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Digital transformation’s role in improving the organisational performance of an Information Technology (IT) company

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University of the Witwatersrand

Faculty of Commerce, Law and Management

Digital transformation's role in improving the organisational performance of an Information Technology (IT) company

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

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ABSTRACT

The potential of digital transformation to improve operational efficiencies and stimulate growth has become a critical path for organisations towards improving their competitive advantage. However, digital transformation requires a significant investment before any real financial benefits can be realised. Due to its focus on optimising business operations, an organisation's operating model must be realigned to enable efficiency improvements of its core business activities through investments in digital technologies.

The benefits of digital transformation are extensively covered in business and academic research, but few mention digital transformation costs. Hence, this study evaluates the positive impact that digital transformation has on an organisation's operational performance and financial performance. In addition to improved operational performance, digital transformation has the potential to bring about higher profitability in the long run by lowering operating costs. However, rising operational and integration costs reduce profits in the short to medium term, taking time before positive net benefits are generated.

This study contributes to the literature relating to the impact that digital transformation has on the performance of an organisation by exploring the influence of digital maturity factors on operational and financial performance. Furthermore, the analysis reveals that digital transformation has a much more immediate impact on operational performance (operating margin growth) than on financial performance (gross margin growth).

Keywords: organisational performance, digital transformation, operational performance, digital maturity, financial performance.

DECLARATION

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

Name: Anati Stofile

Signature: 

Signed at Wits Business School

28 February 2022

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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
CAPEX	Capital Expenditure
GTM	Go-To-Market
GM	Gross Margin
GMG	Gross Margin Growth
IT	Information Technology
IBA	Intelligent Business Applications
ICX	Intelligent Customer Experience
II	Intelligent Infrastructure
ISec	Intelligent Security
IW	Intelligent Workplace
IMF	International Monetary Fund
IoT	Internet of Things
ML	Machine Learning
xGTM	Multiple GTM
OPEX	Operating Expenditure
OM	Operating Margin
OMG	Operating Margin Growth
RPA	Robotic Process Automation

CHAPTER 1. INTRODUCTION

Some of the most common drivers for organisational change are the adoption of innovation, technology advancements, and evolving customer needs – both in the context of an organisation or industry-wide. Technology advancements are often referenced as drivers of what is known as digitalisation, a phenomenon that is disrupting many existing organisations across different industries and forcing them to develop and execute digital transformation plans. Digital transformation, therefore, changes the way organisations think about designing their corporate vision, strategy, organisational structure, customer interactions, processes, products, business models, and culture to adapt to the changing digital world (Vial, 2019). To remain competitive in this digital world, organisations must accelerate their digital transformation initiatives.

Digital transformation relates to deliberate efforts by organisations to improve business models, operational processes, or customer relationships with digital technologies (Westerman & Bonnet, 2015). While digital technologies (e.g., Cloud Computing, Internet of Things (IoT), Machine Learning (ML), Artificial Intelligence (AI), Big Data Analytics and Robotic Process Automation (RPA)) are changing how societies and industries operate (Vial, 2019), COVID-19 has accelerated the application of these digital technologies.

Digital technologies enable operations and intensify product, service, and business model innovation. While digital transformation helps streamline business operation processes, it also adds value by creating opportunities for business growth and profit improvements (Hanlet et al., 2021). The cost of digital transformation then shifts from the conventional IT infrastructure investment towards integration and management costs resulting from business and organisational transformation. The costs and benefits of digital transformation are therefore significantly different to traditional Information Technology (IT) investments.

The success of a digital transformation process is increased by defining the required steps, organising the steps into phases, establishing a governance

process to manage these phases, and developing metrics to measure the maturity over time. Organisations typically struggle to implement or adapt to change, whether driven by internal or external factors, without following a change management framework. Many change management frameworks exist, but the effectiveness of their execution relies on the organisational culture and adopting a sound digital maturity model to manage the transformation.

The impact of digital transformation is often not well understood and, as a result, discourages some organisations from executing digital transformation strategies. The relationship between digital transformation and an organisation's financial performance remains uncertain (Fernández-Rovira et al., 2021). Therefore, an important link needs to be established between digital transformation and its influence on improving organisational performance.

1.1. PURPOSE OF THE STUDY

According to Morgan (2019), digital transformation involves revenue and shareholders, over-and-above updating technology and processes. He further infers that many organisations hesitate to make significant investments in digital transformation initiatives as it's unclear if the investments will pay off (Morgan, 2019).

The purpose of this study, therefore, is to examine the correlation between digital maturity and organisational performance (i.e. both operational and financial performance) of an IT company. The data gathered from this study was analysed to understand which dimensions and factors were perceived to influence the organisation's performance. The insights enabled the research to identify positive factors concerning the organisation's current state of digital maturity relative to its operational and financial performance across various business units, also known as Go-To-Markets (GTMs).

1.2. CONTEXT OF THE STUDY

Digital transformation is about applying digital technologies to business processes to develop new and improved business processes for tomorrow. It is equally about applying digital technologies, thinking and business models to find ways of taking new products into new business segments. When these are done together, they provide new business models for tomorrow (Anthony et al., 2017). However, digital transformation must also create value and redefine an organisation's business purpose.

Whilst the purpose of an organisation is largely to maximise profits and shareholder value, shareholders can distribute those profits for social causes if they see fit. The purpose of organisations has evolved over the years to include stakeholder value, indicating that economic, ethical, legal, and discretionary factors should also be considered with the main responsibilities of an organisation. As evidence of this, the purpose of organisations now includes stewardship and social capital factors such as trust and goodwill. Digital transformation, therefore, needs to help deliver against this expanded purpose and business outcomes (e.g., customer loyalty, customer experience, customer satisfaction, customer retention etc.) of an organisation to drive profits.

1.3. RESEARCH PROBLEM

In these times of economic and technology disruption, mostly accelerated by COVID-19, organisations have been forced to embrace digitalisation, data and analytics as new operating models are being defined. More and more organisations are leveraging technology to adopt digital transformation and improve every aspect of their businesses. As these organisations begin to implement digital technology solutions that drive digital transformation, leaders of these organisations are required to show the financial impact of these changes to their executive team and shareholders.

Although significant research has been done on the link between digital transformation and organisational performance, the evidence remains more anecdotal than scientific. The success of digital transformation is typically attached to creating a technological platform, developing innovative products, or investing in infrastructure. However, it is somewhat difficult to quantify how digital transformation impacts an organisation's bottom line. While it is important to execute digital transformation projects and initiatives, they may not always guarantee increasing revenues, profitability, market share, efficiency, or competitiveness (Fitzpatrick & Strovink, 2021).

1.4. RESEARCH OBJECTIVES

a) Establish whether there is a link between digital maturity and organisational performance; and
b) Establish the relative impact of each of the factors of digital maturity on organisational performance.

1.5. SIGNIFICANCE OF THE STUDY

Many IT organisations are being disrupted by digital forces and are expected to steer their clients through their own digital transformations. If IT organisations are not well equipped to manage their own digital maturity, they will find it difficult to help their clients.

Although many previous studies have examined the relationship between digital maturity and organisational performance, these studies were focused on organisations operating in developed regions, not emerging regions. The transferability of these studies to an organisation in an emerging region is then questionable. This study focusses on an organisation, specifically an IT organisation, operating in an emerging region (South Africa), making it potentially one of the first of its kind.

This study outlines the prominent digital maturity factors from Armstrong and Lee (2021) in ***Figure 1***, which, if well executed, contribute to the improved organisational performance of an IT organisation.

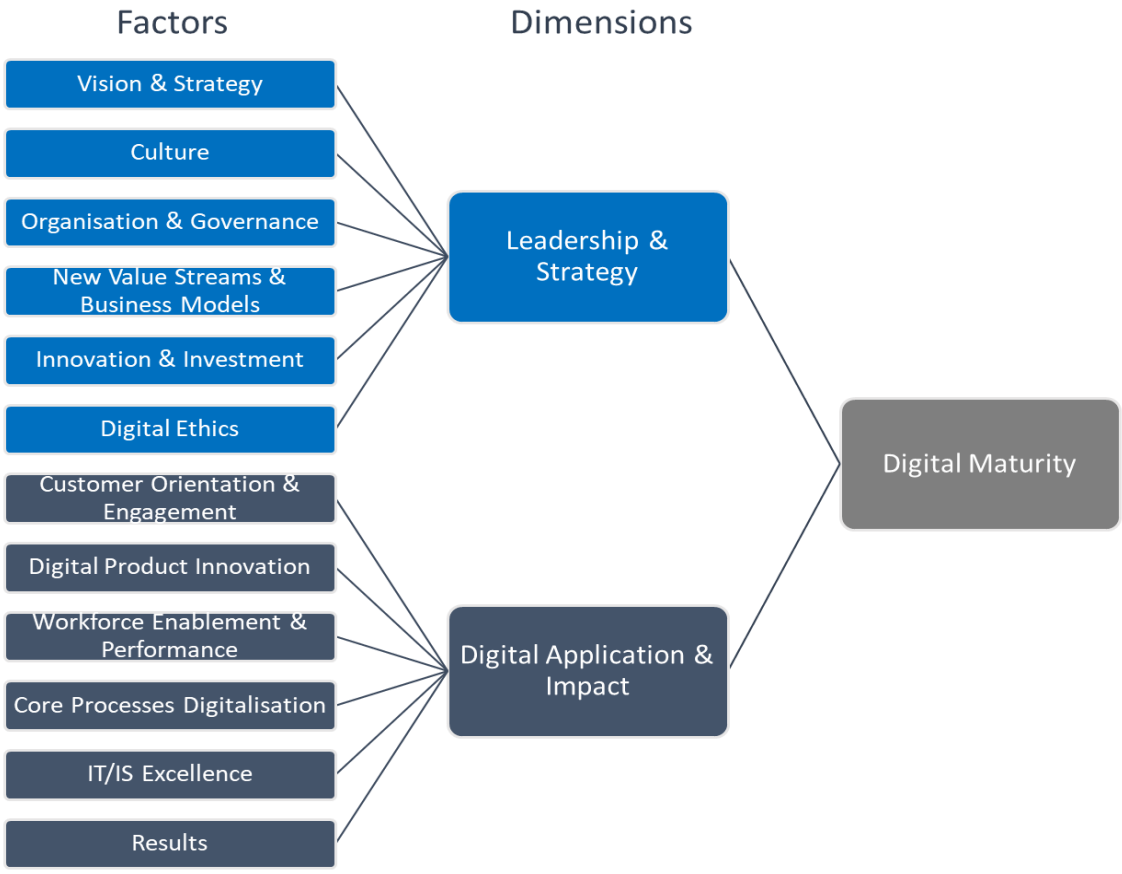


Figure 1: Unified Model for Digital Maturity – Factors & Dimensions

1.6. DELIMITATIONS OF THE STUDY

The focus of this study is less on digital transformation and more on the digital maturity of an organisation within the IT sector, specifically a mature system integrator with vast experience and investments towards the cloud, IoT, AI and other digital technologies. The outcome of this study aims to measure the digital maturity of an IT organisation and how its performance is impacted as it moves from one state of maturity to another.

Numerous factors can measure organisational performance (see ***Figure 2***). Although this list is not exhaustive, this study focuses primarily on two performance measures: (1) Profitability and (2) Growth.

