerely supported by senior leadership to ensure it creates the necessary momentum to monetise data (Dubey et al., 2018).

According to Akter et al. (2016), big data will transform business success yet suggests that if firms do not improve their data competencies, they risk being outcompeted by other more data-capable firms. It is therefore recommended that executive leadership understand data and then develop a big data strategy to ensure the continued success of the organisations that they lead.

Businesses can drive value with the monetisation of their big data assets. Data monetisation can be defined as extracting business value from its data assets in the form of increased market share, more satisfied clients and profitability (Parvinen et al., 2020). Businesses can monetise their data assets through the following methods: the enhancement of existing products and services using big data assets (Parvinen et al., 2020). Further, creating new products and services with big data assets (Parvinen et al., 2020). Additionally, the selling of big data assets to external organisations who then combine additional data assets to create new products and services (Parvinen et al., 2020).

2.5 Culture and innovation

Owoyemi and Ekwoaba (2014) define culture as the norms, behaviour and underlying conduct of the organisation and its employees which create a persona of the business for which the business is recognised in its industry (Owoyemi & Ekwoaba, 2014). In a business sense, the culture can be described as the response of the organisation to external and internal forces which may impact the organisation (Dubey et al., 2019). The culture of an organisation is therefore a direct influence on corporate performance and is a leading indicator of profitability and long-term sustainability (Gillespie & Reader, 2017).

The culture of the organisation irrespective of a positive or negative culture has the most important contextual influence over the behaviour of its employees (Rus & Rusa, 2015). It can therefore be assumed that if the culture promotes a progressive data strategy and the subsequent monetisation of data, the culture will achieve its intended strategy.

Organisational innovation can be defined as transforming a plan, idea or concept into a product or service which is required by customers which they are willing to pay for (Abdulla et al., 2014). Organisations that are continuously innovative have a greater chance to attract more customers and be more profitable thus ensuring long term sustainability (Trenerry et., 2021). The evidence, therefore, suggested that firms are continuously innovating to remain successful businesses.

Business agility which is the firm's capacity to first acknowledge and then respond to the opportunities in their market environment can be enabled through the insights from data analytics (Ghasemaghahi et al., 2017). Aligned to business

agility, improved firm performance using the insights of data analytics will lead to increased innovation and subsequently improved business performance (Akter et al., 2016). These dynamic capabilities which are enabled by data analytics need to be embedded into the culture of the organisation to empower the innovation which permeates from the insights of the firm's data. This innovation process, however, needs to be supported through the process of continuous learning and development within the firm supported by senior leadership (Wamba et al., 2015).

Organisational learning theory which is supported by the resource-based theory suggests that successful firms are continuously creating a culture of learning and growth to improve their corporate performance (Ghasemaghaei & Calic, 2020). This view is supported by Trener et al. (2021) who proposes that the explorative culture of a firm creates the market niches needed to generate new and innovative products and services for clients. In summary, organisational learning theory suggests that firms must promote a constant philosophy of learning and growth which will create a culture to create new insights which are driven by data (Ghasemaghaei & Calic, 2020).

An organisation can monetise its data assets, but it requires a strong, capable culture that is open and is flexible to innovative new ideas and products for clients (Dubey et al., 2018). Leadership will need to play a pivotal role to create an innovative culture that can identify and create new business opportunities to monetise (Parvinen et al., 2020).

2.6 Big data monetisation

As the core purpose of the research paper, it is therefore necessary to define the meaning of data monetisation. Big data can be described as vast of volumes digital information or records which are challenging to process and comprehend whilst being stored in complex database technology systems (Syed et al., 2013; Corte-Real et., 2019; Ukhalkar et al., 2020). Monetisation has multiple different definitions depending on the audience so it's important to define a common description. According to Fred (2017), monetisation can be described as a business process that derives value in economic terms which can be identifiable in an organisation's financial statements. Baecker et al. (2020) describes monetisation as the process to extract economic value for a business from its assets.

Using the described definitions of big data and monetisation the researcher postulates that big data monetisation as a concept can be defined as the organisation's ability to identify commercial opportunities from its institutional data assets. Based on this definition, Akter et al. (2016) suggest that organisations need to ensure that the conditions to identify these commercial opportunities need to be structurally in place for data monetisation to be achievable.

2.7 Valuable data

Before deciding on how to monetise big data, it is important to gain an understanding of data which is valuable to the organisation. Big data has the

capability to transform business success however it is vital to understand how to create value for the data (Wamba et al., 2015). According to Schuritz et al. (2017), valuable big data allows businesses to create new opportunities through the development of new business models. Gunther et al. (2017) suggest that a firm's valuable big data normally aligns to the strategic objectives of data monetisation opportunities outlined by the organisation.

According to Elragal and Klischewski (2017) when big data enables predictive and prescriptive analytics collectively known as data sciences, it can create valuable insights for the organisation. These insights enable businesses to have a future view of their market and competitive environment however these insights need to align to business objectives (Provost & Fawcett, 2013). As suggested by Newman (2020), predictive and prescriptive analytics makes marketing of products more efficient and effective and is the reason why large technology companies such as Facebook, Microsoft and Amazon are investing billions of dollars in data expenditure to enable valuable customer insights which they can monetise. Combining personal data with predictive and prescriptive analysis can create added value. As claimed by Hoffmann (2017), data from personal insights enable data-driven businesses to create value-added customer insights aligned to customer requirements through smarter and more targeted recommendations. Customer data aligned to personal client history and patterns in client behaviour within the digital environment enables a firm's competitive advantage and thus can be considered valuable data (Morey et al., 2015).

Valuable big data is however more than producing reports and insights but rather aligning business problems and subsequent solutions which are enabled through

the process of the mining of big data assets (Provost & Fawcett, 2013). Coupled with meaningful insights is the ability of data management teams to deliver on the data strategy which is aligned to the overall corporate strategy (Sow & Aborbie, 2018). Leadership, therefore, needs to guide the organisation's vision towards the ability to create their valuable data aligned to business objectives (Corte-Real et al., 2019). As indicated by Wamba et al. (2015) valuable data is where businesses use their big data assets to create meaningful competitive advantages in their respective industries. In summary, organisations that dynamically adapt to utilise organisational data assets will derive customer or business value (Schuritz et al., 2017).

2.8 Senior leadership

According to Sow and Aborbie (2018), senior leadership is fundamental to the success of any large-scale digital transformation change initiative. Corte-Real et al. (2019) propose that although a considerable number of executives have financed big data investments, many of these businesses are failing in achieving their big data objectives. There are many challenges to the monetisation of big data but data can create potential compounding effects of improved customer experience, increased market share and subsequent profitability that creates long-term business sustainability (Lee, 2017). Consequently, it is the responsibility of senior leadership to guide the organisation's trajectory which is strategically aligned to the understanding of data and then monetisation of data in the digital economy (Parvinen et al., 2020). This strategic, long-term view of

organisational success, which is aligned to big data, therefore crucially remains under the accountability of senior leaders in the firm (Dubey et al., 2018).

Digital transformation is another important concept aligned to business transformation. According to Cortellazzo et al. (2019) digital transformation, which is empowered by senior leadership, can be defined as the adoption of digital technologies to create added value for clients through the firm's service offering. The rapid advancement of business ideas and creative client solutions has been enabled by digital technologies such as big data, social media, artificial intelligence, cloud services and other social media platforms (Trenerry, et al., 2021). According to Oberer and Erkollar (2018), this process of digital transformation must be supported by and implemented through the strategic output of senior leaders who can then be described as digital leaders. Understanding big data assets and subsequent monetisation of a firm's data assets requires digital technologies which therefore necessitates the support and oversight by senior leaders to ensure attainable big data rewards (Parvinen et al., 2020). These digital leaders are required to not only have an adequate understanding of digital technologies but must have the strategic vision to achieve intended business success (Sow & Aborbie, 2018).

For the exploration of new business opportunities, Ghasemaghaei & Calic (2020) proposes businesses use the organisation learning theory which advocates leadership creating a culture of continuous learning and growth. As suggested by Trenerry et. (2021), continuous innovation is a requirement for sustainable success in the digital economy. Ghasemaghaei & Calic (2020) theory of organisational learning which advocates constant scanning of both the macro and

micro business environment, requires leadership to interpret the feedback and then use the feedback to create a process of data-driven based decision making. There is therefore a critical role for leadership to drive the message and culture for continuous learning and growth to enable company success (Corte-Real et al., 2019; Lee 2017; Sow and Aborbie 2018; Trenerry et al., 2021).

The monetisation of a firm's data assets requires visionary and supportive leadership structures which can create an enabling supportive data culture (Parvinen et al., 2020). It is therefore essential that executive management encourages the correct culture by setting realistic business goals to enable the organisation to exploit data opportunities (Corte-Real et al., 2019).

Leadership needs to understand the data competencies of the business, possible challenges to the strategy and align the entire organisation towards achieving the data strategy objectives which are invariably aligned to the overall business vision for the organisation (Sow & Aborbie, 2018). In summary, as the evidence confirms, senior leadership is extremely important to the successful realisation of data monetisation in the organisation.

2.9 Data confidentiality and ethics

Big data can be a collection of information that can include content that is of a personalised and sensitive construct (Dubey et al., 2018). According to Sun et al. (2021), owing to the widespread proliferation of big data which contains the private and personal information of individuals, multiple countries have created data protection laws and policies. South Africa has therefore also produced its

legislation, thereby creating laws that provide protection for citizens and their personal information.

According to the Protection of Personal Information Act 2013 (CPT), the Protection of Personal Information Act (POPIA) which is a South African regulation, aims to protect the privacy of individual persons of South Africa. Burger-Smidt (2021) suggests this Act will change the way businesses operate with regards to the precaution in using sensitive client data. The Protection of Personal Information Act 2013 (CPT) is clear and unambiguous which is to defend the rights of an ordinary citizen who can be exploited by private organisations. The security and privacy of data is therefore an important consideration for any organisation which is prioritising a big data monetisation strategy as the ethical considerations of using personal data must be aligned to POPIA (Burger-Smidt, 2021). Businesses need to ensure that they comply with POPIA as there are significant monetary fines and potential imprisonment for serious POPIA offences (Burger-Smidt, 2021). According to Parvinen et al. (2020), the increased levels of regulation will however negatively impact data monetisation for most businesses who are wanting to monetise their business data assets. Therefore, regulation such POPIA needs to be a factor that is considered by organisations wanting to monetise data.

2.10 Cyber security and big data

The reliability of big data whilst in storage or transit is also an important consideration for companies whose systems produce big data. The modern

economy is largely dependent on information technology systems to create economic and business momentum at a global scale (Dambra et al., 2020). As suggested by Sun et al. (2021), data security and the governance of data are key priorities of senior leadership to ensure data is secure and accurate which are aligned to global best practices. Big data produces a large and complex dynamic of structured and unstructured aligned to the five dimensions which include the volume of data, the velocity of data, variety of data, variability of data and the complexity of data (Kshetri, 2014; Lopez-Robles et al., 2019). These complexities create additional problems for organisations who are required to keep big data safe from cyber security threats.