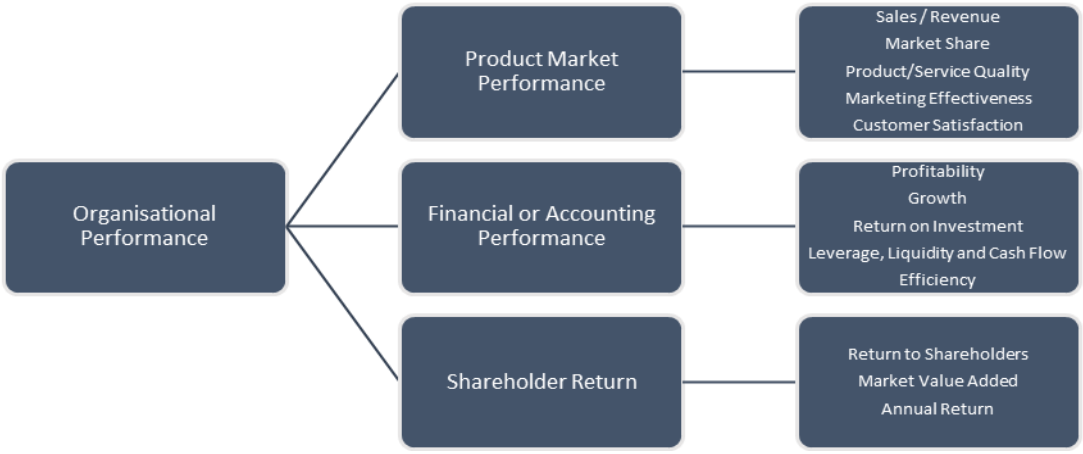


Figure 2: Organisational Performance Measures (selection from exhaustive measures)

A study by Valoir (2021) surveyed members of digital transformation teams at more than 1400 companies worldwide across key operational areas. This study concluded that digital transformation drives revenue and margin growth by improving efficiency and delivering better customer and employee experiences. He states, “We found a correlation between digital transformation levels and margin growth, with companies at the high end of the scale being able to grow margins by almost 10 percent.” (Valoir, 2021).

1.7. DEFINITION OF TERMS

Digitisation: “Taking analogue information and encoding it into zeroes and ones so that computers can store, process, and transmit such information” (Bloomberg, 2018).

Digitalisation: “The use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business” (Bloomberg, 2018).

Digital Transformation: “The process of using digital technologies to create new — or modify existing — business processes, culture, and customer experiences to meet changing business and market requirements” (Salesforce, 2020).

Digital Maturity: “A measure of an organisation’s ability to create value through digital, is a key predictor of success for companies launching a digital transformation” (BCG, 2020).

Cloud: “The delivery of on-demand computing services - from applications to storage and processing power - typically over the internet and on a pay-as-you-go basis” (Ranger, 2018).

IoT: “The Internet of Things (IoT) describes the network of physical objects – “things” – that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet” (Oracle, 2022)

AI: “Artificial Intelligence (AI) is the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions” (Frankenfield, 2021).

Organisational Performance: “Encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product-market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value-added, etc.)” (Richard, Devinney, Yip, & Johnson, 2009).

Absolute change: “The simple difference in the indicator over two periods in time (i.e., the value of the indicator in period 2 minus that in period 1)” (Ministry of Manpower, 2021).

Relative change: “Expresses the absolute change as a percentage of the value of the indicator in the earlier period (i.e., absolute change as a percentage of the value of the indicator in period 1)” (Ministry of Manpower, 2021).

1.8. ASSUMPTIONS

The assumptions for this study were as follows:

- A well-developed collection of digital competencies steers an organisation to higher levels of digital maturity (Rossmann, 2018).
- Maturity models are used in organisations to assess the current situation, develop actions for improvement, and a prioritisation plan for execution (Remane, Hanelt, Wiesboeck, & Kolbe, 2017).
- One of an organisation's key influencing factors in achieving a higher level of performance is the evaluation of the maturity of its capabilities (Pedrini & Frederico, 2018).
- There is an objective truth for each survey question for a particular GTM unit. The respondents answer the questions per that objective truth.
- The answers to the survey questions represent an objective truth, and the objective truth is presumably different between the GTMs.

CHAPTER 2. LITERATURE REVIEW

2.1. INTRODUCTION

The world today has evolved through several Industrial Revolutions. The First was defined by the use of water and steam to power machines and buildings, the Second was defined by the use of electrical power to create mass production and the Third (also referred to as the Digital Revolution) was defined by the use of personal computers, internet and automation in production and operations. Today, the Fourth refers to the technological transformation society is undergoing in the 21st Century (Ross & Maynard, 2021).

The terms ‘digitalisation’, ‘digitisation’ and ‘digital transformation’ are often used interchangeably (Hossnofsky & Junge, 2019). The distinction between these terms is often subjective and debatable, with no commonly accepted definition. There are, however, three studies amongst others which provide a useful distinction between the terms. The first study by Rachinger et al. (2018) distinguishes digitisation as the process of changing from analogue to digital form; digitalisation as the use of digital technologies to improve the performance of a business, and digital transformation as the adaptation to the requirements of the digital economy (Rachinger et al., 2018). The second study by Verhoef et al. (2021) describes digital transformation as three stages: digitisation as the first stage involving the automation of routine activities or conversion of analogue information into digital format, digitalisation as the second stage involving the use of robots in production, the introduction of digital distribution and communication channels, and digital transformation as the third stage which consists of the introduction of new business models, such as the delivery of a ‘product-as-service’, digital platforms etc. (Verhoef, et al., 2021). The third study by Savic (2020) views digitisation, digitalisation and digital transformation through five facets (see ***Figure 3***) to shed some light on differences between these three terms (Savić, 2020).

	DIGITIZATION	DIGITILIZATION	DIGITAL TRANSFORMATION
Focus	Data conversion	Information processing	Knowledge leveraging
Goal	Change analog to digital format	Automate existing business operations and processes	Change company's culture, the way it works and thinks
Activity	Convert paper documents, photos, microfilms, LPs, films, and VHS tapes to digital format	Creation of completely digital work processes	Creation of a new digital company or transformation to a digital one
Tools	Computers and conversion/encoding equipment	IT systems and computer applications	Matrix of new (currently disruptive) digital technologies
Challenge	Volume *Material*	Price *Financial*	Resistance to change *Human resource*
Example	Scanning paper-based registration forms	Completely electronic registration process	Everything electronic, from registration to content delivery
			

Figure 3: Facets of Digitisation, Digitalisation and Digital Transformation

The word 'transformation' communicates a critical shift affecting strategy, structure, and distribution of power (Matt et al., 2015) and the word 'maturity' communicates a state of being complete, perfect, or ready (Lahrmann, 2011). Therefore, 'digital maturity' reflects the position of an organisation's ability to execute digital transformation initiatives (Chanias & Hess, 2016). Digital maturity is about continuously adapting an organisation by applying innovative technologies, depending on the trends, to compete effectively in an increasingly digital environment in order to remain competitive in the market (Kane et al., 2017). A study by Watanabe et al. (2018) affirms that the rapid development and acceleration of innovation and digitalisation has already led to the emergence of a digital economy where new business models redefine and transform traditional concepts of economic growth (Watanabe et al., 2018).

Digital transformation is frequently linked to financial and economic growth, mainly due to the influence that emerging digital technologies have on both social practices (through integrating technology platforms such as eCommerce and social media into our daily lives) and labour practices (by using technology to enable optimised business operations and cost efficiencies through remote services). In a study by Kasperovica and Lace (2021), the ability of four non-financial factors to promote digital business value were analysed (Kasperovica et

al., 2022). The first factor, digital networking, was found to have the ability to create a business ecosystem, consisting of individuals, organisations and state entities (Seelos & Kair, 2007) through the establishment of business communication with customers, suppliers and partners expanding opportunities to facilitate product ordering options (Raymond et al., 2016). The second factor, digital data, presents an opportunity to integrate analytical tools with organisation business models to facilitate and improve decision making, helping create a profitable business (Köhler, 2008), shifting the focus from process definition to data management (Schallmo et al., 2017) and making businesses more efficient thus radically reducing costs (Dehning et al., 2003). The third factor, automation was described as the integration of AI technologies with business processes that allows the creation of self-organising systems, reduces errors, increases speed and decreases maintenance costs (Schallmo et al., 2017). The fourth factor, disruptive innovation, is not aimed at developing better products, but rather launching new products that currently are not available in the market (Christensen & Raynor, 2003) which allows selling them at a higher price, simultaneously attracting more customers, and disruptive innovation (Joseph, 2018).

The success of digital transformation is largely determined by the role of leaders who have a vision to direct the organisation (Prakasa et al., 2021) and culture is an essential element in driving a successful business transformation (Wokurka et al., 2017). Various areas of an organisation can be impacted by the adoption of digital transformation including (a) business models, (b) operational processes, (c) products and services, and (d) customer engagement (Fitzgerald et al., 2014). The business model of an organisation can be changed by digital transformation through the re-design of its cost and revenue structure (Westerman & Bonnet, 2015). Operational processes are changed by leveraging technology like cloud computing, artificial intelligence, machine learning, and IoT technologies to enhance the business operation and customers' experience (Ahmed et al., 2020). Products and services are affected by digital transformation by embedding innovation and improving their features (Matt et al., 2015). Customer engagement is impacted by digital transformation by improving customer interactions through channels such as social media and self-service portals (Westerman & Bonnet,

2015). Positive customer engagement includes customer actions which have favourable financial and nonfinancial consequences for a firm (Kumar & Pansari, 2016).

Today, most people, businesses and government entities have either already become part of the digital era or are planning to (Kodama, 2018). The development and sustainability of companies and industries have been accelerated by digitalisation making them connected, fast, and controllable, while also providing easy access to data and necessary information (Shim et al., 2018). A correlation analysis was done by Eremina et al. (2019) examining the digital maturity of 29 organisations in Latvia (Europe) and their financial indicators. This study found the following (Eremina et al., 2019):

1. There is a positive correlation with sales growth as digital maturity provides new distribution channels for sales, which in turn leads to positive changes in revenue.
2. There is a positive correlation with return on equity and gross profit over assets as digital maturity allows a company to at least partially increase the profitability of its invested capital.
3. There is a negative correlation with shareholders' return, since digital maturity is not yet realised completely in companies' net earnings/dividends and, therefore, not realised in their total return.
4. The correlation between gross profit margin, operating profit margin, and net profit margin is insignificant.
5. These results are supported by the fact that in the initial stages of digital maturity development, more investments are required.

This study by Eremina et al. (2019) used a "text query" search for keywords and phrases in these company's annual reports to determine their digital maturity and subsequent correlation with their financial indicators. These "text queries" were defined from a collection of literature analysis sources from articles and consolidated into major groups of digital maturity elements as depicted in Figure 4 below. These results, however, cannot be considered conclusive as the elements are not based on application or any further validation but rather text query of phrases in company reports.

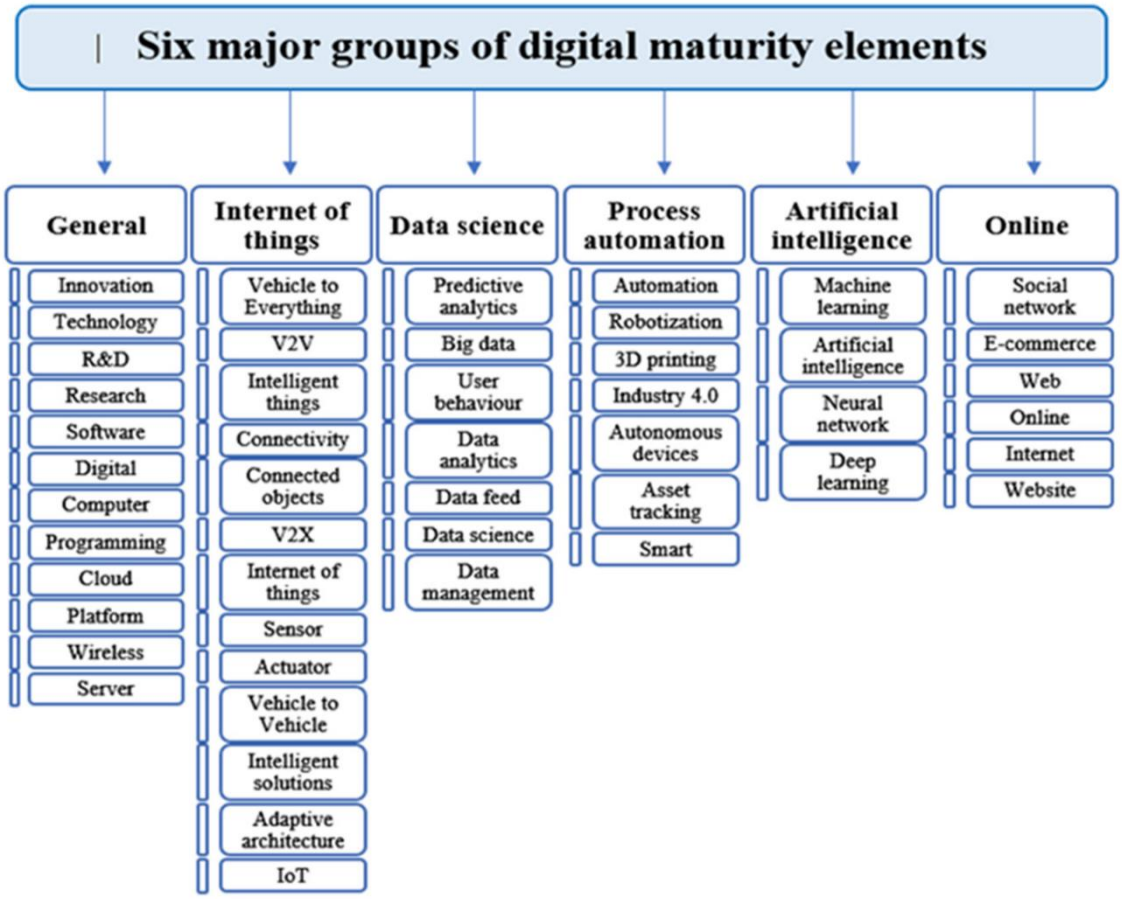


Figure 4: The Six Major Groups of Digital Maturity Elements

Since digital transformation affects all areas of an organisation, defining an optimal digital transformation strategy is a complex task for many organisations. This is largely because the infrastructure of organisations has become digital with rapid interconnectedness between products, processes and services (Bharadwaj et al., 2013). Digital technologies have transformed traditional functional business strategies, processes, capabilities, products and services to those which enable work to be carried out across borders, time zones and function (Banker et al., 2006). This has called for executives to redefine organisational strategies to those which integrate and align IT and digital business strategy to advance their digital transformation. Digital business strategies rely on data and information exchanges via digital platforms to enable the interconnectedness of multifunctional strategies and processes (Rai et al., 2012). To facilitate this interconnectedness, digital maturity models can help by mapping a framework and execution roadmap as digital maturity is an important process before arriving at digital transformation (Schwer et al., 2018).

Schwer et al. (2018) undertook a study to formulate which digital maturity factors influence an organisation's architecture and measure their impact. This study gathered literature from 305 different articles, which were narrowed down to 15 maturity models comprising 147 maturity factors through a rigorous screening exercise. The findings of this study observed that the 15 maturity models examined were not suitable for the overall evaluation of an organisation's digital maturity (Schwer et al., 2018). Teichert (2019) studied 22 digital maturity models to understand the developments in digital maturity models better. Most of them offered an incomplete definition, description, and representation of digital maturity. This study focused on the role of organisational culture in the digital transformation process, concluding that those cultural attributes that enhance digital transformation are not well represented in digital maturity models (Teichert, 2019).

In a two-year market analysis covering more than 400 large firms, Capgemini Consulting defined digital maturity as a mixture of two interrelated attributes, 'transformation management intensity' and 'digital intensity' (Westerman et al., 2012). 'Digital intensity' is described as an investment made in technology to enable digital initiatives to change how an organisation operates (e.g. its business models, internal operations, and customer engagements). 'Transformation management intensity' is described as driving digital transformation by developing the required leadership capabilities in the organisation. This includes having the vision to form a future for the organisation, governance to steer the organisation according to policies and rules, and convergence of IT & business to implement technology-based change. The Capgemini Consulting market study concluded that stronger digital intensity enables organisations to derive more revenue from their physical assets, while stronger transformation management intensity enables organisations to be more profitable (Westerman et al., 2012).

Finally, Armstrong and Lee (2021) consolidated numerous models' main factors and indicators into a Unified Model for Digital Maturity. This resulted from examining over 225 sub-factors in various digital maturity models, and although finding enormous overlap, there were also unique factors. The Unified Model of Digital Maturity entails twelve factors, which are incorporated in highly digitally

transformed companies. These are (1) Vision & Strategy, (2) Culture & Engagement, (3) Governance & Organisation, (4) Investment & Innovation, (5) New Value Streams & Business Models, (6) Digital Ethics, (7) Customer Orientation & Engagement, (8) Digital Product Innovation, (9) Workforce Enablement & Performance, (10) Core Processes Digitalisation, (11) IT/IS Excellence, and (12) Results. These twelve factors were further broken down into 56 indicators or sub-factors – see ***Table 22*** in Annexure E.

Armstrong and Lee (2021) argued that the real insight and definition of digital maturity comes through looking at sub-factors or indicators of each maturity factor. Armstrong and Lee's model was preferred for this study as it was perceived to be the most logical and inclusive collation of all existing models. Additionally, it is the most practical and implementable as it has a ready-to-use survey instrument available, which can be administered to collect data.

An important observation was made while reviewing the available literature related to this study. It was found that insufficient peer reviewed journals were available which investigate the relationship between digital maturity factors on the growth of operating and gross margins of organisations. Instead, there were far more textbooks and contemporary sources (websites etc.) that were available, particularly on the adoption of digital transformation as a strategic priority towards the establishment of digital organisations.

2.2. OBJECTIVE OF STUDY

This study also investigates the relationship between digital maturity and organisational performance. Organisational performance is understood to be the measure used to indicate the results of an organisation's use of its inputs against its goals. Investors, analysts, researchers all rely on organisational performance variables to determine the survival and success of businesses. Richard et al. (2009) identified three specific organisational performance variables: (a) product-market performance; (b) financial performance) and (c) shareholder return (Richard et al., 2009).

This study does not focus on the exhaustive organisational performance variables. Product market performance has not been considered because the different GTMs specifically address different products and segments so cross-comparison would be difficult. Similarly, shareholder returns have not been considered because the organisation does not offer shares in any GTMs; therefore, total shareholder return cannot be calculated.

Measuring organisational performance promotes evaluating how a firm performs over time compared to its competitors and other market forces in the environment which it operates in. The statistical measures for organisational performance used for correlation in this study were carefully considered, taking the following considerations into account:

1. The measures must be applied or measured consistently, i.e., should be measured the same way from period to period; and
2. The measures must avoid uncontrollable factors (e.g., economy, politics etc.), which are exogenous to digital maturity.

Although revenue and profits are standard measures of organisational performance, analysing their absolute performance was not preferred because it would be difficult to compare these measures between the different GTMs due to their different sizes. Other organisational performance measures such as market share also were not preferred because of market-related factors which influence different levels of market share of organisations or different units. These factors ultimately make comparing absolute organisational performance measures between organisations or GTMs meaningless.

The preferred analysis method was to compare relative changes in operating and gross margins, making comparisons between the GTMs meaningful.

2.3. BACKGROUND DISCUSSION

Before defining and executing a digital transformation plan, an organisation’s current digital capabilities of the organisation need to be well understood. The

formulation of an organisation's digital transformation strategy typically involves several stakeholders across business functions such as marketing, IT, product development, strategy, HR etc. This is to ensure alignment of digital transformation strategy with the business strategy and consensus on a roadmap of prioritised digital transformation activities. A practical and agile change management process would be needed to govern roadmap activities across people, processes, and systems. These activities would be further measured on a digital maturity model to determine how well the organisation is executing against its roadmap (Berghaus & Back, 2016). These activities align to three pillars of a digital transformation process: 1) evaluating the digital transformation, 2) defining the strategy & setting strategic goals, and 3) implementing the digital transformation (Zaoui & Souissi, 2020).

Capgemini Consulting's survey study examined the links between digital maturity and financial performance, where questionnaires were gathered from 469 senior executives across 391 large companies (Westerman et al., 2012). Financial performance for these companies was obtained and analysed to establish the link between digital maturity and financial performance. The statistical analyses showed that Digital Leaders outperformed Digital Laggards by 13% in revenue, 50% in profits and 19% in market value (Westerman et al., 2012).

The International Monetary Fund (IMF) also presented data that suggests a relationship between digital transformation and increased margin earnings. The study presented that mark-ups have increased about twice as much in digitally intensive industries than in the average industry since 2000, i.e. the mark-up of organisations operating in digitally intensive industries has increased by 12% while the mark-up of organisations operating in non-digitally intensive industries has increased by 6% (International Monetary Fund, 2019).

In a Deloitte Insights publication, Gurumurthy et al. (2020) conducted a survey that asked executives in the United States to assess their organisations' approach towards digital transformation. This survey suggested that digital transformation delivers many benefits, including better customer satisfaction, product quality, increased revenue, and greater efficiency. Further insights show that "45% of high-maturity companies achieved net revenue growth above

industry averages, compared to 15% of companies not rated as highly mature" (Gurumurthy et al., 2020). This study concluded that the effect of digital maturity on the financial performance of organisations could be attributed to enabling efficiencies, revenue growth, product/service quality, customer satisfaction and a greater focus on innovation. The survey data affirmed that organisations that achieve a higher level of digital maturity were far more likely to outperform the industry average on key financial metrics than organisations with a lower level of digital maturity (Gurumurthy et al., 2020).

Although these studies have examined and demonstrated a positive relationship between digital maturity and organisational performance, this evidence is not compelling to make a conclusive assertion.

2.4. FIRST RESEARCH QUESTION

Is there a link between digital maturity and organisational performance?

2.4.1 PROPOSITION 1

There is a positive correlation between digital maturity and organisational performance.

2.5. SECOND RESEARCH QUESTION

Is there a relative impact of each of the factors of digital maturity on organisational performance?

2.5.1 PROPOSITION 2

There is a varying impact of each of the digital maturity factors on organisational performance.

The organisational performance measures assessed in this study are operating profit and gross profit. While absolute values are critical to an organisation's existence, growth is crucial to its long-term survival (Maverick, 2020). The analysis in this study combines both absolute and relative values. While the absolute values were measured as part of the organisation's monthly financial reporting, these were collected over the past 21 months to determine their growth rate over the same period.

Measuring growth rate can boost an organisation's business performance and profitability by helping it explore growth strategies that suit its circumstances.. A study by Kasperovica et al. (2022) aiming to determine the effect digital maturity has on an organisation's economic indicators of balanced growth studied 34 organisations from different industries and found that:

a. Profit growth reported by 5 companies, or 15% of the surveyed, is attributable to the increase of their revenue. Their costs grew faster than their revenue, therefore, it is the revenue growth that ensured profit increase.
b. 9 companies, or 26%, demonstrate the balanced profit increase, the growth of their profit surpasses their revenue increase and cost reduction
c. 4 companies, or 12%, witnessed a drop in their revenue, however, this profit growth was sustained at the expense of radical cost minimisation.

2.6. CONCLUSION OF LITERATURE REVIEW

The execution of a digital transformation strategy calls for organisations to be deliberate and well organised while regularly measuring the progress of their digital maturity throughout the transformation process. Organisations should not take a generic approach but rather tailor their digital transformation strategy according to their organisation's needs, exercising flexibility that enables agility (Zaoui & Souissi, 2020).

The important requirements for a successful digital transformation are organisation-wide commitment and like-mindedness among employees. While this may be the case, it is also suggested that a successful digital transformation

requires more strategic collaboration between IT and business (Berghaus & Back, 2016).

The Teichert (2019) study suggests that organisational culture elements like ‘customer-centricity’, ‘collaboration’, ‘organisational learning’, and ‘agility & flexibility’ are included in all digital maturity models. However, the organisational culture elements which improve digital transformation are limited in digital maturity models (Teichert, 2019). A further study by Schwer et al. (2018) revealed that many maturity models were not appropriate to measure an organisation’s digital maturity. Literature has not entirely found a standard set of factors that constitute digital maturity (Schwer et al., 2018). Almost every published digital maturity model has its own framework for measuring digital maturity. A Unified Model for Digital Maturity has therefore been proposed by Armstrong and Lee (2021), which “represents the best currently available composite model for digital maturity” (Armstrong & Lee, 2021).

2.7. ANALYTICAL FRAMEWORK

This section outlines the analytical framework (theoretical and conceptual) that was designed to tackle the research questions of this study.

2.7.1 THEORETICAL FRAMEWORK

The theoretical framework (in ***Figure 5*** on the next page) defines the key concepts in this study and proposes the relationship between them based on the literature review (Pacheco-Vega, 2018).