All organisations who deliver a function or service in the digital age are prone to serious cyber security threats which can result in data being hacked and used for illegal purposes by these cyber criminals (Rashid et al., 2021). Wessels et al. (2021) argues that although there are numerous benefits with digitalisation, these technological advancements carry major cyber security threats to organisations. Cyber security breaches and more specially data leakages can lead to the compromise of a client's personal data which have the added risk of significant legal costs and monetary fines issued by regulators (Ogbanufe et al., 2021). According to Gao et al. (2020) these cyber threats can potentially damage a firm's reputation compromising the integrity of the firm and its ability to provide a service to its clients. Due to the complexity of the five dimensions of big data, management of the security of big data is often a difficult process to manage thereby requiring a well-thought plan (Ardagna et al., 2021).

It is because of these serious reputational repercussions to organisations that the management of cyber security is now an important strategic deliverable that is managed by senior leadership (Ogbanufe et al., 2021). As suggested by Gao et al. (2020) the advancement of digital technologies aligned to digital transformation will create value but also generate added cyber security risks which need to be managed. This will require a concerted organisational effort which is led by senior management to ensure adequate priority and focus is mandated to fight the criminal activities of cyber threats (Ogbanufe et al., 2021).

Organisations are not allocating sufficient budget, priority and resources to effectively prevent cyber security threats therefore it is suggested that there should be government incentives through regulation to enable adequate focus (Wessels et al., 2021). Cyber security solutions are also aligning with the benefits of big data by leveraging the insights of data to lead the fight against cyber threats (Ullah & Babar, 2019). Therefore, a well-defined cyber security strategy must have the necessary management focus to ensure digital strategy and cyber security are aligned to effectively guard the business against threats (Ogbanufe et al., 2021).

2.11 Theoretical Frameworks

2.11.1 Data science framework

Data science involves using data and supporting disciplines such as mathematics, programming, and business acumen to provide answers to

businesses problems (Song & Zhu, 2017). Foster and Fawcett (2013) detail a framework for data-driven decision making within an organisation. As described by Foster and Fawcett (2013) to enable a data-driven decision-making process, the data environment, expertise, strategy, and leadership needs to be aligned to ensure a well-constructed business environment succeeds in empowering data-driven decision making.

2.11.2 Creating business value from big data

According to Parvinen et al. (2020), big data has the potential to facilitate transformative business prosperity by unlocking innovation and growth opportunities. Unlocking this value from big data is however a predicament that most companies fail (Corte-Real et al., 2019). Galetsi et al. (2019) schematic big data research framework which finds support in the Resource-Based theory aims to bring together resources such as technology, data and employees to advocate asking the correct questions from a firms' data assets to extract the value from it. The theory from Galetsi et al. (2019) proposes that businesses derive value from big data by using its resources to create insights that are aligned to business objectives that answer client needs. This theory is important because it allows businesses to meet consumer demands. As previously noted, most data initiatives fail as these are not delivering on business expectations (Corte-Real et al., 2019). Galetsi et al. (2019) argue that to deliver a valuable data output to clients, they need to recognise and then answer actual client problems.

To complement the Galetsi et al. (2019) value of data theory, Wamba et al. (2015) propose a data classification framework that focuses on key dimensions which provide the platform for sustainable value for a data initiative. These dimensions support an organisation-wide awareness of data strategy with an innovative culture that is supportive of research and the development of big data initiatives (Wamba et al., 2015). Supporting these dimensions are tools and technology along with the relevant data-enabled policies and procedures. Wamba et al. (2015) advise when data resources which include technology, staff and capital are aligned to business outcomes then coupled with supportive leadership and innovative culture, these factors will lay the foundation for success in big data initiatives.

2.11.3 Resource-based view

The long-term sustainability of all businesses needs to create a competitive advantage over its rivals. This differentiation allows some firms to dominate industries and create new opportunities for their companies. According to Balashova and Gromova (2016), a resource-based view (RBV) can be defined as the unique organisational resources which are fundamentally used to create business success. These internal business resources include people, physical resources and organisational resources which subsequently creates a unique competitive advantage (Kozlenkova et al., 2013).

Furthermore, Akter et al. (2016), suggests that the principles of RBV are further defined by the extent to which the firm possess valuable, rare, imitable and

organised resources which is commonly referred to as the VRIO framework. According to Galetsi et al. (2019) when firms identify and then learn to make use of their data assets which then is combined with technology to create value for their clients, these businesses are leveraging upon the RBV theory. It can therefore be assumed that a firm's big data assets can be categorised as valuable, rare, inimitable and organisation. This is important as the extent to which a firm embraces the VRIO resources will directly impact the level of business performance and success (Kozlenkova et al., 2013). Big data and monetisation can therefore be an extension of RBV where resources are used to innovate and extract value from data assets.

2.11.4 Conceptual model for data monetisation

Based on the preceding literature, the research proposes the below conceptual model in figure 1.

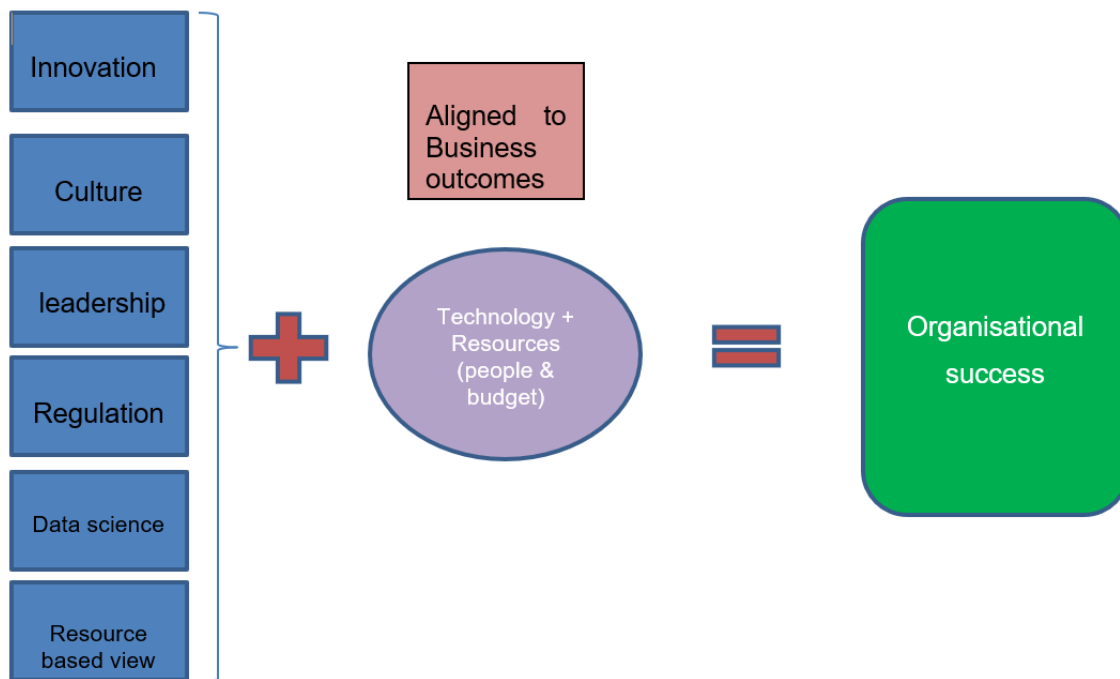


Figure one: Conceptual model on Data Monetisation (Researchers own model)

To enable organisational success, which is supported through big data, there need to be 6 pillars that will create the foundation for organisational success.

- There needs to be a constant state of organisational innovation.
- The culture needs to be progressive.
- Leadership will have to be open to new ideas and suggestions and support.
- The business needs to align to Government regulations such as POPIA.
- Data sciences models will need to be used to create business insights.
- Create differentiation from other competitors.

These 6 pillars need to align with the strategic objectives of the organisation to ensure the data-driven decision-making answers actual business questions. The

relevant organisational resources from human capital to budget allocation and technology investment will need to be provided to enable the data strategy to deliver on expectations.

CHAPTER 3. Research Methodology

3.1 Research approach

A qualitative approach was used to obtain data to solve for the requirements of the research questions. Qualitative research is defined as the collection of participant feedback with data collected through observations and interviews which is then analysed into themes from the feedback from respondents (Zohrabi, 2013). The feedback received from the respondents enabled the researcher to respond to the main topic which analyses the principles which can monetise big data with South African financial institutions.

3.2 Research methodology and design

The organisation's awareness of big data and the ability to obtain benefits is a difficult process to operationalise as it is still a relatively new strategic competence (Reuben, 2019). Starr (2014) recommends that the qualitative approach to data collection is most appropriate in aspects of business that are explorative or in their infancy.

3.3 Data collection methods

The researcher used an experimental phase to test the data collection process before the actual interview process with selected respondents. This process

involved pilot interviews with volunteers which enabled the interviewer to gain the necessary experience to facilitate the actual qualitative interviews. Each interviewee that participated in the research interviews signed a consent form approving the interview process.

3.4 Population and sample

The universe comprised of organisations from large banks including but not limited to Standard Bank, Nedbank, and First National Bank. Also included are financial companies including Strate, JSE and other organisations within the financial sector who opted to remain anonymous.

3.4.1 Population

Data was obtained through a qualitative interview process from senior leaders within the South African financial markets. The respondents were all respected and experienced personnel in the field of big data or are senior managers who have or have had previous knowledge or skills in monetising big data assets in their organisation. Some respondents were employed in the business consulting industry who enable and provide strategic direction to organisations to monetise their big data.

3.4.2 Sample and sampling method

The researcher used a snowballing sampling technique to locate qualified respondents for the qualitative questionnaire. The population was limited to a maximum of 13 respondents or whenever saturation was first reached. Saturation can be defined as the time in the qualitative interview process where no new information or codes are identified during the data analysis of the content received from the respondents (Ngulube, 2015). The required sample will all have to comply with the following criteria to qualify to be part of the interview process:

- Mid to senior leadership role
- Minimum experience of two years in a leadership role
- Accountable for decision making
- Responsible for data monetisation
- Data monetisation and/or data management and/or any other role in data
- Management and selling of data-related products and services

3.5 Procedure for data collection

The researcher set up semi-structured interviews with each interviewee. According to Zohrabi (2013), semi-structured interviews is the preferred data collection method to get detailed feedback whilst also allowing for probing questions, especially in business fields that are exploratory in findings. Due to the Covid-19 pandemic, all the interviews were enabled via Microsoft teams at the convenience of the respondent. The virtual meetings were all recorded with the

approval of the interviewee. Each recording was saved and stored in a cloud-based storage platform for future reference. Some interviewees accepted to be interviewed by declined to be recorded as well as provide any details on the organisation for which they are employed. They did however provide written consent and provided a summary of their responses to each interview question.