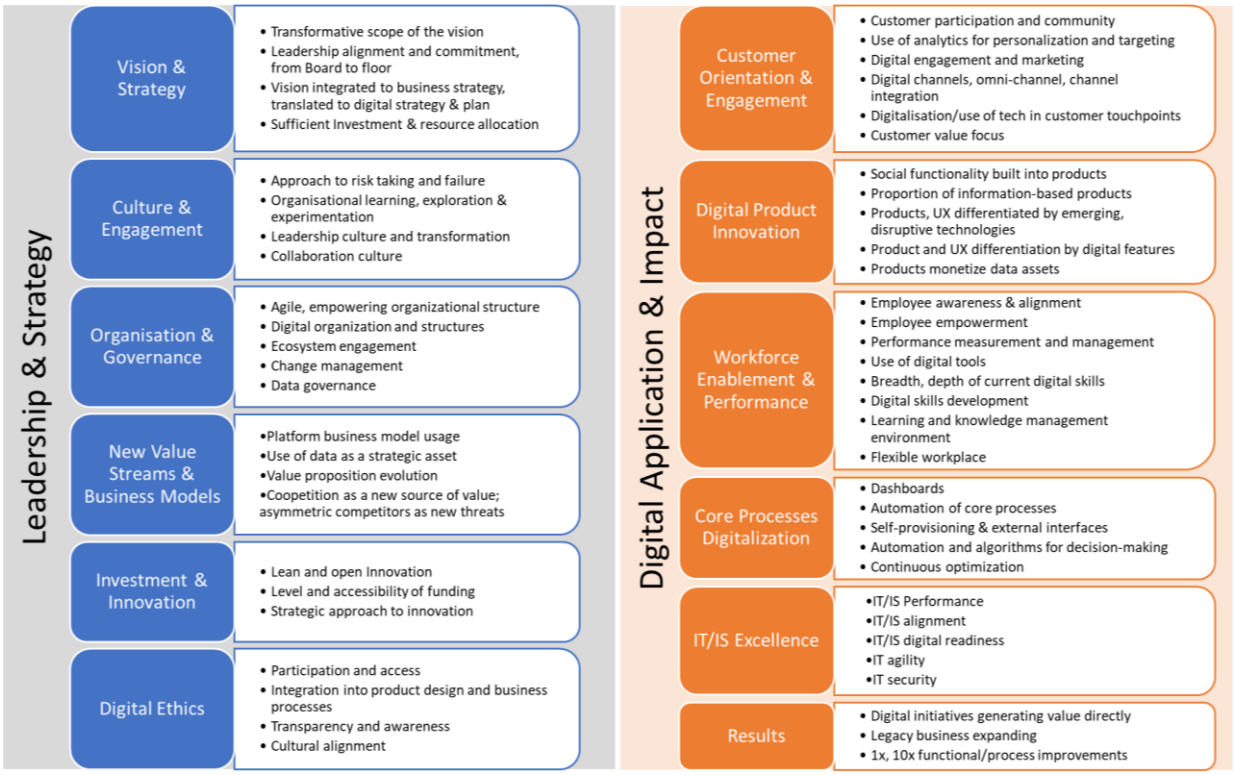


Figure 5: Theoretical Framework

2.7.2 CONCEPTUAL FRAMEWORK

The conceptual framework (in ***Figure 6*** on the next page) illustrates various concepts which describe what needs to be known to understand digital maturity by defining the relevant variables and mapping out how they might relate to each other (Pacheco-Vega, 2018).

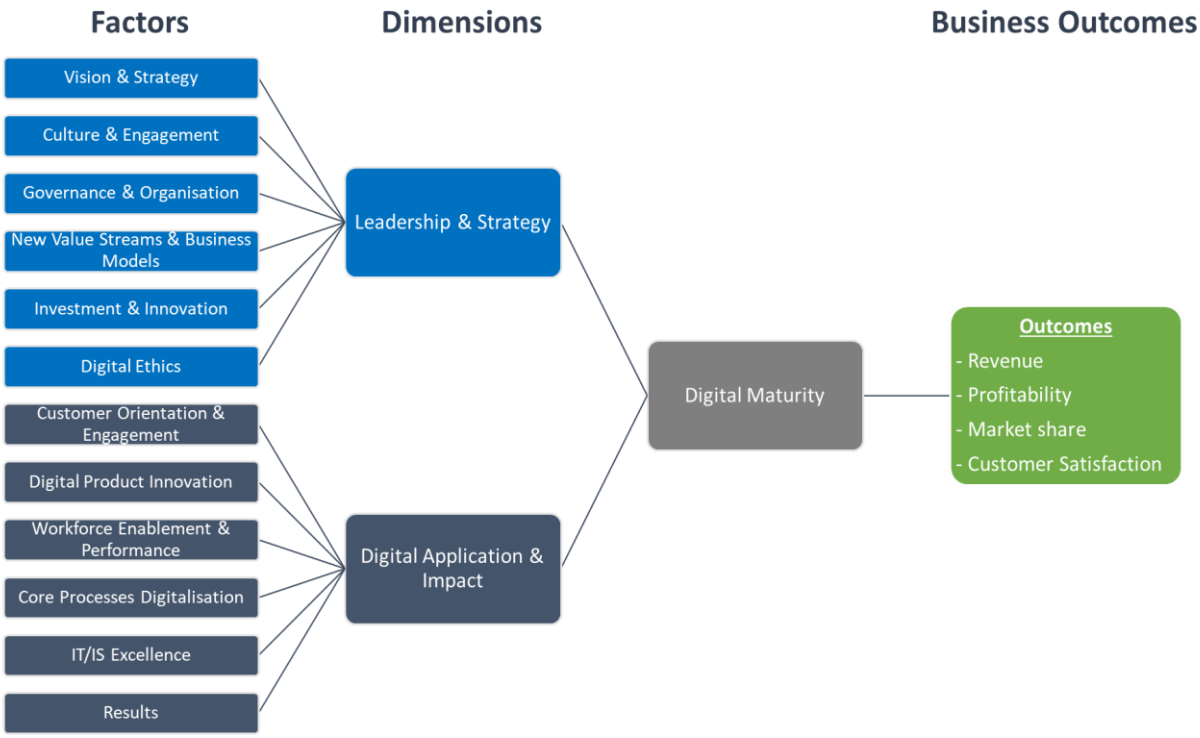


Figure 6: Conceptual Framework

CHAPTER 3. RESEARCH METHODOLOGY

3.1 RESEARCH APPROACH

A quantitative research approach was taken to quantify the collection and analysis of data using a survey questionnaire. This data was collected to form a proposition on how the organisation perceives its digital maturity. The intention was to draw out the perceived strengths and weaknesses of the organisation's digital maturity against two dimensions and twelve factors – see ***Figure 1***.

This quantitative data was analysed with the selected organisational performance measures to establish if a relationship exists between organisational performance and digital maturity. A historic set of monthly reported financial performance data (i.e., operating and gross margins) was extracted over 21 months to establish the average growth rate from 1 April 2020 to 31 December 2021. The average operating and gross margin growth rates represented the change in the organisation's profits accrued over the 21 months.

3.2 RESEARCH DESIGN

The quantitative research method was preferred as the study involved measuring variables and finding correlations. Although this made this study original, it relied on survey participants being available and accessible.

This quantitative research study gathered the most appropriate data to provide a proposition on which digital maturity factors influence an organisation's performance. The relationship between organisational performance and digital maturity was established by determining the correlation of digital maturity with the organisation's operating and gross margin growth rates. Growth essentially illustrates the organisation's expansion, increasing its market share and ultimately resulting in greater profitability (Maverick, 2020). This study measured the organisation's operating and gross margin growth rate over 21 months by firstly measuring its change from one period to another. For example, if the

organisation realised a 10% gross margin last year and 20% this year, the growth rate will be 100%.

Although the growth rates were measured over 21 months and the quantitative study was done at a point in time, the average growth rate was measured from when the organisation started its digital transformation initiatives on 1 April 2020. The organisation has five GTMs, which had their own digital maturity score and growth rate calculated for this study. These GTMs, considered to be the unit of analysis in this study, are:

i. Intelligent Business Applications (IBA)
ii. Intelligent Customer Experience (ICX)
iii. Intelligent Infrastructure (II)
iv. Intelligent Security (ISec)
v. Intelligent Workplace (IW)
vi. Multiple GTM (xGTM)

The II GTM provides solutions which form the foundation of the modern enterprise network and enables greater organisational agility and flexibility. The IW GTM provides solutions which improve productivity through helping connect people, processes, platforms, and products. The IBA GTM accelerates operational efficiency and enables businesses to innovate for the future while the ICX GTM strives to offer meaningful digital client experiences for businesses and their customers. The ISec GTM helps businesses achieve true organisational security and resilience. xGTM is a cross-functional team operating within the organisation, which also had its own digital maturity score but no growth rate as it is not a direct contributor of revenue to the organisation.

3.3 DATA COLLECTION METHODS

Data was collected through an electronic distribution of a survey. This was used to gather feedback and then analysed to obtain quantitative results. Furthermore, a correlation was done to study the relationship between organisational

performance and digital maturity. This correlation was done to show how digital maturity affected organisational performance and vice versa. The organisational performance data was extracted from existing organisational financial reports.

It was anticipated that the survey results would provide supportive evidence to better understand the digital maturity levers which allow digital maturity to move forward.

3.4 POPULATION AND SAMPLE

3.4.1 POPULATION

The population of this study was taken from employees of the IT organisation and could be of any race and gender. Approximately 450 South African employees were targeted from Western Cape, Eastern Cape, Kwa-Zulu Natal, and Gauteng. This sample size was acceptable and represented a mixed population.

The survey was sent to selected employees representing different levels within the organisation's hierarchy to obtain their feedback based on testing and verifying the current maturity level of digital maturity within the organisation.

3.4.2 SAMPLE AND SAMPLING METHOD

The sampling method was consecutive sampling. This sampling method was preferred as it controls sampling bias by including all accessible study participants that are available as part of the sample. The selected target audience included employees at different levels within the organisation, across provinces and job roles.

3.4.2.1 INCLUSION CRITERIA

i. Executive (e.g., C-suite Executive, Managing Director etc.),
ii. Top-level Manager (e.g., GTM Head, Principal Head etc.),
iii. Mid-level Manager (e.g., Team Leader, Practice Manager, Sales Manager, Project Manager etc.),
iv. Intermediate (e.g., Data/Business Analyst, Project Coordinator, Sales Specialist, HR Consultant etc.), and
v. Interns / Graduates.

3.4.2.2 EXCLUSION CRITERIA

i. Contractors / Secretaries / Personal Assistants, and
ii. New employees (less than 12 months employed).

All employees meeting the inclusion criteria within the organisation were selected to participate in the survey, and the sample size was distributed to employees across Kwa-Zulu Natal, Gauteng, Western Cape, and Eastern Cape. This target sample size is indicated in ***Table 1***.

Employees	Gauteng	Eastern Cape	KwaZulu Natal	Western Cape	Total
Executive	3	2	2	3	**10**
Top-level Manager	15	10	10	15	**50**
Mid-level Manager	20	15	15	20	**70**
Intermediate	30	25	25	30	**110**
Intern / Graduate	40	35	35	40	**150**
Other	20	10	10	20	**60**
Total	**128**	**97**	**97**	**128**	**450**

Table 1: Target Sample Size

This target sample size was distributed across the organisation's GTMs, as per ***Table 2*** on the next page, to attain a digital maturity score for each.

GTMs	Participants
Intelligent Business Applications	75
Intelligent Customer Experience	75
Intelligent Infrastructure	75
Intelligent Security	75
Intelligent Workplace	75
Multiple GTM	75
Total	**450**

Table 2: Target GTM Distribution

3.5 THE RESEARCH INSTRUMENT

An online survey tool (i.e. Qualtrics) was used to design and administer the survey in ***ANNEXURE C: RESEARCH QUESTIONNAIRE***. This allowed response rates to be tracked accurately and in real-time. The first three questions of the survey were used to profile the survey participants by location, seniority and business function in the organisation, while the rest of the questions had single answer questions. Some questions were developed using Likert scales for statistical purposes and analysis of answers to questions. While the rest of the questions also had single answer questions, they were developed on varying scales. The scoring method was similar, with negative answers scoring the lowest (e.g., 1) and the positive answers scoring highest (e.g., 4) as per ***Table 3*** below.

Likert scale (7-point)	Likert scale (4-point)	Likert scale (3-point)	Key
Completely Disagree	Never	Insignificant	1
Disagree	Occasionally	Significant	2
Somewhat Disagree	Most of the time	Truly Differentiating	3
Neither Agree nor Disagree	Always		4
Somewhat Agree			5
Agree			6
Completely Agree			7

Table 3: Digital Maturity Key

All scores of each question from the survey were captured and calculated according to questions ranked from the highest to lowest scoring to indicate popular and unpopular traits.

3.6 VALIDITY & RELIABILITY

The research quality is typically evaluated by using validity and reliability. Validity refers to the accuracy of a measure, whereas reliability refers to the consistency of a measure (Middleton, 2019).

3.6.1 EXTERNAL VALIDITY

The context of this research was specific to a single IT organisation in South Africa. The population sampling method used to target the organisation's employees was consecutive sampling. Therefore, the ability to apply this research in other areas will be lowered because the context was particular to an IT organisation in South Africa. Additionally, the sampling method was consecutive; therefore, moderate external validity was expected for this research.

3.6.2 INTERNAL VALIDITY

This target sample size was distributed across the organisation's GTMs to achieve statistical validity, i.e., the extent of accuracy and reliability of research study results. The internal validity of the results was measured by the strength of correlation between digital maturity and organisational performance (Kalla, 2010).

3.6.3 RELIABILITY

Reliability refers to the accuracy of a research instrument. In other words, the extent to which a research instrument consistently has the same results if it is used in the same situation on repeated occasions. This study was done for the first time on this sample and did not reach this point of assessment; hence there is room to argue the reliability of this study on this sample.

3.7 PROCEDURE FOR DATA COLLECTION

3.7.1 PILOT STUDY

Survey feasibility was conducted amongst five (5) knowledgeable employees who were asked to volunteer to test the efficiency of the survey to optimise the workflow of the survey if necessary. The outcome of the pilot survey highlighted logistical and/or technical queries which were resolved prior to the execution of the large-scale survey.

3.7.2 SURVEY DISTRIBUTION

An initial introduction email was sent to the target participants by the organisation's Managing Director of South Africa, stating the purpose and importance of completing the survey. This improved the chances of receiving a high response rate from the participants. The introductory survey email contained a brief on the purpose of the survey and its voluntary & confidential nature. Instructions and guidelines on accessing the questionnaire were also provided in detail (see ***Figure 38*** in Annexure A).

3.8 DATA ANALYSIS AND INTERPRETATION

The survey results were analysed to determine (a) the correlation between digital maturity and organisational performance and (b) the relative impact of the factors of digital maturity on organisational performance. The independent variables were the twelve digital maturity factors, and the dependent variables were the measures of organisational performance, namely operating margin growth and gross margin growth.

Descriptive statistics were generated on each of the survey questions, grouped under the relevant factors of digital maturity. These descriptive statistics included the mean scores, standard deviation, and coefficient of variation for each digital

maturity factor. The organisational performance data was tracked over the past 21 months to calculate the relative change during the period. A correlation was then measured between the descriptive statistics from the survey results and the relative changes in organisational performance.

Statistically, the correlation indicated the strength of the statistical relationship between the variables. The range of possible values was from -1.0 to +1.0. Numbers less than zero represent a negative relationship between variables, and numbers greater than zero represent a positive relationship (Custom Insight, 2021).

3.9 LIMITATIONS OF THE STUDY

There are several limitations in this study that could be addressed in future research:

- The implementation of the survey was limited to one organisation and one country.

This limitation raises the risk of bias and group think resulting in similar decision-making towards answering the survey questionnaire which may influence the results of the study towards a particular outcome.

- The sample size was not large enough to be representative of the entire organisation.

A small sample size increases the likelihood of errors skewing the study results, which may end up decreasing the statistical power of the study

- The research method did not provide access to detailed feedback.

A quantitative method was used in pursuit of concrete, statistical relationships, which can lead to broader themes and relationships being overlooked

- The research was timebound to a specific timeframe, and the results were relevant to a particular point in time.

The data was collected while the organisation was going through a series of digital transformation initiatives. Respondents may either receive the questionnaire in an overly positive or negative light which may lead to

inaccuracies in the data generated from an imbalance of emotions and experiences.

3.10 ETHICAL CONSIDERATIONS

This research followed all the ethical standards prescribed by Wits University. All research participants were apprised of the research purpose to ensure awareness and clarity of their involvement. They were given the option to choose whether they wished to participate, and they were informed that their data would only be used for analysis. All participants were protected by any means and could pull out of the research at any point they wished to; this includes the respondents, the researcher, the university, and anyone else involved in this research. The data was collected via an online survey tool and will be securely stored in a SOC 2 accredited data center that adheres to security best practices and will be kept for ten years.

The research received ethics clearance from the Human Research Ethics Committee (non-medical) and did not discriminate against any participant based on their age, gender, or race. This research was also not a threat to the physical environment and was not used to impact the physical environment adversely.

Lastly, this research was conducted based on ethics approval from the board of Wits University, which required all the minimum ethical standards to be met by this research paper.

CHAPTER 4. RESULTS

A total of fifty-six (56) responses were received from the 450 employees selected for the survey sample, resulting in a 12,4% response rate. The response rate for the survey was calculated as the number of completed questionnaires divided by the sample size. There was 100% eligibility as selected employees were verified to be employed at the time of the survey launch, and their email addresses were verified against the organisation's email address list.

Findings by Visser et al. (1996) in the publication, "Mail Surveys for Election Forecasting? An Evaluation of the Colombia Dispatch Poll", showed that surveys with lower response rates (near 20%) yielded more accurate measurements than did surveys with higher response rates (near 60 or 70%), so the opinions provided by the survey participants may be accepted as indicative of current thinking within the organisation (Visser, Krosnick, Marquette, & Curtin, 1996).

Once the participants completed the survey, the data was coded. The survey had a total of 141 questions – of which a total of 87 questions had a 7-point Likert scale, 19 questions had a 4-point Likert scale, and three questions had a 3-point Likert scale. These scales were used to understand the views and opinions of each participant towards the various digital maturity factors. The results in ***Table 4*** suggest that participants' views were largely positive.

Variable	Category	#	%
7-point Likert	Completely Disagree	228	4.68
	Disagree	330	6.77
(*n* = 87)	Somewhat Disagree	370	7.59
	Neither Agree nor Disagree	549	11.27
	Somewhat Agree	1073	22.02
	Agree	1428	29.31
	Completely Agree	894	18.35
		4872	**100**

4-point Likert (***n*** **= 19)**	Never	164	15.41
	Occasionally	319	29.98
	Most of the time	291	27.35
	Always	290	27.26
		1064	**100**
3-point Likert (***n*** **= 3)**	Insignificant	34	20.24
	Significant	97	57.74
	Truly Differentiating	37	22.02
		168	**100**

Table 4: Likert Scales

The data collected from the survey was then entered into an excel spreadsheet for descriptive analysis. The data was cleaned and normalised by removing the null responses to enable correlation calculations as they would have skewed the data and introduced inconsistencies. Some questions, such as those that required a selection of the best answer, were entered into an excel spreadsheet for content analysis.

All the means and standard deviations were measured on a per question basis across all the factors of digital maturity. A high standard deviation would show that the data is less reliable. In contrast, a low standard deviation would show that the data is clustered closely around the mean – therefore, more reliable.

4.1 DEMOGRAPHICS

The survey was completely anonymous, while the participant's locations and roles were obtained to conduct content analysis only. The first few questions of the survey were constructed to gather demographic data of each participant to divide the target sample size into smaller categories based on demographic factors, such as location, role and GTM. This was done to draw conclusions of digital maturity performance across these factors to focus resources and

interventions into defined groups within the sample size. Dividing the sample size into smaller segments allows the organisation to understand the employee segments better and use targeted approaches to improve their digital maturity according to their specific needs.

The most important demographic was identifying which GTM the participants work in to draw correlations between the digital maturity scores and the performance of each GTM in the organisation. Some of these GTMs are existing areas of strength where the organisation is already a leader and well-positioned for market share growth. Some are emerging areas where the organisation can extend its addressable market. These technology domains are increasingly converging and becoming more interconnected. The organisation offers a compelling end-to-end value proposition by harnessing them together collectively.

While 29% of participants worked in the II GTM, a high percentage (30%) of participants worked in multiple GTMs – see ***Figure 7***. These include cross-functional and multi-disciplinary roles such as Strategy Consultants, Solution Architects etc.

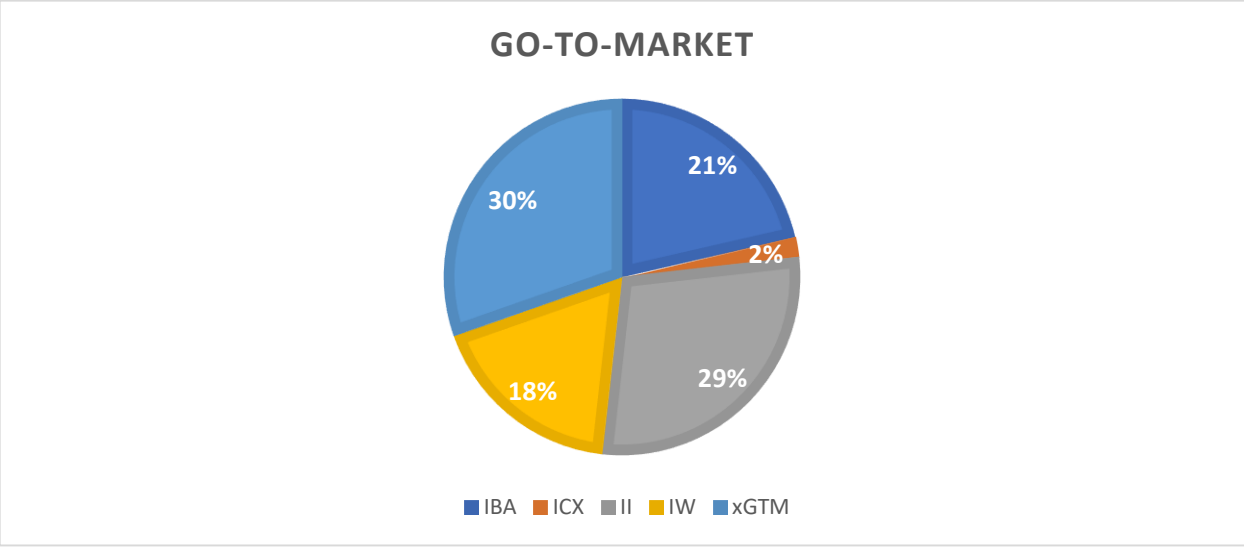


Figure 7: Reponses per Go-To-Market

While most GTMs are organised by expertise and purpose, these cross-functional teams break through the ‘silos’ of a traditional organisational structure

to tackle problems and achieve the organisation's goals more efficiently. By combining different viewpoints and knowledge, cross-functional teams can increase innovation of both processes and products. They can find holistic solutions to meet the organisation's needs because they can see the perspectives of other functionalities (Organ & Bottorff, 2021). Although not a key part of this study, this group will be observed for comparative reasons to assess whether digital maturity is more prominent in cross-functional teams compared with the organisation’s traditional GTM structures.

An anomaly in the results indicated 0% participation from the ISec GTM. This is because the capabilities of this GTM have been integrated and embedded into the other GTMs instead of existing in isolation. The organisation’s employees representing ISec have subsequently moved into the other GTMs. Therefore, ISec has been excluded as a standalone GTM for the purposes of this research study.

4.2 GTM DIGITAL MATURITY SCORES

The digital maturity scores for each of the twelve factors across the GTMs were counted and normalised to improve their accuracy and integrity as different Likert scales were used throughout the survey. The output of these scores resulted in a digital score measured as a percentage.

The results in ***Table 5*** on the next page show that the ICX GTM scored by far the highest digital score of 98.82%, followed by IBA and II GTMs with respective scores of 66.84% and 64.97%.

Go-to-Market	Score	Total	Result
Intelligent Business Applications (IBA)	94.24	141	66.84%
Intelligent Customer Experience (ICX)	139.33	141	98.82%
Intelligent Infrastructure (II)	91.61	141	64.97%
Intelligent Workplace (IW)	80.74	141	57.26%
Multiple GTM (xGTM)	81.00	141	57.45%

Table 5: GTM Digital Maturity Scores

An alarming observation from the data collection was the low response rate from the ICX GTM. Only two participants from ICX participated in the study. Such a small sample size from ICX may affect the reliability and not yield valid results which may lead to bias. However, it is difficult to ignore the results of this GTM as it recorded the highest operating margin growth and the second highest gross margin growth over the period under review.