The researcher did not employ any additional personnel to assist with the collection of the data. The researcher contacted each interviewee, set up the meetings for the interviews, facilitated the interviews and then coded the interviewee responses into the research findings.

3.6 Data analysis and interpretation

Qualitative data analysis is the process of evaluating information and then through a process of coding converting the raw data into meaningful patterns and trends which then make sense of research questions (Spiggle, 1994). The data will be analysed as follows:

- The feedback from each interviewee response was individually analysed to enable the researcher to concentrate on each question's specific response (Ngulube, 2015).
- The researcher reviewed the feedback from respondents and grouped the responses into key factors (Ngulube, 2015).

3.7 Limitations of the study

Qualitative research in its definition has structural limitations in the personal bias from respondents which can therefore impact the final analysis of research findings (Zohrabi, 2013). In this regard, there are potential errors when the researcher interprets a respondent's feedback on open-ended questions and then tries to consolidate and code that feedback into the research paper (Noble & Smith, 2015). Further, qualitative research is not a statistical representation of data as per quantitative methods but rather finds similarities in feedback from respondents (Queiros et al., 2017), which required the researcher to remove their personal bias when interpreting the respondents' feedback in the interviews (Queiros et al., 2017). This problem occurs when the researcher incorrectly deciphers the non-verbal feedback through actions and gestures during the interview process.

3.8 Validity and reliability

According to Zohrabi (2013), qualitative research is an unsystematic and non-statistical method of data collection that is then subjected to personal biases. Qualitative research in its very construction relies on an interviewee's individual experience therefore this high level of subjectivity may invariably lead to concerns around the findings in the research paper. These qualitative research limitations have potential impacts on the reliability and validity of the researcher's study.

According to (Zohrabi, 2013) validity and reliability is, therefore, a measure of the level of quality of the research findings concerning consistency in the data collection process.

3.8.1 Validity

Validity can be defined as the accuracy of the findings in a research paper (Queiros et al., 2017). The concept of validity, therefore, ensures that the results are measuring what they are supposed to assess.

External validity can be described as the legitimacy of the research outcomes to be applied to various business scenarios (Lakshmi & Mohideen, 2013).

Lakshmi and Mohideen (2013) describe the concept of internal validity as the degree of confidence in the outcomes of the research as the findings may not be representative of the view of the sample.

The researcher ensured that the following factors were included to limit the inaccuracy of the findings in the research paper related to validity:

- The researcher interviewed suitable candidates from the population by using a random selection of interviewees (Zohrabi, 2013).
- A standardised semi-structured questionnaire was consistently used across all interviewees (Noble & Smith, 2015)

3.8.2 Reliability

Reliability can be described as the consistency and repeatability in the measurement and the corresponding findings in the research (Taherdoost, 2016). The researcher ensured the following conditions were factored into the research findings to safeguard reliability:

- The researcher interviewed respondents until saturation was reached (Ngulube, 2015).
- The researcher applied consistent methods in the data collection process (Queiros et al., 2017).

3.9 Demographic profile of respondents

The data and business experience along with the job roles of each interviewee were considered rather than the race, age, and sex of each respondent.

3.10 Ethical considerations

No ethical impediments were identified in the researcher's qualitative research.

- The researcher received full consent from each interviewee.
- Each interviewee's name was anonymised.
- Each interviewee signed a letter of consent permitting the researcher to conduct interviews.

- Each respondent was requested to receive permission from their respective organisations.

CHAPTER 4. Findings

4.1 Introduction

The monetisation of a firm's big data assets is considered to be a crucial strategic deliverable for financial services companies to enable these companies to grow additional revenue streams (Akter et al., 2016). Big data if technically mastered and aligned to customer needs, has the potential to transform a business's success however it needs a determined and coordinated organisational effort (Wamba et al., 2015; Schuritz et al., 2017).

The findings of the research originated from the interview process which the researcher undertook. The main research indicates the various factors which can foster a business to enable big data monetisation.

There are however several sub-questions that the research aims to answer, these include:

- Factors that can impact South African financial services companies to monetise their big data assets.
- Is big data a core component of the overall corporate strategy at financial services companies?
- What role can leadership play in a financial organisations ambition to monetise its big data assets?

The researcher prudently selected twelve candidates from various organisations, all suitably qualified with big data monetisation experience to provide feedback on seven semi-structured interview questions.

4.2 Sample overview

Below in table one, is an overview of the candidates who have been interviewed. The names and titles are disclosed yet the organisations to which these respondents are employed are anonymised.

Name	Position	Organisation
Interviewee one	Senior Manager – Business Intelligence	Organisation one
Interviewee two	Product and research specialist	Organisation two
Interviewee three	Chief Executive Officer	Organisation three
Interviewee four	Operations and Projects	Organisation four
Interviewee five	Head of Data Services	Organisation two

Interviewee six	Sales Head	Organisation five
Interviewee seven	Business Intelligence Head	Organisation five
Interviewee eight	Manager: Strategy & Business Design	Organisation six
Interviewee nine	Information Services: New business and strategy	Organisation seven
Interviewee ten	Platform Lead: Global Markets Data Analytics	Organisation eight
Interviewee eleven	Head of Advanced Analytics	Organisation one
Interviewee twelve	Senior Manager: Data Management and Business Optimisation	Organisation nine

Table one: List of titles for the interviewees

There was a diverse range of organisations that made up the sample with feedback received from nine different organisations. Three organisations had two respondents each whilst the other six businesses provided a single respondent respectively. The researcher would have interviewed one respondent per organisation however due to time constraints, this was unavoidable therefore some organisations had more than one respondent. The researcher recommends

for future research, a more comprehensive population sample would be the preferred approach to data collection and analysis.

4.3 Coding and data saturation

The researcher conducted a total of twelve semi-structured interviews as per the information in table one. The first interview gathered thirteen new codes and was the interview that gathered the highest number of codes whilst five other interviews grouped just one new code each. The researcher noticed a general decline in new codes which were collected after the completion of interview number one. There were however incremental increases in new codes identified at three different phases throughout the data gathering process, namely from interviews two to three, interviews four to six and interviews nine to ten. Interview two gathered five new codes whilst interview three collected six new identified codes. Interview four assembled two new codes whilst interviews five and six collected three and four new codes respectively. Interview nine accumulated just one new code and interview ten gathered two new codes. Interviews eleven and twelve collected just one new code between the respondents.

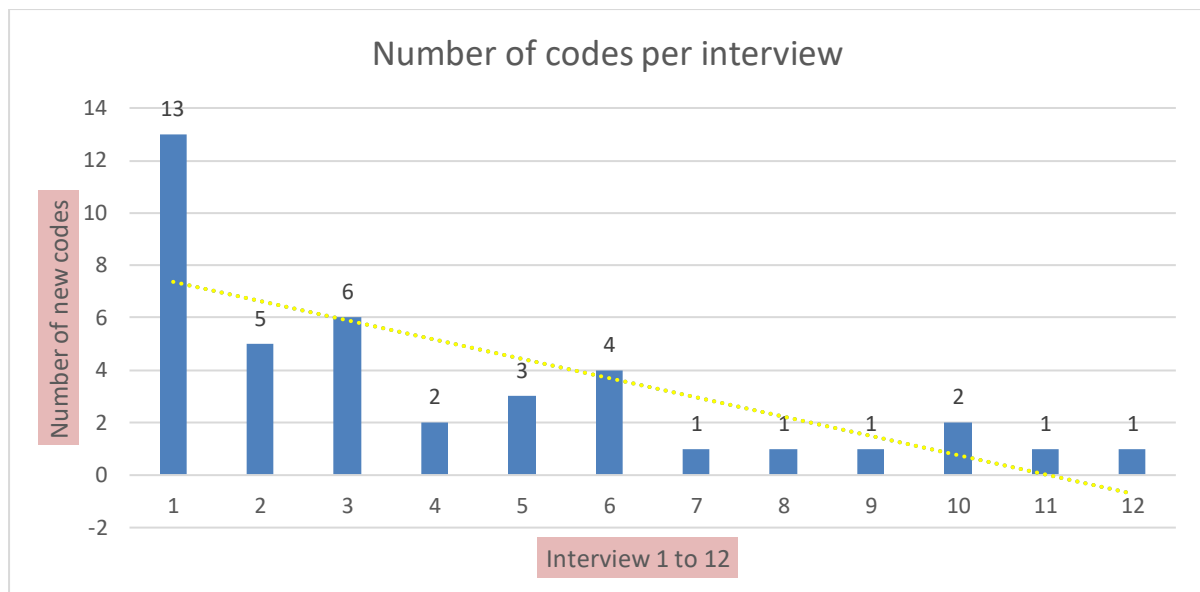


Figure two: Number of new codes per interview

The researcher identified interview number twelve as the last interview as data saturation had been achieved. Saturation can be described as the time in the data analysis phase where no new information or codes are identified by the researcher (Ngulube, 2015). Due to time constraints and overall code saturation, the researcher opted to conclude the interview process at interview number twelve.

4.4 Findings

4.4.1 Codes categories

There was a total of thirty-seven codes that were identified throughout the interview process from the twelve respondents as identified in table two. Some codes were repeated by the same respondents numerous times throughout the interview process.

Number	Codes	Number	Codes
1	Efficiency	2	Key strategic deliverables
3	Data driven intelligence	4	Customisation for client service offering
5	Improved customer service	6	Competitive advantage
7	New innovation and products	8	Good data quality
9	Data privacy	10	Regulations
11	Lack of leadership support	12	Leadership needs to provide strategic direction
13	Coherent data and business strategy	14	Improved insights
15	Lack of data skills	16	Funding is required
17	Enable decision making	18	Resources are required
19	Develop data strategy with corporate strategy	20	Protection of personal information act (POPIA)
21	Develop a data strategy	22	Understand your clients' needs

23	Enabling a data culture	24	Data to have a significant impact on business
25	Business agility and adaptability	26	Increases revenue streams
27	Change management	28	Improved customer experience
29	Treat data as a business asset	30	Data revenue generation
31	Data insights prevent fraud	32	Invest in data technology
33	Legacy impacts monetisation	34	Fear of understanding data
35	Difficult to monetise data	36	Data will lead to job losses, but the net effect will add jobs
37	Leadership needs to guide thinking		

Table two: Codes from research findings

As identified in table two, the word data was the most frequently identified expression used by the interviewees during their responses to the interview questions. This can be expected considering the subject matter of the research

paper. Strategy as well leadership were also reoccurring terms used by respondents throughout their respective opinions. Revenue from data as well as investment for data initiatives were notable mentions. There was clear evidence from the respondents that data can transform the organisation, yet it need be understood and then driven by senior leadership with a coherent strategic response to ensure success.

4.4.2 Key factors from the research

From the codes identified in table two, the researcher identified seven key research factors. The researcher thoroughly analysed the interview transcripts and went through a comprehensive process of then grouping the respondent's feedback into carefully categorised factors. These factors were key constructs derived from summarising the thirty-seven codes identified during the interview questions. Detailed below are the seven factors:

- Data privacy and regulation
- Executive leadership support
- Investment
- Coherent data and business strategy
- Data drives new products and services
- Data culture
- Skill factors

Each of the key factors was attributed to each of the research questions. This ensured an unambiguous alignment to the research objectives of the research. These key factors will provide the foundation for the analysis of the research allowing the researcher to provide the underlying basis for discussion of the results as detailed in chapter six.

The seven key factors were derived from the following codes which were grouped per theme as per table three.

Key factors	Codes per factor
Skill factors	• Lack of skills • Funding is needed • Resources are required
Executive leadership support	• Lack of leadership support • Leadership needs to provide strategic direction • Leadership needs to guide thinking • Business agility and adaptability • Change management
Investment	• Data to have a significant impact on business • Invest in data technology • Data will lead to job losses, but the net effect will add jobs

Coherent data and business strategy	• Key strategic deliverable • Coherent data and business strategy • Develop data strategy with corporate strategy • Develop a data strategy
Data drives new products and services	• Efficiency • Improved customer service • Competitive advantage • Customisation for client service offering • Innovation and products • Improved insights • Understand your clients' needs • Increase revenue streams • Improved customer experience • Data revenue generation • Data insights prevent fraud
Data culture	• Data has been driven by intelligence • Good data quality • Enable decision making • Enabling a data culture • Treat data as a business asset • Legacy impacts monetisation • Fear of understanding data • Difficult to monetise data
Data privacy and regulation	• Data privacy

	• Regulations • POPIA
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Table three: Code categories per theme

Data drives new products and services was the theme which accumulated the most codes with a total of eleven codes whilst the lowest can be assigned to lack of data skills, investment and data privacy which collected three codes each. Data culture accumulated eight codes whilst executive leadership support and coherent data and business strategy accrued five and four codes respectively

4.5 Results for research question one

4.5.1 Overview

Research question one was identified to attempt to get an understanding of the following:

Factors that can assist South African financial services companies to monetise their big data assets.

Research question one identified the following considerations:

- Lack of leadership direction and support related to extracting the value of big data
- Misalignment between corporate strategy and data strategy.

- Inadequate allocation of the funding for data strategy and initiatives specifically related to data resources and technology spend.
- Shortage of data literacy programs within the organisation to create cultural awareness of the value of data.
- The newly introduced POPIA regulation limits the prospects for data monetisation.
- As public awareness around data privacy increases, it will prove a hindrance to achieving potential opportunities in big data
- Regulation issues related to South Africa's newly introduced Protection of Personal Information Act (POPIA) and other personal information constraints

The rationale supporting research question one was to probe the interviewees to understand their views on influences on an organisations ambition to monetise their data assets. Inquisitive questions were positioned to probe the interviewees to critically think about their thoughts behind why some organisations are unable to monetise their data assets, yet a select few businesses can greatly benefit from their data. This was a crucial research question that needed answering as it provided clear data indicators to executive leadership and other data professionals. These factors are business influences which executive leadership needed to concentrate their time and resources towards, to enable their data monetisation strategies within their organisations.

The factors include: skill factors, executive leadership support, data privacy, data regulation

4.5.2 Theme 1: Skill factors

a. *Overview*

Businesses require capable personnel who have the necessary skills to achieve their organisational targets aligned to their strategy. The monetisation of big data is also a crucial function, as a result, big data expertise is required to assist the business to realise their value from their data assets. As suggested by (Akter et al., 2016), businesses require the technical computer-based skills as well as the engineering and mathematics-based skillset needed to effectively understand, interpret and then monetise big data. There is however a worldwide deficiency of big data analytics skills and businesses are therefore unable to find suitable talent to match their big data ambitions (Ramachandran & Watson, 2021). These realities as certified by the experts was corroborated by the opinions of the interviewees as detailed in the findings of the research paper.

b. *Findings*

There was a significant portion of interviewees as detailed in table three who identified skills factors or the lack thereof data skills, which is a major obstruction to organisations achieving their data ambitions. Only the first interviewee did not identify lack of skills as an impediment to an organisations data initiative.

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Lack of skills	0	7	2	3	1	3	2	6	5	3	5	5	42

Table four: *Skill factors theme codes identified per interview*

Lack of skills was pointed out by interviewees a total of forty-two times throughout the twelve interviews with an average of three-point five mentions per interviewee. Interview two was the highest occurrence with seven mentions followed by interview eight with five mentions.

c. *Perspectives from interviewees*

There were numerous notable responses throughout the interview process. The researcher identified important reactions listed below in no particular order of importance:

Perspective one

“...you need to have a lot of skills which could be a barrier to monetise your data so you have to leverage the relevant skills that you can make available in the financial markets” – (response from interviewee two)

Summary of perspective

Interviewee two suggested that although data can be monetised, there are significant barriers or impediments to this initiative. Companies require both the business expertise which is needed to first understand which data to monetise and then the technical data scientists and other technical personnel who can extract the data from systems and databases. The interviewee spoke from personal experience with failed data monetisation efforts at a particular company. Leadership would need to provide sufficient resources in the context of skilled

personnel as well as the funding for technology investment and strategic direction.

Perspective two

“... there are two primary reasons for the barriers to data monetisation. One is the resource available, I do not think that we have the adequate skills and experienced resources within the South African region” – (Response from interviewee three)

Summary of perspective

Interviewee three spoke in the capacity of a Chief Executive Officer of a digital transformation organisation. The interviewee suggested that South African companies have a significant structural problem with a lack of suitably qualified and experienced personnel in the country. The interviewee claims that immigration to other countries is creating this skills vacuum within South Africa. Foreign companies who are required to monetise their big data have the resources and budget to poach South African data talent. The interviewee suggested that its organisation has had a series of resignations with a large number of these resignations being due to new opportunities from foreign organisations. The interviewee suggested that these foreign entities can use the weakness of the South African currency and provide huge salary increments which provided the incentive for skilled personnel to immigrate to seek newer and more lucrative opportunities.

Perspective three

“...big data is an expensive set of technologies, expensive resources. Data scientists are amongst one of the highest-paid resources that an organisation can invest in” – (response from interviewee eight)

Summary of perspective

Interviewee eight who works for a large established financial services company advised that the resources in the form of skilled personnel and investment in technology need to be funded by senior leadership. These data technologists such as data scientists as well as the technology investments require major funding and budget allocation to ensure these functional areas are sufficiently capacitated to extract value from the data strategy. Senior leadership needs to also provide their time and effort to support and guide the data scientists and other technology investments.

Perspective five

“...there is a lack of up to data technology skills” – (response from interviewee five)

Summary of perspective

Interviewee six advocates that within South African financial services there is a shortage of skilled personnel which is hindering the expected benefits of companies' big data expectations.

Perspective six

“...From a skills set perspective, the organisation has to be encouraged to hire the right talent as you need to bring in people with analytical backgrounds and analytical skills” – (response from interviewee nine)

Summary of perspective

Respondent nine suggested that a criteria for businesses to nurture big data monetisation, is the appropriate logical and systematic personnel needs to be recruited. This is an important step as distinctive skillsets are required to monetise big data which is a unique asset to commercialise.

For big data initiatives to be profitable, it requires executive leadership support through investment in technology, personnel, and strategic direction (Reuben, 2019). The interviewees' responses resonate with these statements suggesting that without the necessary skills and resources big data plans will inevitably fail to achieve intended benefits.

4.5.3 Theme 2: Data privacy and regulation

a. *Overview*

Regulation such as POPIA, recently introduced into South African law has created complex considerations for all financial services companies. As suggested by Sun et al. (2021), global lawmakers have recognised that there are vast quantities of big data being produced and thus have created laws to protect the public. There are benefits to big data monetisation however businesses must ensure that they comply with South African and other foreign laws related to data privacy.

b. **Findings**

Data privacy and regulation was a theme that identified a total of twenty-six times codes throughout the interview process as detailed in table five. Data privacy

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Data privacy and regulation	2	2	3	2	4	2	0	0	2	4	2	3	26

Table five: Data privacy and regulation codes identified per interview

and regulation was a theme that was used by ten interviewees with an average of two point one seven per interview. Interviewees seven and eight did not generate any codes whilst five and ten generated the most codes with four each per interview.

c. **Perspective from interviewees**

Perspective one

“...Now if you look at the big technology companies, most of the big tech companies that started, I can guarantee you, never had this huge governance arm at the front. Even now, you would find that these companies that are over ten years old still have to deal with POPIA issues. There is so much governance that has never been followed, but they only changed it over the last few years” –
(response from interviewee ten)

Summary of perspective

The respondent alluded to the traditional big technology companies which were founded before the worldwide awareness of privacy of data. These technology companies found a supervisory advantage due to the lack of regulation related to the protection of personal information. They previously benefitted although they are now required to adhere to newer regulations such as POPIA and other privacy guidelines such as General Data Protection Regulation (GDPR). Currently, financial companies who are only now starting to find value in data are finding it increasingly difficult to achieve their data monetisation efforts whilst simultaneously ensuring compliance with data privacy and regulation. This requires a strategic response from senior leadership to guide the organisation through this process of data monetisation and comply with the various local and internal privacy laws.

Perspective two

“...A big problem is POPIA, the protection of private information. The amount of limitations that have been imposed by the regulators is taking away a lot of the power that is available to be monetised from the big data structure” – (feedback from respondent three)

Summary of perspective

According to interviewee three, the newly introduced POPIA regulation will have a detrimental effect on monetisation prospects for South African financial services companies. The interviewee alludes to that South African financial companies may not fully understand how to navigate through the data privacy regulation whilst simultaneously obtaining benefits from big data. This requires a strategic

leadership focus combined with expert legal opinions on how to circumnavigate through the POPIA and other privacy regulations.

Perspective three

“...I would say probably say that regulation is a barrier to data monetisation. So more on the legal side, also regulatory access, is it legal to go and sell my information without me knowing” – (response from interviewee twelve)

Summary of perspective

Interviewee twelve frames its perspective from financial services companies trying to monetise their financial information. In a small profitability margins industry, the new threat of POPIA and other privacy regulations requires a shift in data monetisation strategy. POPIA will require a legal opinion whenever new or existing data products are utilised to ensure compliance with privacy regulations. This will require additional organisational time and resources which will impact financial services companies to monetise their big data assets.