Furthermore, ICX is the GTM that focusses on Customer Experience (CX). According to the NTT Customer Benchmarking Report (2020), “81.6% of organisations recognise the competitive edge added by customer experience, so our pivot is moving away from a tech conversation to a business outcome and ROI conversation”. The report further states that “81.6% of organisations agree that CX is a competitive differentiator and indicator of strategic performance” (NTT, 2020). According to the North Highland Beacon Report (2020) 87% of senior business leaders in the U.S. and U.K. considered CX to be their top strategic priority for growth in 2020. Notable growth engines which are driving this growth include operational efficiency (85%), data & analytics (81%), product/service innovation (78%) and digital capabilities (78%). (PR Newswire, 2019).

Nevertheless, the results for ICX need to be interpreted with some caution.

4.3 DIGITAL MATURITY DIMENSION SCORES

The survey tested various scale items and delivered rich data, ultimately exploring and measuring the organisation’s digital maturity. The broad definition

of digital maturity, 'where an organisation is on its digital transformation journey' is a multi-faceted concept. In this study, two dimensions comprising of twelve factors were measured.

The overall mean score of the study across the entire survey sample group was 0.61, with a standard deviation of 0.06 and a coefficient of variation of 10%. This is a satisfactory result as the low standard deviation indicates a high level of reliability. The two dimensions, Leadership & Strategy and Application & Impact, recorded mean scores of 0.62 and 0.60 respectively.

The results in ***Table 6*** suggest close scores between the organisation's ability to set a digital strategy and lead the organisation to fulfil its vision (Leadership & Strategy) and its ability to implement the strategy towards four key transformation objectives (Digital Application & Impact).

Dimension	IBA	ICX	II	IW	xGTM
Leadership & Strategy	69%	98%	66%	56%	58%
Digital Application & Impact	67%	99%	62%	58%	54%
Digital Maturity Score	67%	99%	65%	57%	57%

Table 6: GTM Digital Maturity Dimension Scores

The digital maturity score results demonstrate that while there are organisational benefits by having cross-functional teams in xGTM, such as increased efficiency, diversity, and innovation to the organisation, these do not translate to increased digital maturity. The xGTM group scored the second-lowest digital maturity score of 57.4%. No further analysis or correlation was done to establish the relationship between xGTMs digital maturity score and performance as the organisation does not measure operational or financial performance for xGTM.

4.4 DIGITAL MATURITY MODEL

Justin Grossman, CEO of Meltmedia, defines four levels of digital maturity as follows: Incidental, Intentional, Integrated, and Optimised (Grossman, 2018).

The results recorded in ***Figure 8*** gauge the digital maturity of the organisation's GTM practices across the twelve factors.

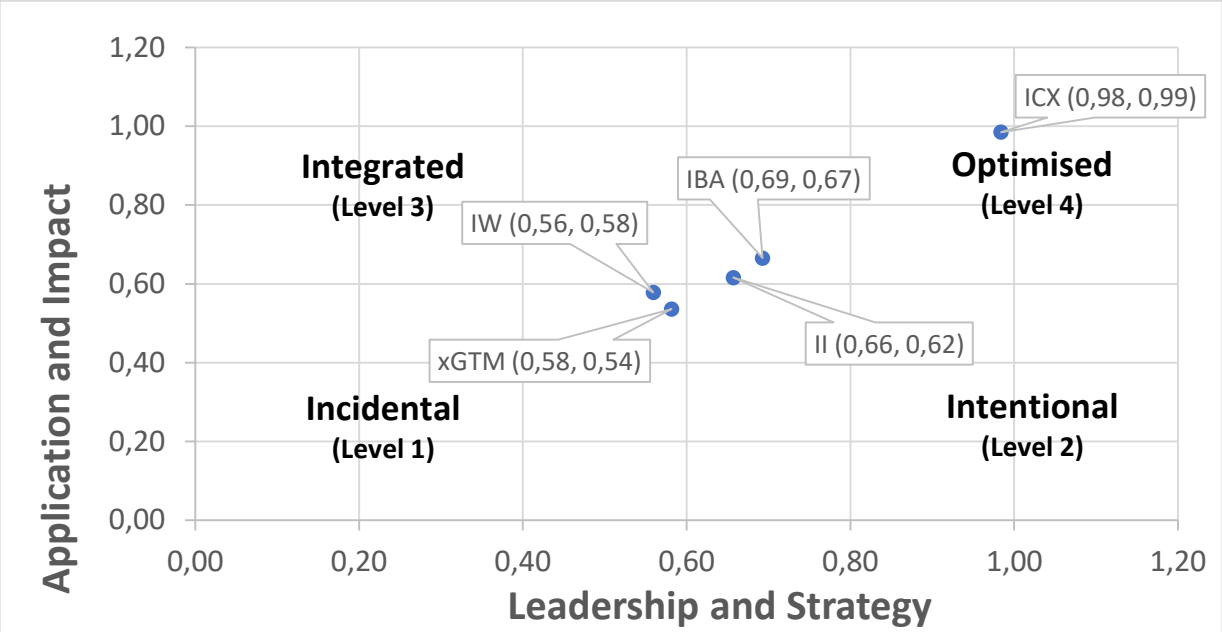


Figure 8: GTM Digital Maturity Model

To interpret the digital maturity scores of the GTMs, their coordinates plotted in ***Figure 8*** are described in ***Table 7***.

Level	Description	x-axis	y-axis
Incidental (Level 1)	Activities supporting digital maturity are done by happenstance and are not planned or strategic in nature.	0 – 0.49	0 – 0.49
Intentional (Level 2)	There is purpose and strategy behind digital transformation activities, but only in some, not all, areas of business. Many times, these processes are not yet automated.	0.5 - 1	0 – 0.49
Integrated (Level 3)	Companies operating at this level are successfully integrating digital transformation strategies across multiple business areas in a streamlined fashion with buy-in from leadership.	0 – 0.49	0.5 – 1

Level	Description	x-axis	y-axis
Optimised (Level 4)	The cream of the crop, these companies are fully integrated with digital transformation, making it a part of company culture. They can turn on a dime when the market shifts.	0.5 - 1	0.5 - 1

Table 7: Levels of Capability Maturity Model (Grossman, 2018)

These were derived from the twelve digital maturity factors grouped into two dimensions. A mean was calculated for each factor and aggregated to formulate the mean for the dimensions. The factor which recorded the highest mean was IT/IS Excellence (0.77), and the factor which recorded the lowest mean was Digital Product Innovation (0.59) – see ***Table 23*** in Annexure E.

4.5 DIGITAL MATURITY FACTOR SCORES

The survey responses in this study were received from a sample of the overall population of the organisation. Therefore, the sample standard deviation was used to make estimates or inferences about the population to understand the larger population from which the sample is taken. While descriptive statistics summarise the characteristics of a data set, inferential statistics help reach conclusions and make predictions based on the data (Bhandari, 2021).

The digital maturity factor scores were collated in this fashion. Mean scores, standard deviations, and coefficient of variations were calculated for each factor – see ***Table 8*** (on the next page). The results indicate relatively low standard deviations (StDev), the highest being 0.14, indicating high reliability of the digital maturity scores. The mean scores were relatively high, all above 0.5, indicating that the survey's average digital maturity factor scores were high.

The coefficient of variation (CV), which measures the extent of variability in the data, prescribes that a CV of 10 or lower is very good, 10-20 is good, 20-30 is acceptable, and 30 or above is not acceptable. The CV scores of this study are generally between very good and good, except for Vision and Strategy (0.21).

Digital Maturity Factors	Mean	Mean + StDev	Mean - StDev	StDev	CV
Vision & Strategy	0.65	0.79	0.51	0.14	0.21
Culture & Engagement	0.68	0.78	0.58	0.10	0.15
Governance & Organisation	0.60	0.65	0.55	0.05	0.08
Investment & Innovation	0.59	0.69	0.50	0.09	0.15
New Value Streams & Business Models	0.63	0.74	0.52	0.11	0.17
Digital Ethics	0.56	0.61	0.50	0.05	0.09
Customer Orientation & Engagement	0.65	0.71	0.59	0.06	0.09
Digital Product Innovation	0.51	0.54	0.48	0.03	0.06
Workforce Enablement & Performance	0.62	0.71	0.53	0.09	0.14
Core Processes & Digitalisation	0.55	0.63	0.47	0.08	0.14
IT Excellence	0.72	0.80	0.64	0.08	0.11
Results	0.56	0.59	0.53	0.03	0.06

Table 8: Digital Maturity Factor Scores

The factor which scored the highest mean was IT Excellence, scoring 72%, followed by Culture & Engagement, scoring 68%, while Vision & Strategy scored 65% – see ***Figure 9*** on the next page.

Digital Product Innovation was the lowest-scoring factor, scoring 51%, followed by Core Process Digitalisation, scoring 55%, while Digital Ethics scored 56%. The highest recorded standard deviation was for Vision & Strategy at 0.14, followed by New Value Streams & Business Models at 0.11.

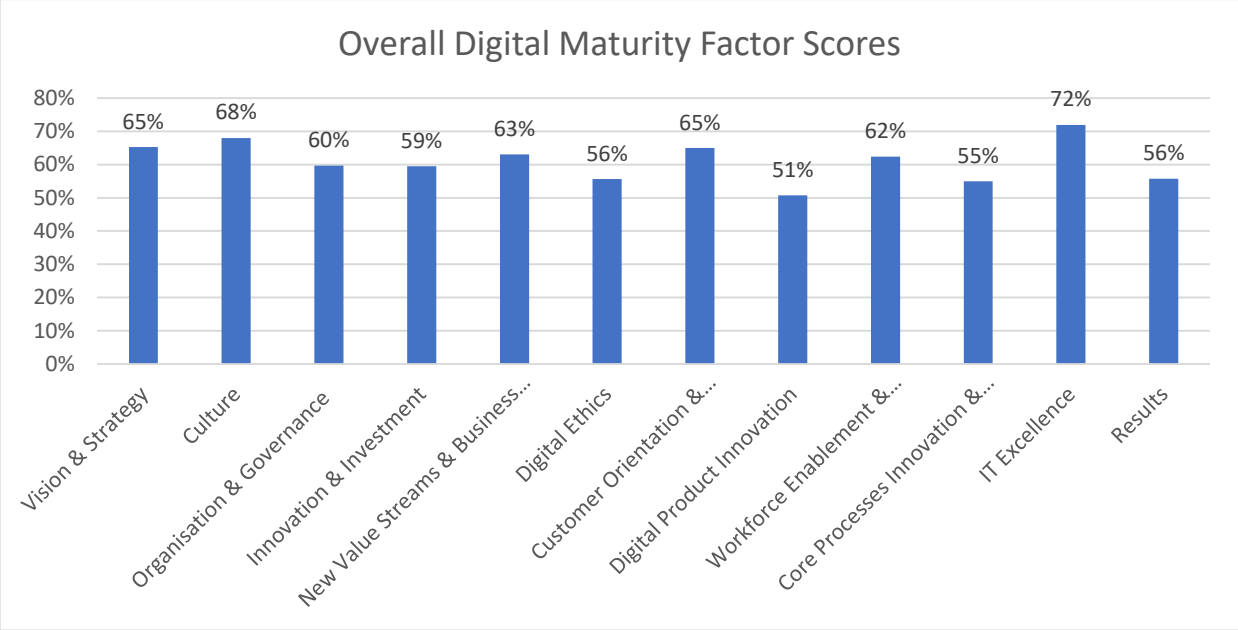


Figure 9: Overall Digital Maturity Factor Scores

The scores of these factors were also measured across the various GTMs, as shown in ***Table 9*** (on the next page) and ***Table 23*** (in Annexure E), indicating the dominant (green) and weak (red) factors per GTM. The establishment of these digital maturity factor scores was important to determine the extent of their influence on organisational performance. These results are consistent with findings in (Evans, 2017) introducing a "reference model and blueprint for decoding how leading players have launched new digital disruptions within their markets." His model for assessing the extent of digital transformation of an organisation, namely its digital maturity, comprises four pillars:

- **Technology and capabilities** – The use of disruptive technologies, the adoption of platform business models, and the attainment of digital service mastery.
- **Strategy and vision** – The strategy and vision aspect of the digital transformation journey set the agenda in terms of transformation objectives, focus and investments to drive transformational change.
- **People and culture** – This covers leadership, culture and digital skills, which are all essential to successfully make the transformation.
- **Process and governance** – This covers innovation management, change management and overall transformation governance.

	Digital Maturity Factors	IBA	ICX	II	IW	xGTM
Leadership & Strategy	Vision & Strategy	64%	94%	69%	64%	62%
	Culture & Engagement	71%	**100%**	**73%**	61%	64%
	Governance & Organisation	63%	**100%**	64%	51%	56%
	New Value Streams & Business Models	66%	**100%**	64%	62%	58%
	Investment & Innovation	63%	97%	63%	50%	57%
	Digital Ethics	61%	**100%**	61%	**48%**	48%
Digital Application & Impact	Customer Orientation & Engagement	72%	**100%**	69%	**65%**	54%
	Digital Product Innovation	**55%**	**93%**	**49%**	53%	46%
	Workforce Enablement & Performance	65%	**100%**	66%	59%	57%
	Core Processes Digitalisation	61%	**100%**	58%	51%	47%
	IT/IS Excellence	**80%**	98%	71%	**65%**	**70%**
	Results	66%	**100%**	57%	54%	**45%**

Table 9: GTM Digital Maturity Factor Scores

In comparison to the overall digital maturity factor scores in ***Figure 9***, ***Table 9*** summarises digital maturity factor scores across the GTMs. This study's top three scoring digital maturity factors are aligned and consistent with findings in Evans (2017). These are IT/IS Excellence (72%), Culture & Engagement (68%) and Vision & Strategy (65%) – see descriptions and indicators of these factors in ***Table 22*** (in Annexure E). The GTMs, which scored the highest digital maturity scores – ICX, IBA and II – all recorded Digital Product Innovation as the lowest-scoring factor, while Culture & Engagement and IT/IS Excellence were the highest scoring factors.

4.6 OPERATIONAL & FINANCIAL PERFORMANCE

The operational & financial performance of the organisation was tracked over 21 months, between 1 April 2020 and 31 December 2021. This happened to be the beginning of the organisation's financial year, 1 April 2020 – 30 March 2021, and the early stages of the COVID-19 lockdown in South Africa. Investments towards

digital transformation were accelerated by the pandemic and a landscape has now been created that will continue elevating innovation and technological adoption moving forward.

The operational & financial performance was tracked to link the impact of the organisation's digital transformation initiatives to its performance. Two operational performance metrics were tracked in each GTM – Operating Margin (OM) and Operating Margin Growth (OMG). Two financial performance metrics were tracked in each GTM – Gross Margin (GM) and Gross Margin Growth (GMG).

Operating Margin (OM), sometimes referred to as **Return on Sales (ROS),** evaluated the organisation's operational efficiency. This ratio provides insight into how efficiently the organisation generates profits from its core operations. It measures the organisation's performance by analysing the percentage of its total revenue converted into operating profits. An increasing OM indicates that the organisation is improving efficiency, while a decreasing OM could signal impending financial troubles. The calculation shows how effectively a company produces its core products and services and how its management runs the business (Adam, 2021).

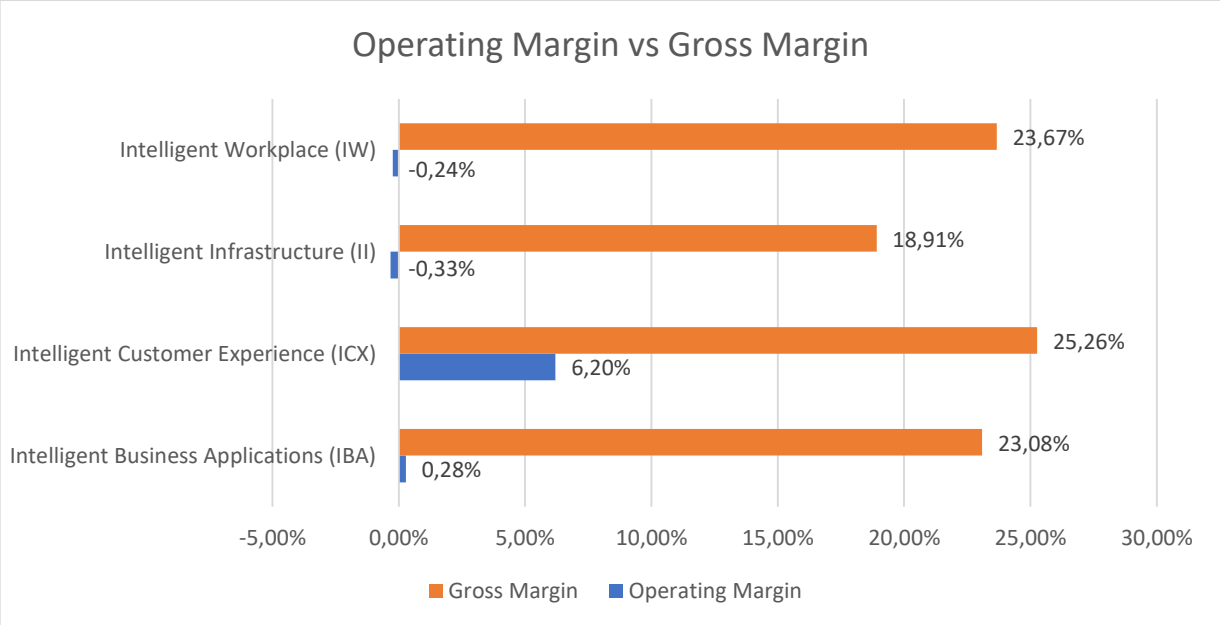


Figure 10: Average Operating Margin (OM) – 1 April 2020 to 31 December 2021

Figure 10 represents the average OM over the 21 months, between 1 April 2020 and 31 December 2021. Over this period, the best performing GTM was ICX, with an average OM of 6.10%, followed by IBA with an average OM of 0.28%. Although IW and II recorded negative results, -0.24% and -0.33% respectively, trend analysis will determine any impending financial troubles.

Operating Margin Growth (OMG) was used to give insights into the operating margin's growth rate. An organisation's OM does not convey anything about its growth rate. Fast-growing organisations often have low or even negative OM because they spend aggressively on initiatives like digital technologies to expand the business and reinvest profits back into the company (Bowman, 2021). OM considers all operating costs related to the operations of the organisation which makes this an important measure in this study as digital transformation impacts core internal operations (such as back-office, supply chain, production and R&D) of the organisation (LaBerge et al., 2020). Most of these factors are within the organisation's control which makes them easier to influence.

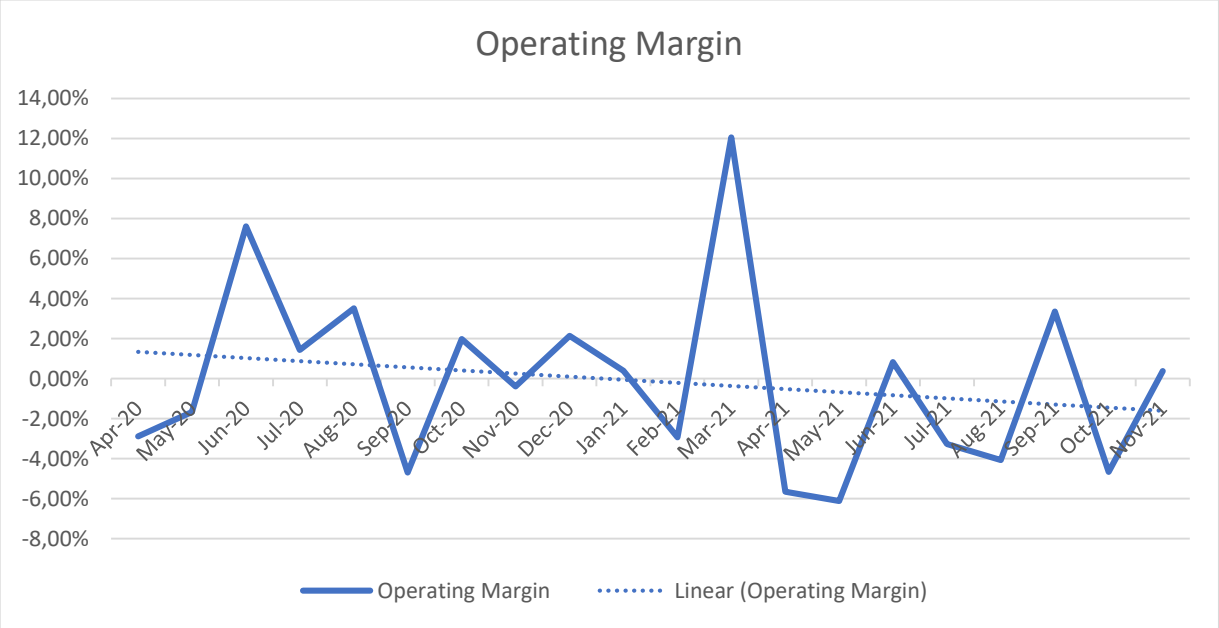


Figure 11: Operating Margin Growth (OMG) – 1 April 2020 to 31 December 2021

Figure 11 represents the change of OM across all the GTMs between 1 April 2020 and 31 December 2021. This indicates the monthly change of the

organisation's OM to assess its performance and predict future performance. March 2021 recorded the highest growth of 14.99% (from -2.94% to 12.05%), while April 2021 recorded the highest decline of -17.70% (from 12.05% to -5.65%) - see ***Table 24*** in Annexure E.

Gross Margin (GM) was used to give insight into how the organisation controls efficiencies of its production costs, which helps produce higher profits in the income statement. Comparing an organisation's GM over multiple reporting periods provides insight into whether the organisation's operations are becoming efficient or inefficient. The higher the GM, the more revenue the organisation has to cover its obligations – like taxes, interest on debt, and other expenses – and generate profit. Determining the GM of multiple organisations within the same industry can aid in understanding which market participants have the most efficient operations (DiLallo, 2021).

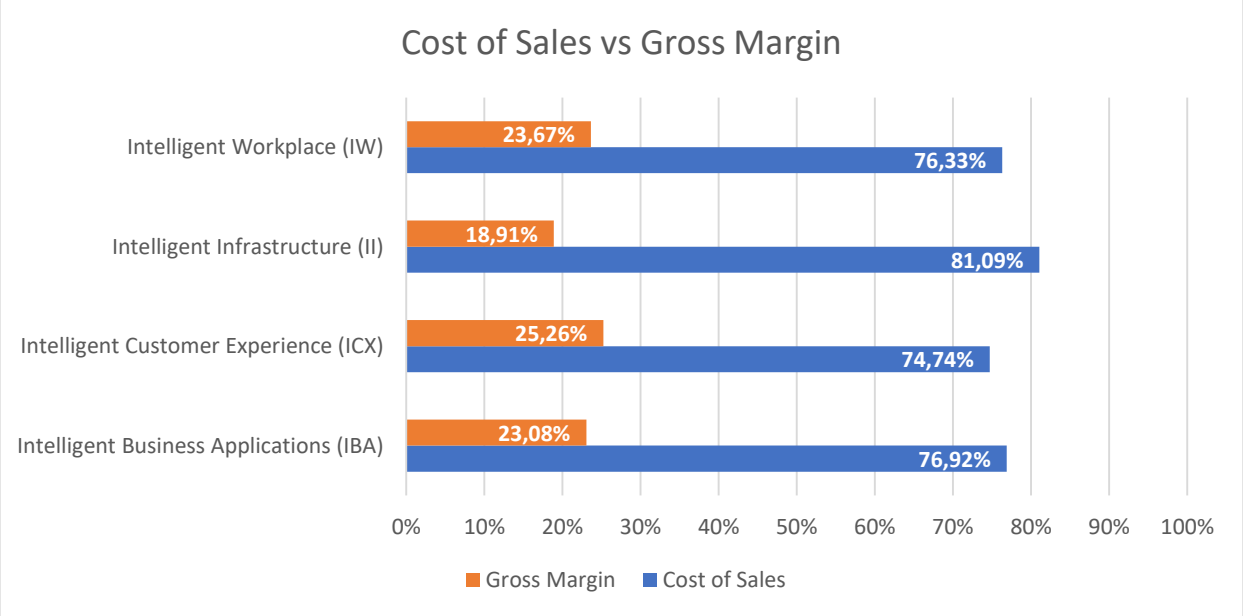


Figure 12: Average Gross Margin (GM) – 1 April 2020 to 31 December 2021

Figure 12 represents the average GM over the 21 months, between 1 April 2020 and 31 December 2021. The GTM with the highest average GM over this period was ICX, with an average GM of 25.26%, followed by IW with an average GM of 23.67%. It is no surprise that the GTM with the lowest average GM of 18.83% also recorded the highest COS of 81.17%.