Perspective four

“...there is a fear of data, this is probably one of the biggest aspects of data. It is especially when you deal with finance and information security, it is very strict, very strict. Because it is financial services and personal data, you have to jump through hoops” – (response from interviewee ten)

Summary of perspective

Interviewee ten claimed that within financial services companies, there is the added complexity of ensuring compliance with cyber security threats as well data security laws such as POPIA. Banks especially are finding it complex to navigate

through the complicated laws. Added to this is that banking clients also demand assurances from all the reputable banks within South Africa that their personal information is held securely whilst complying with data privacy. Banks, therefore, require a strategic response to monetising big data as well as a planned response to banking regulatory and data privacy compliance.

Data privacy is a serious consideration for senior leadership to first understand and then provide a strategic response for the organisation. South African based regulations such as POPIA will require a coordinated response to ensure clients privacy is kept confidential and in a safe and secure digital environment (Burger-Smidt, 2021).

4.5.4 Theme 3: Executive leadership support

a. *Overview*

All businesses require support from senior leadership to achieve organisations ambitions. The strategic and operational support from executive leadership is fundamental to achieving both the strategic and operational objectives of any organisation (Oberer & Erkollar, 2018). Cortellazzo et al. (2019) suggest that mastering the extraction of big data is a complex task therefore it requires additional funding and financial assistance from top management.

b. ***Findings***

Executive leadership support was a theme that was identified by all twelve of the respondents with a total of forty-seven mentions throughout the interview process. As evidenced in table six, all the interviewees advocated the importance of senior leadership and the crucial role they have in attaining success for big data objectives.

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Executive leadership support	4	4	3	3	4	3	6	5	3	5	3	4	47

Table six: Executive leadership support theme codes identified per interview

The number of codes ranged between three for interviewee three, four, six, nine and eleven up to a maximum of six identified codes as per the results in interviewee seven. This provided evidence of a consistent trend of mentions for executive leadership support with an average of three-point ninety-one mentions per interview.

c. ***Perspectives from interviewees***

There were multiple responses related to executive leadership support throughout the interview process as per the codes identified in table five. The researcher identified some of the important reactions listed below which are in no order of importance:

Perspective one

“... Leaders must acknowledge the potential that data plays in an organisation and not as just information for reporting but as an asset that will increase the value of the organisation” – (response from interviewee one)

Summary of perspective

One of the interviewees advises that for data to create value within the organisation, they need to understand its value. Thereafter they must provide the necessary financial and moral support in the shape of funding, investment, and strategic guidance on big data. Without this support, the big data plans will invariably fail.

Perspective two

“...Change management, you need to change the mindset of the organisation, you need to convince people that they cannot keep on doing things the way they previously did as they need to move to the new ways” – (response from interviewee nine)

Summary of perspective

The respondent argues that financial organisations need to transform their approach to their big data plans. This cultural investment of changing the way an organisation reflects on big data needs to be supported by senior leadership. Only through this changing cultural mindset enabled by senior leadership can an organisation become a business with data-driven mindsets. It is a difficult yet rewarding journey nevertheless it needs to be done to effectively monetise a company's big data assets.

Perspective three

“...Leadership influence is high, so leaders need to drive this. They need to provide the aspiration, they need to provide the ambition and cascade it correctly. If they are unable to cascade it, the organisation cannot deliver on it” – (response from interviewee seven)

Summary of perspective

Interviewee seven claims that the big data plans are key strategic deliverables that require a coordinated and systematic approach from uppermost management. The leadership needs to provide the vision and direction and drive the big data determination throughout the organisation. This is a crucial deliverable from the senior leadership, and it needs to be a well-thought strategy to drive the benefits and outcomes of big data.

Perspective four

“...so, I think it will start at the top with them being willing to want to implement things like this. Then once you breach that barrier, it becomes selling it to the people the leaders are leading” – (response from interviewee twelve)

Summary of perspective

Interviewee twelve suggest that the leadership within the organisation need to understand the prospects in big data monetisation and then provide a well thought out plan to guide the organisation on its data monetisation efforts. Only through a strategic mandate from leadership that moves the organisation towards this goal, will big data plans be accomplished.

The findings from the interviewees suggest that without sincere executive leadership support for the big data plans, these strategies will invariably fail. Big data as with any strategic objectives, necessitates support from senior management to cultivate the required culture to monetise a business's data assets (Parvinen et al., 2020).

4.5.5 Theme 4: Investment

a. *Overview*

Companies require financial support and investment for their businesses to achieve their strategic objectives. Dubey et al. (2018) suggest that without the real investment made by senior leadership, the strategic objectives of a company will invariably never materialise. Senior leadership need to ensure that they influence the organisation on the strategic data journey as without this leadership investment, these objectives will invariably fail. (Cortellazzo et al., 2019).

b. *Findings*

As per the information in table seven, compared to other factors, investment identified the fewest number of codes throughout the interview process. Five interviewees identified zero codes. The interviewee with the highest number of codes was interviewee nine with three codes.

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Investment	0	0	1	1	0	0	2	2	3	1	0	1	11

Table seven: *Investment theme codes identified per interview*

A total of eleven codes were mentioned throughout the interview process with an average of zero point nine two. This provides evidence of a consistent low trend analysis of the investment theme mentioned throughout the interview process.

c. *Perspectives from interviewees*

There were limited responses related to investment throughout the interview process as per the codes identified in table six. The researcher identified some of the important reactions listed below which are in no order of importance:

Perspective one

“...there needs to be an investment in analytical projects to build these big data solutions. You can put the tech in, bring the skills in you still need a budget to deliver on these projects” – (response from interview nine)

Summary of perspective

Interviewee nine argues that investment from the organisation is compulsory in addition to skills, resources and technology which together enable big data monetisation. The respondent claims that investment in the form of senior leadership support in strategic and operational plans are required as well as additional funding in the form of capital allocations for big data investments. To monetise big data requires time, effort and continuous support to enable its success.

Perspective two

“...if you want to build and create your digital and data journey, you require capex. You require an investment in capabilities, infrastructure and assets” –
(response from interviewee seven)

Summary of perspective

Respondent seven claimed that some of the barriers to big data monetisation are the lack of the necessary investment to achieve the big data targets. Some organisations are underestimating the required monetary investments. The investments in technology, skills and cultural change are miscalculated by executive management. Leadership expects immediate rewards from big data, yet they are not providing the necessary time and resources. Investment is required to achieve big data targets. In summary, investment and success are complementary to each other.

Perspective three

“...I guess financial constraints in terms of being able to take something and build something new with it, so investment and access to investment are needed. Investment companies are very stuck in their ways” – (response from interviewee twelve)

Summary of perspective

Respondent eleven proposes that there are vast opportunities to monetise big data within financial services companies. These companies are however not making the necessary investment in resources, technology and are not providing the strategic thinking around big data. The respondent suggests that although financial companies want to monetise their big data, they may be going through this journey in the incorrect approach.

Perspective four

“...I think more money and resources will be allocated to solve problems; however, I think the effort, complexity and cost might outweigh the actual benefit”

– (response from interviewee eleven)

Summary of perspective

Interviewee eleven reiterated the demand from senior leadership for additional resources in the form of competent personnel as well as funding for technology and other budgetary requirements. This is needed to solve the problems or solutions with big data. Paradoxically, however, the interviewee suggests that the investment in big data may not receive the expected benefits. The interviewee implies that businesses overestimate the expected benefits resulting in excessive financial expectations from big data. This can be the reason why most big data strategies fail, largely because of the unrealistic transformative prospects of big data.

Investment is required to ensure data ambitions are achieved but companies need to act with caution. Without the necessary investment, there will invariably be a failure in the overall data objectives of the organisation.

4.6 Results for research question two

4.6.1 Overview

Research question two was identified to attempt to get an awareness of the following:

Is big data a core component of the overall corporate strategy at financial services companies?

Research question two addressed the following considerations:

- The corporate strategy is developed in isolation and exclusive of the data strategy
- Misalignment between the corporate mandate and expectations from big data
- Is big data strategy a core deliverable of senior leaders who develop the corporate strategy?

The motivation behind research question two was to examine the respondents to gain an understanding of an organisations approach to developing its data and organisational strategy. The researcher probed the interviewees to assess the standing between company strategy and data strategy. Are these two strategies in alignment or is the organisational strategy developed first and then the data strategy? Or is it an afterthought post the formulation of the organisational strategy? This was an important research question that addressed if executive management sees data as a core business asset that they can monetise as part of the corporate strategy or is data an afterthought of the wider business strategy. The responses indicate the importance of big data and where its importance resides in the executive management board room.

The factors include: coherent business and data strategy, executive leadership priorities, organisational alignment

4.6.2 Theme 4: Coherent data and business strategy

a. *Overview*

The development of the business strategy is a core function of the senior leadership team. According to Parvinen et al. (2020), data can transform a business's success therefore there needs to be clear discussions at the executive level to guide the organisation through this process. Crucially though, most organisations fail to effectively understand and then implement strategies that enable data monetisation (Corte-Real et al., 2019). The evidence suggests that senior leaders do not fully understand the transformative opportunities of big data, or maybe they just choose to ignore it.

b. *Findings*

Coherent data and business strategy as per the details in table eight was a theme that was mentioned by all twelve of the respondents with an accumulative count of thirty-six codes throughout the interview process. The lowest number of identified codes was with interviewees one and two whilst the

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Coherent data and business strategy	1	1	2	4	2	3	7	5	3	3	3	2	36

Table eight: Coherent data and business strategy codes identified per interview

The highest number of identified codes was attributed to interviewee seven. The average per interviewee was three codes per interviewee.

c. *Perspectives from interviewees*

There were numerous notable responses throughout the interview process. The researcher identified the below important reactions listed below in no order of importance:

Perspective one

“... previously companies used KPI’s (key performance indicators) in terms of tying back success of the strategy, in terms of just sales numbers and maybe client satisfaction. I think now additional KPI measures in terms of what high-level strategy is and how it can be combined with data and how it can be used to support the organisation” – (response from interviewee five)

Summary of perspective

The interviewee suggests that previously big data strategy was often measured individually because it was developed in isolation of the corporate strategy, more so as an afterthought. This created a very narrow organisational measurement of big data and its intended benefits. If big data strategy is developed together with corporate strategy, it creates the necessary focus which should measure the big data strategy as a core component of the corporate strategy.

Perspective two

“...each company is now starting to realise how important data is to their business. It’s been a while that data has had an impact on the world and what’s happening now, I feel companies are not only just changing their strategies, their organisational skills and their career growth as data has completely changed the way banks are thinking. Five years ago, we never had a data career stream, we never had grad programs. Data now has a seat at board level” – (response from interviewee ten)

Summary of perspective

The interviewee claims that data has gradually been given the essential voice it requires at the senior levels within the organisation specifically within the boardroom where strategic decision making is made. Earlier, data leaders never had a seat at the senior management or board level. As a result, obtaining value from data never materialised as data strategies were developed outside of the main business strategy. There was no alignment between the two plans. It was essentially a tactical decision rather than a coordinated strategic decision made by senior leadership. The interviewee suggested that banks now have a capable data voice at the board level which is leading their efforts to effectively monetise their big data.

Perspective three

“...I don’t think we have scratched the surface from the opportunities from big data. And I think that the more companies invest in this function, they will see the value. What I expect from a strategic perspective is that much more information-based decisions will be made” – (response from interviewee eight)

Summary of perspective

The interviewee suggests there are numerous revenue opportunities for financial companies in big data. Strategic data decisions need to be made at senior leadership to ensure a coordinated organisational response to monetise big data prospects. There are opportunities in data but there needs to be more effort at senior management to enable the core strategic data response to be harmonised and planned at the organisational level.

Perspective three

“...Big data is a key strategic deliverable in enabling, informing stakeholders, customers and employees within the financial industry” – (Response from interviewee six)

Summary of perspective

According to interviewee six, data is a strategic deliverable from senior management. The interviewee claims that big data cannot be a middle management deliverable therefore it requires a strategic response from senior leadership. Therefore, the interviewee recommends that big data should be a part of the core deliverable of the corporate strategy.

A coherent business and data strategy is required to ensure the hidden benefits of big data are realised. As the interviewees suggest this requires a strategic response from senior leadership to persuade the organisation to monetise its big data assets. This data monetisation ambition must be a core component of the corporate strategy to enable its success.

4.7 Results for research question three

4.7.1 Overview

Research question three was identified to attempt to get an understanding of the following:

What role does leadership play in an organisations ambition to monetise its big data assets?

Research question three addressed the following considerations:

- Data can drive new revenue
- Data creates business opportunities
- Role of senior leadership to monetise big data

The justification for research question three was to identify the role that senior leadership have in creating new opportunities for businesses. Data can create new revenue, yet it was needed to understand senior leaderships role in the process.

4.7.1 Theme 5: Data drives new products and services

a. Overview

Data has the potential to create vast opportunities for businesses if it is understood and then utilised correctly within a company (Deighton, 2018). According to Shaw (2016), the insights from big data will generate new products

and services for businesses creating new revenue prospects. This requires a strategic response from senior leadership who are required to drive the big data culture and strategy within the organisation (Dubey et al., 2018).

b. ***Findings***

There was a total of fifty-four identified codes throughout the interview process as per the information in table nine. This represented an average of four point five per interviewee. This represented the highest number of codes per theme

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Data drives new products and services	5	0	5	3	6	4	5	7	8	3	2	7	54

Table nine: Data drives new products and services codes identified per interview

which were classified throughout the entire interview procedure. There was only one interviewee, in respondent two who did not suggest the theme in their interview. The highest code count was seven, as mentioned by interviewee nine.

c. ***Perspectives from interviewees***

Perspective one

“...so, I think big data can start telling us, your behavioural cycles, who you are as a client and I think in financial services especially in banks, there is very rich information. There is transactional information in terms of what a client has done,

the products that you have opened, we even have got the family to construct as well” – (response from interviewee five)

Summary of perspective

Interviewee five suggested that there is a plethora of transactional information on a per-client basis that can be used to identify tailor-made products and services for their banking clients. These individual transactions captured over the lifecycle of the client’s relationship with the bank can be stored and then analysed by data scientists to identify potential opportunities to monetise their client’s data. By interpreting a client’s history along with their family’s history, the bank can provide added shared value to both the client as well as the bank. It firstly creates new products and services for the banks clients’ thereby keeping your clients’ content with the bank’s service. Subsequently, it also generates new business opportunities for the bank thereby growing their bank’s revenue. Therefore, it is mutually beneficial to both bank and client from the new data products and services.

Perspective two

“...Over the last few years margins have been squeezed and the ability to make revenue the easy way has become difficult. So big data allows you the opportunity to exploit or almost interrogate big data to look for opportunities in data. Whether it is in sales, marketing or building better relationships with clients, it gives you the opportunities” – (response from interviewee nine)

Summary of perspective

The interviewee suggests that the traditional methods of earning revenue for financial companies are diminishing due to increased competition and other

macro variables. Big data however can create these new revenue generation opportunities in multiple areas of the business. It does, however, require a strategic response from senior leadership to drive the vision of the opportunities of big data.

Perspective three

“...for me, I think that there is a better value-added into the system. I think that with more data and the ability to analyse that data, you can create more specific client-focused products” – (response from interviewee eight)

Summary of perspective

Interviewee eight claims that within financial services companies, big data has created new revenue opportunities that were traditionally not available. This change has only occurred as businesses have recently realised the potential opportunities of big data. The interviewee indicates that they were able to create these innovative new products by analysing client-specific data and then building data value services. These were products that the client did not know they wanted yet they make use of it. This has subsequently created data monetisation opportunities for their financial services company.

Perspective four

“...for me, I think that there is a better value that is added to the entire system. I think that with more data and the ability to analyse that data, you can create more specific client-focused products. So, we all know with Netflix for example their recommendation system that prompts clients to watch certain programs. The

same thing can be done in the financial services.” – (Response from interviewee eight)

Summary of perspective

The interviewee who works for a large, well established financial company alludes to the vast opportunities that are being created with new and innovative data products and services with the financial industry. The interviewee suggests that financial companies are learning from the other industry data leaders such as Netflix and have realised that they may require an inventive approach to data monetisation. A lot of historical products and services are catered to the masses and the ability to analyse and work with big data allows financial companies to create more client focus products. These new types of products and services enabled through big data provides the opportunity for financial companies with the ability to generate sustainable revenue streams.

Data has the potential to create additional value for businesses in the form of additional products and services. There needs to be a clear mandate from the leadership team to create additional value for the business and client. With traditional revenue streams declining, these new data products and services will be welcomed by financial services companies.

4.7.2 Theme 7: Data Culture

a. Overview

Most financial companies are now using or are planning to utilise big data to improve their organisation's competitiveness (Couldry & Powell, 2014). To

change an organisations approach to data, the cultural thinking within the organisation needs to align to data. Senior leadership are therefore required to lead the cultural transformation of the organisation to ensure data and its intended benefits are realised (Dubey et al., 2018).

b. ***Findings***

Data culture as a theme generated a total of thirty-three identified codes throughout the interview process as detailed in table ten. Data culture produced an average of two point seven five mentions throughout the process. All

Interview	1	2	3	4	5	6	7	8	9	10	11	12	Total
Data culture	2	2	1	0	2	3	5	3	3	5	1	6	33

Table ten: Data culture codes identified per interview

interviewees cited the data culture theme except interviewee four. Interviewee twelve was the highest with a total of six mentions. A total of thirty-three recognised codes was the 3rd highest theme in the research.

c. ***Perspectives from interviewees***

There were numerous notable responses throughout the interview process. The researcher identified the below important reactions listed below in no order of importance:

Perspective one

“...I think it starts with the culture of the business. The function of the leaders within the business is to drive a specific culture and vision of the organisation. So, the responsibility is with the leaders within the organisation to focus and how the culture of the organisation needs to be changed” – (Response from interviewee three)

Summary of perspective

According to interviewee three, data monetisation is a difficult journey for an organisation so it's important for leadership to imprint the necessary data culture to enable monetisation. Leadership, as with any strategic response will need to shape the culture towards its intended objectives. The interviewee alluded to the leaders who need to lead by example and use data to enable their own decision making. When the rest of the organisation perceive that leaders are utilising data, it will drive the organisational thinking thereby creating an enabling data culture to monetise big data.

Perspective two

“...legacy issues. From silos to connected. Many financial services companies work in silos. For example, Bank A will have different divisions for different markets for the different segments to which they cater for. Each business unit will hold the data separately so there is no customer three-sixty view across the business” – (response from interviewee seven)

Summary of perspective

The interviewee gave specific examples of how the culture within financial services companies such as banks operates in silos with effectively departments

competing with each other. There is no coordinated plan aligning towards a synchronised data culture that enables data monetisation. Since the departments are segmented, they create a segmented client offering and the interviewee suggests that if this does not change, large financial services companies will not be able to monetise their big data. If they do not resolve the data culture issues, it will lead to misplaced prospects in the monetisation of big data assets.

Perspective three

“...so, in my case, we started putting up the proper resources from a system point of view. We also came up with new tools that helped us to get the data in the right place, so it could be shown to the leaders that would help them to take the appropriate decisions” – (response from interviewee two)

Summary of perspective

Interview two suggests that senior management decided to change the cultural awareness around data and its intended use cases. Senior leadership enabled the data culture by investing in the technology infrastructure and allocated resources. Once data insights were produced and data-driven decision making was empowered at the leadership level, it created the foundation to support a data culture within the organisation.

Perspective four

“...the first thing is that leadership needs to be open-minded about big data. There is a lot of fear from big data from leadership and employees. It is therefore good to start at the top to enable them to be willing implement things like big data” – (Response from interviewee twelve)

Summary of perspective

The interviewee suggested that big data and how to manage and capture value from big data is a huge cultural hurdle for employees to overcome. Junior and the less experienced personnel cannot understand big data, therefore, requires a strategic and unambiguous response from senior leadership to drive this cultural change of big data monetisation within the organisation. Only with senior leader support can big data plans be successful so there needs to be a concerted and well thought through a big data plan. The data culture needs to change with senior leadership first and only thereafter can the organisation achieve their big data monetisation efforts.

As the evidence suggests, if the organisation has ambitions to monetise its big data it needs a supporting data culture that enables the business to extract meaningful value from its data assets. The business will be required to have the appropriate culture built by senior leadership which creates a suitable environment to monetise their big data assets (Wamba et al., 2015).

CHAPTER 5. Discussion of results

5.1 Introduction

The title of the research is “Monetising big data in South African Financial services”. The purpose of the research was to identify the factors which can assist financial services companies to monetise their big data resources. In chapter four, the researcher articulated in detail, the findings of the extensive qualitative research processes. The research included findings from the twelve semi-structured interview process. Chapter five will subsequently provide a detailed analysis of the findings of the research clearly describing specific constructs related to the research.

Research question one: Factors that can impact South African financial services companies to monetise their big data assets.

Research question two: Is big data a core component of the overall corporate strategy at financial services companies?

Research question three: What role can leadership play in a financial organisations ambition to monetise its big data assets?

5.2 Research question one: Discussion of results

Research question one: Factors that can impact South African financial services companies to monetise their big data assets.

Below are the themes which were documented throughout the research process for research question one

- Skill factors
- Data privacy and regulation
- Executive leadership support
- Investment

5.2.1 Skill factors

Businesses require experienced expertise to ensure that they can firstly understand big data and then monetise their big data assets (Akter et al., 2016). These big data skills are scarce and require a strategic leadership response to adequately identify and then recruit these technical resources needed for big data monetisation (Ramachandran & Watson, 2021). Eleven of the twelve respondents identified skills factors or the lack of skills thereof as an important theme which senior leadership within financial organisations needed to respond to. There was a total of forty-two times that the theme was used throughout the interview process. All businesses require the necessary skills to achieve strategic deliverables. The explosion of big data and the subsequent ambition to data

monetisation has however created a huge demand for data engineers and data scientists which enable businesses to extract value from big data (Lee, 2015).

The consensus from the interviewees was that financial companies in general lack the specialised skills which are needed to adequately monetise their data assets. These skills are also generally more expensive than other personnel. The lack of skills coupled with the high costs of recruitment is creating additional complexities for financial services companies as evidenced in the comments from the interview process. Below are some comments from the interview process.

“...big data is an expensive set of technologies, expensive resources. Data scientists are amongst one of the highest-paid resources that an organisation can invest in”

“I do not think that we have the adequate skills and experienced resources within the South African region”

It was well documented within the findings from the research that South African financial services companies are experiencing difficulties in monetising their big data. Senior leadership is required to provide resources by allocating sufficient budget to not only recruit but also keep their rare data skills employed. Sow and Aborbie 2018) suggests that senior leaders must be big data leaders who can recognise the importance of big data and create the necessary focus on big data through appropriate recruitment practices. Only the required skills enables the successful implementation of the corporate's big data strategy and senior leaders must lead the change with suitably qualified personnel. Only then will this skilled personnel find value in a firm's big data assets. The findings suggest that to

adequately monetise big data assets, firms need to recruit as well as retain the scarce data skills to ensure data provides the intended value.

5.2.2 Data privacy and regulation

Data privacy and regulation was a key theme that was cited twenty-six times throughout the interview process. Of the twelve interviewees, ten respondents cited the theme. Technology systems are creating vast amounts of data from business applications and other social media platforms (Gutierrez, 2014). Regulators have subsequently acknowledged that the vast quantities of personal data which is produced daily needs protection to ensure personal information is safeguarded (Sun et al 2021).

In South Africa, The Protection of Personal Information Act 2013 (CPT) was established to aim to protect South African nationals' personal information through the Protection of Personal Information Act or otherwise known as POPIA. Businesses, namely financial services companies are nevertheless trying to monetise big data whilst ensuring compliance with POPIA. Many financial organisations are however finding it difficult to ensure adherence to POPIA whilst concurrently monetising its big data assets. This confirmation is evidenced below from respondents throughout the interview process. Below are some comments from the interview process.

“...A big problem is POPIA, the protection of private information. The amount of limitations that have been imposed by the regulators are taking away a lot of the power that is available to be monetised from the big data structure”

“Now if you look at the big technology companies, most of the big tech companies that started, I can guarantee you, never had this huge governance arm at the front. Even now, you would find that these companies that are over ten years old still have to deal with POPIA issues”

The suggestion by the interviewees is that data privacy and regulation have swiftly arrived within South Africa and it is an unexpected hurdle which senior leadership need to strategically respond to. One of the complexities was to achieve data monetisation targets whilst ensuring adherence to data privacy laws. An interviewee suggested that the early adopters of data, namely the large technology companies were able to expand their data monetisation efforts since they were not required to comply with data privacy laws. As suggested by the interviewee, the late adopters to data will have general data monetisation hurdles to overcome whilst combined with data privacy laws and regulations, which necessitates a strategic response from leadership.

Organisations within South Africa and international organisations that conduct business with South African citizens are be required to comply with POPIA as there are significant monetary penalties and serious implications for transgressors through POPIA litigation (Burger-Smidt, 2021). These are serious consequences that financial services companies will be required to learn to address.

5.2.3 Executive leadership support

All twelve interviewees identified executive leadership support as a core theme that is required to enable data monetisation within South African financial services companies. There was a total of forty-seven themes mentioned throughout the interview process. The findings suggest that there needs to be deliberate and planned contribution from executive leaders on the organisations planned data monetisation strategies. As suggested by Sow and Aborbie (2018), data monetisation efforts require executive leaderships strategic direction and then execution of the organisation's commercial data plans. Below are some comments from the interview process.

“Leaders must acknowledge the potential that data plays in an organisation and not as just information for reporting but as an asset that will increase the value of the organisation”

“Leadership influence is high, so leaders need to drive this. They need to provide the aspiration, they need to provide the ambition and cascade it correctly. If they are unable to cascade it, the organisation cannot deliver on it”

Parvinen et al. (2020) advocate that when an organisation has the ambition to transform the company's future growth plans through the process of data monetisation, it requires a collaborative and sincere leadership effort to achieve the data targets. Data monetisation requires a digital transformation of the organisation which subsequently requires changing established cultural norms which can only be driven by senior leadership (Cortellazzo et al., 2019). Interviewee seven suggested that leadership needs to develop and then communicate a compelling and believable strategic plan to guide the

organisation's journey to enable big data monetisation. Interviewee twelve suggests however that before a strategic response to data is planned and communicated, the entire leadership group will have to believe in the data monetisation plans. This suggests that the organisation will move forward to enable data monetisation provided that the entire executive leadership team are all aligned to the same strategic direction. Corte-Real et al. (2019) argue that it is vital for executive leadership to drive the cultural change, which is needed to enable data monetisation, as any significant change within an organisation is often extremely challenging to implement.

All interviewees suggested the importance of senior management to drive change throughout the organisation with interviewee nine suggesting that there needs to be a significant transformation of the company to achieve their big data targets. This feedback provided clear evidence that executive leadership fundamentally supports or enables the data monetisation efforts within the financial services industry.

5.2.4 Investment

Investment as a theme generated the fewest number of mentions with a total of eleven conclusions. The evidence suggested that investment remains at the lowermost end of the list of factors that allow for data monetisation as evidenced by the limited number of mentions in the interviews. Singh and El-Kasser (2018), suggests that once the big data strategy has been established senior leadership must provide sufficient investment in the appropriate allocation of budget aligned

to resources, technology and time to deliver on big data plans. Below are some comments from the interview process.

“...there needs to be an investment in analytical projects to build these big data solutions. You can put the tech in, bring the skills in you still need a budget to deliver on these projects”

“...if you want to build and create your digital and data journey, you require CAPEX. You require an investment in capabilities, infrastructure and assets”

The interviewees suggest that creating a compelling data vision for the organisation is important but there need to be follow-up investments in data infrastructure and resources which create the data products and services. As suggested by Dubey et al. (2018) senior management must also provide a creditable investment in data by allocating their time and effort to motivate the organisation to enable data monetisation. Interviewee seven suggests that when senior management invests their time and resources, this creates a guiding coalition to create data opportunities for the firm. Interviewee seven further elaborates that senior leadership who require immediate success from their big data investment are needed to provide their investment of the time and resources.

As suggested by Deighton (2018) big data has transformational opportunities for organisations provided it is harnessed to its potential. Ghasemaghaei & Calic, (2019) argues that most firms are not realising the intended benefits aligned to big data monetisation as they lack the large-scale organisational investments needed for big data. The evidence in the interview process suggested that although investment is an important theme needed to help implement a data

monetisation strategy, it is further down the list of expected factors which enable data monetisation.

5.3 Research question two: Discussion of results

Research question two: Is big data a core component of the overall corporate strategy at financial services companies?

Below is the theme which was established throughout the research process for research question two

- Coherent data and business strategy

5.3.1 Coherent data and business strategy

Coherent data and business strategy was a theme that was identified by all twelve interviewees with a total of thirty-six mentions throughout the interview process. Many organisations, as evidenced in the interviews are however not realising their big data monetisation plans. Corte-Real et al. (2019) suggest that senior leadership are not crafting the vision that is needed to guide the organisation on their big data journey. Below are some comments from the interview process.

“...Five years ago, we never had a data career stream, we never had grad programs. Data now has a seat at board level”

“...Big data is a key strategic deliverable in enabling, informing stakeholders, customers and employees within the financial industry”

Interviewee ten suggested that big data never had a credible opinion at the highest levels of the organisation. Traditionally the team of big data was a subdivision reporting into departments such as the Chief Financial Officer (CFO) or the Chief Information Officer (CIO). This organisational structure setup did not create the opportunity for the opinion of big data to be heard at the highest levels of the organisation as suggested by interviewee ten.

This organogram structure has changed as big data now has permanent positions at senior levels within the organisation with positions such as Chief Data Officer and Chief Analytics Officers having been recently introduced within the financial industry. More focus will be required of data representatives at the board level to ensure that data strategy is not an afterthought of corporate strategy but rather a coherent part of the overall corporate strategy. This creates a clear alignment between the data deliverables and the overall business strategy. Wamba et al. (2015) suggests that when corporate strategies are developed whilst having big data as a core theme, it provides a suitable platform to generate value for the business.

Data and its intended monetisation opportunities have significant growth prospects for companies who can understand and then master the use of big data (Parvinen et al., 2020). There are however numerous challenges to data monetisation. The evidence suggests that the organisational plans and then strategies on big data need to be developed at senior management levels with preference at board or at the c-suite levels. This design creates strategy alignment between big data and corporate objectives. If there is no coherent

business and data strategy, the organisation does not have the compulsory focus to drive data monetisation opportunities.

5.4 Research question three: Discussion of results

Research question three: What role does leadership play in an organisations ambition to monetise its big data assets?

Below are the factors which were documented throughout the research process for research question three

- Data drives new products and services
- Data culture

5.4.1 Data drives new products and services

Data drives new products and services generated the highest number of codes through the interview process with a total of fifty-four codes from the twelve interviewees. This provided a clear indication from the interviewees that this theme is the most crucial factor which influences big data monetisation within financial services companies. Deighton (2018) suggests that big data creates contemporary business possibilities provided there is a clear strategic direction from senior leadership. Below are some comments from the interview process.

“...Over the last few years margins have been squeezed and the ability to make revenue the easy way has become difficult. So big data allows you to exploit or

almost interrogate big data to look for opportunities in data. Whether it is in sales, marketing building better relationships with clients give you the opportunities”

“...for me, I think that there is a better value-added into the system. I think that with more data and the ability to analyse that data, you can create more specific client-focused products”

The interviews suggest that financial services companies are already producing large volumes of big data and the respondents claim that there are already vast opportunities that are not being monetised. Interviewee five suggest that financial services companies are unaware of the potential data monetisation opportunities of their data. The respondent argues that financial firms maybe require a diverse approach to identify innovative new data products and services. It is suggested that a well-defined strategic response is required to characterize these data monetisation prospects.

Interviewee nine claims that due to traditional revenue declining for financial services companies, data products will create new growth possibilities. This however requires clear leadership direction on how to find and then monetise big data. Interviewee eight claims that financial services companies are only recently realising the value in big data. The respondent advises that these companies should try to emulate the large technology companies that have already been through the process of finding value in big data.

Big data and its realised benefits are a very difficult organisational journey. This approach requires time and effort and a strategic leadership response to generate new data products and services. As suggested by Shaw (2016) data will create new value for businesses provided that the organisation positions the customer

at the forefront of the data strategies. In summary, data will create new products and services within the financial services industry, but it will require a strategic response from senior leadership.

5.4.2 Data culture

The theme of data culture produced a total of thirty-three codes through the interview process with eleven of the twelve interviewees having cited the theme. Organisations on a worldwide basis want to use big data to create innovative new products and services and the financial services industry is also following this trend. The cultural behaviour related to data monetisation would be developed to ensure that the organisation can eventually start creating data products and services (Owoyemi & Ekwoaba, 2014). Wamba et al. (2015) contend that senior leadership is needed to create the cultural conditions which are needed to achieve the intended strategic targets of the organisation. Below are some comments from the interview process.

“...I think it starts with the culture of the business. The function of the leaders within the business is to drive a specific culture and vision of the organisation. So, the responsibility is with the leaders within the organisation to focus on how the culture of the organisation needs to be changed”

“...the first thing is that leadership needs to be open-minded about big data. There is a lot of fear from big data from leadership and employees. It is therefore good to start at the top to enable them to be willing to implement things like big data”

There was unanimous agreement from the interviewees that to enable data monetisation the organisation needs to have a culture that empowers data monetisation. Interviewee three claims that senior leadership needs to create a sympathetic organisational culture to monetise its data assets. Observation within the organisation is also crucial so employees must perceive that senior leaders are leading by example in their data monetisation efforts. This behaviour from senior leaders drives the appropriate cultural behaviour within the organisation. The evidence suggests that with any new strategic idea there needs to be alignment between business objectives and cultural support which enables the business plans. Gillespie and Reader (2017) argue that culture permits organisational success, and the culture motivates the business to achieve its intended strategic targets.

Dubey et al. (2018) argue that a business can achieve its most difficult strategic targets, but it does require an enabling organisational culture that will shift the organisations in the correct direction. Trenerry et al. (2021) recommend that firms should have an experimental culture that will empower the culture to find new data products and services. The evidence from the interviewees suggests that creating an enabling data culture is foundational to a successful data monetisation strategy. Any organisation can monetise its data assets but its needs to be supported by senior leadership who can mould an empowering and innovative culture to create value from big data (Ghasemaghaei & Calic, 2020).

CHAPTER 6. Recommendations and conclusion

6.1 Introduction

The purpose of the research was to go through a systematic approach to try to attempt to comprehend the business factors which can facilitate big data monetisation within South African financial services companies. A qualitative semi-structured interview process was used by the researcher to gain the appropriate feedback. The researcher selected interviewees who all had substantial experience in understanding and exploiting big data opportunities within the financial services industry. The vast experience of the respondents provided the researcher with valuable insight into the themes which can create a platform for data monetisation.

The findings suggest that big data through the enablement of data monetisation will greatly transform the success of businesses. This is however a difficult organisational journey that requires senior leadership to firstly develop the data strategy and then operationally execute the strategy to realise its intended benefits. There are however several important factors that need to be factored into enable successful big data monetisation.

6.2 Core findings

The research aimed to understand the elements that enable companies within financial services in South Africa to monetise data. There were three research sub-questions:

- Factors that can impact South African financial services companies to monetise their big data assets
- Is big data a core component of the overall corporate strategy at financial services companies?
- What role can leadership play in a financial organisations ambition to monetise its big data assets?

The qualitative research process identified seven key factors which are important for the data monetisation efforts in financial services companies in South Africa.

The seven key factors identified were:

- Skill factors – forty-two identified theme codes
- Data privacy and regulation – twenty-six identified theme codes
- Executive leadership support – forty-seven identified theme codes
- Investment – eleven identified theme codes
- Coherent data and business strategy – thirty-six identified theme codes
- Data drives new products and services – fifty-four identified theme codes
- Data culture – thirty-three identified theme codes

Five of the factors namely data culture, data drives new products and services, investment, coherent data. business strategy and executive leadership support are factors that are internal to the organisation. This advocates that financial

organisations have some form of control over these factors. This suggests that senior leaders have the inherent ability to influence these factors. This creates the opportunity for senior leadership to devise strategic plans to focus on the five identified factors internal to the organisation.

Senior leadership will as part of their overall corporate strategy develop strategic plans to address the identified factors listed below:

- Senior leadership must provide the necessary investment in resources, budget, and time allocation to ensure the organisation has the ability to deliver on big data monetisation (Dubey et al., 2018).
- Senior leadership must create the culture of the organisation to ensure that it can view data as an organisational asset as well as can pursue big data monetisation as a corporate competitive advantage (Gillespie & Reader, 2017).
- Senior leadership is required to create a data strategy that is directly aligned to the corporate strategy to ensure a coherent data and business strategy (Parvinen et al., 2020).
- Big data can create innovative new data products and services however it requires a guiding strategic vision from senior leadership to extract the intended value (Shaw, 2016)
- There needs to be clear and unambiguous support from executive leadership to ensure value is obtained from the firm's big data strategic plans (Oberer & Erkollar, 2018).

Two of the seven identified factors namely skill factors and data privacy and regulation are two factors that are external to most financial services

organisations in South Africa. This scenario, therefore, requires a different tactical response from senior leadership to address these key factors impacting big data monetisation:

- There is a global shortage of adequately qualified personnel with big data skillsets therefore there is a requirement from senior leadership to provide the necessary resources to recruit and then keep employed these skilled individuals (Ramachandran & Watson, 2021).
- Data privacy and regulation laws will impact most businesses ability to monetise big data due to the data containing personal information of the general public (Burger-Smidt, 2021). Senior leadership will therefore be required to develop a big data strategy that complies with the various data privacy and regulations laws in South Africa.

6.3 Conclusion for research question one

Research question one identified four factors which were factors that would impact the ability of financial services companies with their big data monetisation plans. The four factors would require a strategic response from senior leadership to effectively respond to these factors. The reaction or the approach to these factors will determine the businesses capacity to effectively monetise its big data assets.

The organisation would be required to recruit and retain skilled staff who will assist the organisation in its data monetisation plans. Leadership would need to

align their strategic data plans with the data recruitment initiatives. As suggested by Akter et al. (2016) data scientists and related skills are in demand therefore companies would need to prioritise the recruitment of these skills. The researcher suggests that financial services companies follow this development to ensure they have the skills to enable their data monetisation plans.

There will need to be a structured plan by senior leadership to address the impact of newly introduced data privacy laws such as POPIA. Parvinen et al. (2020) argue that data privacy laws will create additional obstacles for businesses trying to monetise their big data. The impact of data privacy laws and regulations needs to be strategically analysed by senior leadership to understand and then respond to the influence of data privacy laws and regulations.

Senior leadership will be required to take the lead and be the corporate model for the organisation to enable its data monetisation plans. Cortellazzo et al. (2019) argue that senior leadership will need to create a guiding partnership that drives the organisation in the direction of big data monetisation.

Organisations will be required to provide investment to assist with their data monetisation plans. After the data strategy has been developed, senior leadership will be required to invest their time and allocate sufficient budget to data initiatives to create a successful data program (Singh and El-Kasser, 2018). Without the investments made by the organisation to monetise big data, the big data strategy will invariably fail (Ghasemaghahi & Calic, 2019).

6.4 Conclusion for research question two

Research question two identified one theme aligned to big data being a core element of the overall corporate strategy. Senior leadership would however need to acknowledge the alignment between the two strategies. This would occur when big data has a position at the executive and board levels of the organisation. This corporate structure allows data to have a qualified opinion at the most senior levels of the organisation where the corporate strategy is planned.

The data strategy should not function as a separate strategy without alignment to the overall corporate objectives (Corte-Real et al., 2019). The evidence suggests that while the corporate strategy is developed, the data strategy should also be planned. This would ensure that there is obvious alignment between the corporate strategy and the requirements from big data.

6.5 Conclusion for research question three

Research question three identified two factors aligned to the role that leadership has in an organisation's ability to monetise its big data assets. These two factors are crucial levers that senior leadership can manage to create new revenue from data assets. These two levers can be directly linked to the influence that senior leadership can have on their respective organisations.

Senior leadership will be required to create and then embed the culture that will drive the behaviour of the organisation to create innovative new data products and services. Corte-Real et al. (2019) argue that senior leadership must establish

and advance the business culture to create innovative concepts to monetise big data. The appropriate data culture constructed by executive management will create the expected value from data initiatives. Senior leadership will be required to be sincere in the ambition to monetise big data, as employees will be required to believe that leadership are effectively leading the data culture in their behaviours. In summary employee's junior to executive management will follow their executives only if these executives lead the data plans.

6.6 Research limitations

Below are the limitations associated with the research on monetising big data in South African financial services:

- A more comprehensive qualitative interview process with additional interviewees can be undertaken to get a more complete assessment of the research.
- A mixed-method approach including a quantitative research assessment would also provide a broader perspective on the topic. This will also enable the research to gather more detailed information from a wider range of research subjects.

6.7 Recommendations for future research

Businesses and industries are rapidly changing, and the precise insights from big data will drive new revenue opportunities provided they are aligned to clients' requirements (Deighton, 2018). According to Syed et al. (2013) when senior leadership understand data, it will transform not only businesses but also create additional value for society in general. The respondents suggested that most financial companies in South Africa are not monetising their big data assets. These key factors were identified in the research findings.

Additional to the factors the researcher developed a conceptual framework for data monetisation as listed in figure one. The framework positioned six key pillars aligned to the business strategy which should be supplemented with the appropriate budget allocation for data initiatives. The researcher suggests that additional research be conducted to test the framework in financial businesses that aspire to monetise their big data assets.

6.8 Research conclusion

The research paper focused on the monetisation of big data in South African financial services companies. After an extensive qualitative research process using semi-structured interviews, the research finding produced seven key factors. The research findings indicated the factors which are essential for financial services companies to monetise their big data assets. These seven factors provided specific indicators which financial companies can recognise as

either crucial enablers or inhibitors to data monetisation strategies. As organisations accelerate towards a digital transformation of their business model, big data is a key enabler to transform business success.

The seven factors, namely skills, data privacy and regulation, data culture, data drives new products and services, investment, coherent business and data strategy and investment all contribute to data monetisation. These factors will require a strategic response from senior leadership to address each specific factor. Although each theme has its influence on an organisation the researcher suggests that senior leadership should take an all-inclusive view of these seven factors. This holistic approach to these factors will create the necessary strategic response from the executive management to address the factors.

Businesses are confronted with a dynamic workplace environment whereby technology is empowered by digital transformation, an ever more demanding client base and the complexities of challenging stakeholders. This creates challenging business conditions for financial companies to remain a going concern. The current dynamic macro landscape coupled with the complex micro workplace settings is a difficult business environment for financial services companies to operate in. There are however vast opportunities in big data that are available to these financial services companies. It is not an easy approach to big data monetisation as many financial companies have previously failed and are currently experiencing difficulties in monetising their big data assets. The research findings recommend that senior leadership concentrate on these seven key factors which can be used to effectively enable financial services companies to monetise their big data assets.

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