Gross Margin Growth (GMG) was used to give insights on the growth rate in GM. Digital transformation is known to progress platform unification and optimise staff and technology, resulting in reduced operational and overhead costs (Rosner, 2016). The higher the GMGR, the more capital the organisation retains, which it can then use to pay other costs or satisfy its debt obligations. If margins are rising, that may be an indicator of improved efficiencies. A decline in GM may indicate inefficiencies. It can also indicate that lowering prices to increase sales could negatively impact the organisation's financial stability (Unknown, 2021). GM is largely impacted by exogenous factors which contribute to the change in the cost of goods sold such as transportation costs, raw materials and maintenance costs. Most of these factors are not in the organisation's control which makes them difficult to influence.

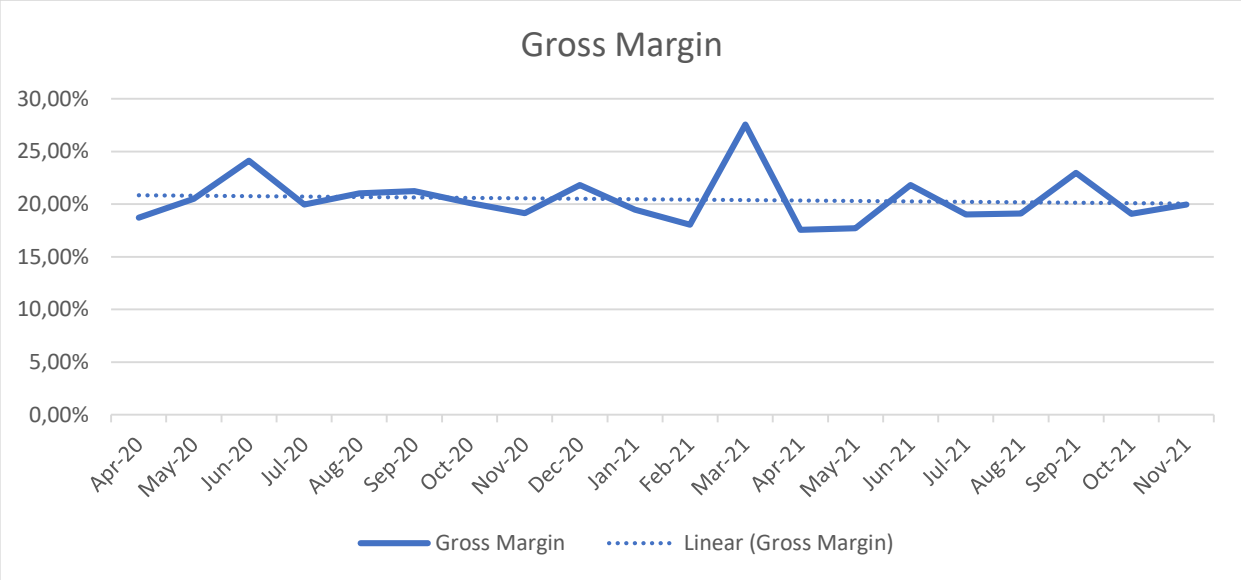


Figure 13: Gross Margin Growth (GMG) – 1 April 2020 to 31 December 2021

Figure 13 represents the change of GM across all the GTMs between 1 April 2020 and 31 December 2021. This indicates the monthly change of the organisation's GM to assess its performance and predict future performance. March 2021 recorded the highest growth of 9.53% (from 18.04% to 27.57), while April 2021 recorded the highest decline of -10.01% (from 27.57% to 17.56%) - see ***Table 24*** in Annexure E.

4.6.1 INTELLIGENT BUSINESS APPLICATIONS (IBA)

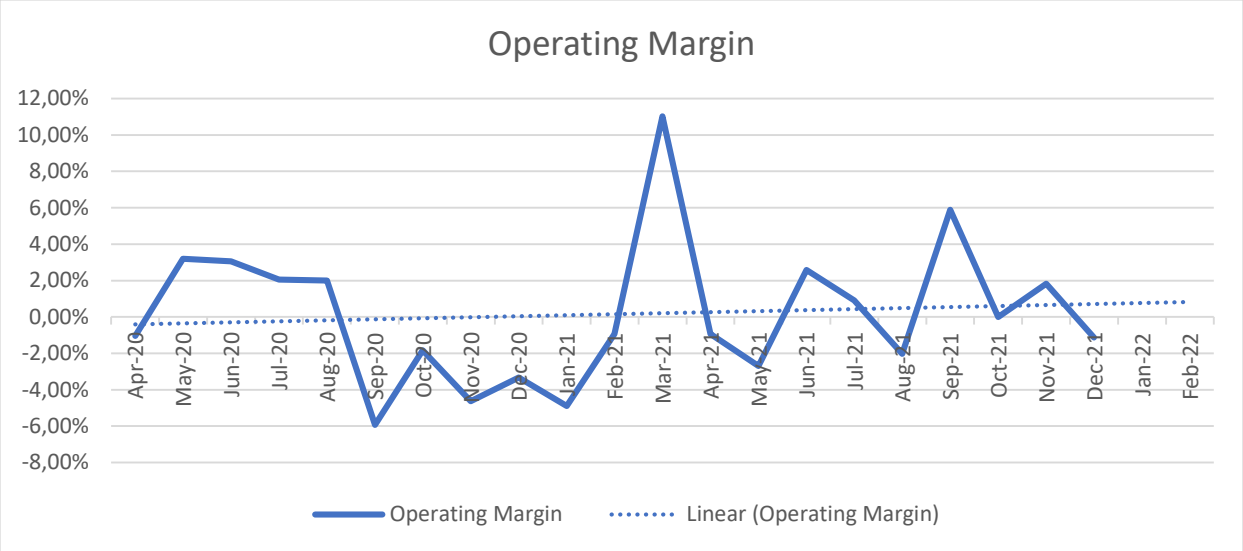


Figure 14: Intelligent Business Applications (IBA) – Operating Margin (OM)

Over the 21 months, IBA recorded its highest OM growth of 11.97% in March 2021 and its highest OM decline of -11.97% in April 2021, with an overall upward trend in ***Figure 14*** indicating improving efficiency.

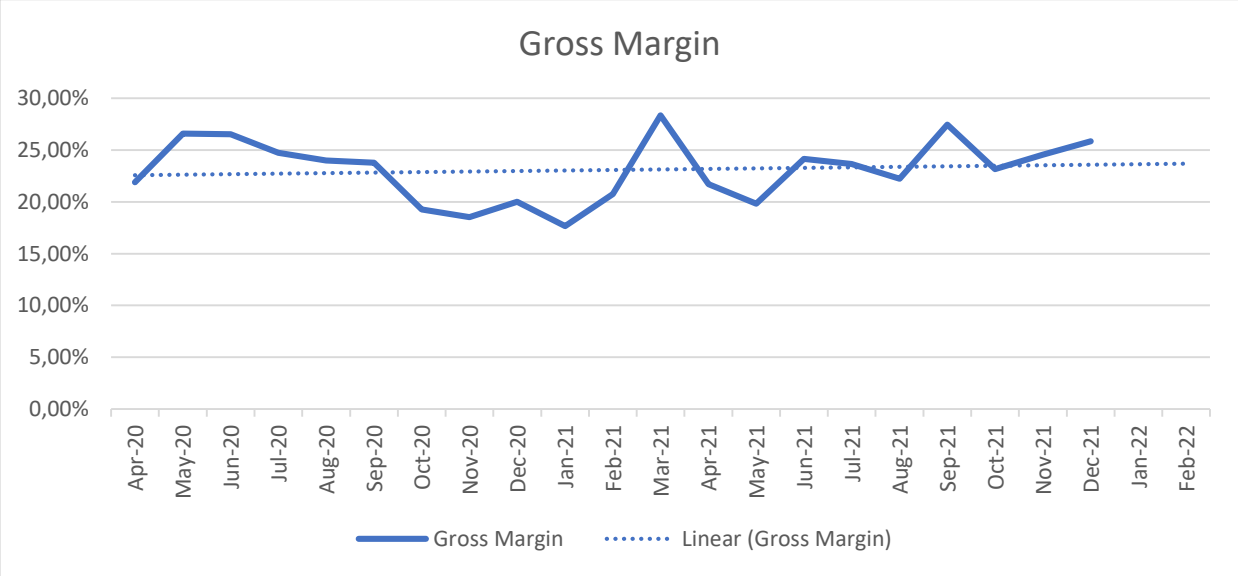


Figure 15: Intelligent Business Applications (IBA) – Gross Margin (GM)

Over the 21 months, IBA recorded its highest GM growth of 7.59% in March 2021 and its highest GM decline of -6.65% in April 2021, with an overall upward trend in ***Figure 15*** indicating improving profitability.

4.6.2 INTELLIGENT CUSTOMER EXPERIENCE (ICX)

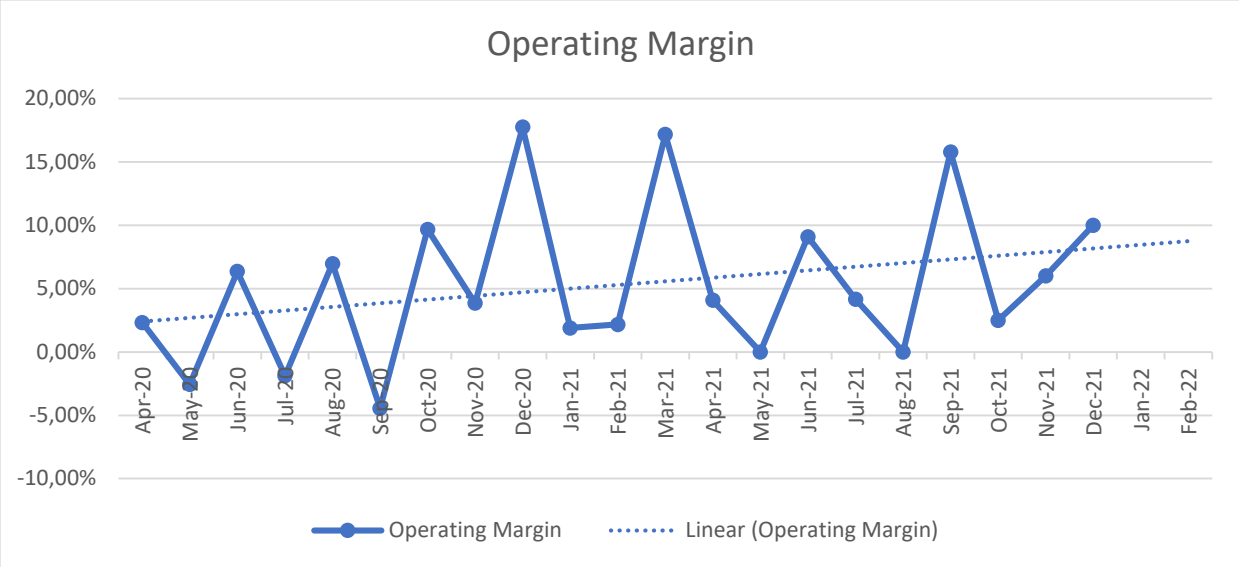


Figure 16: Intelligent Customer Experience (ICX) – Operating Margin (OM)

Over the 21 months, ICX recorded its highest OM growth of 15.79% in September 2021 and its highest OM decline of -15.86% in January 2021, with an overall upward trend in ***Figure 16*** indicating improving efficiency.

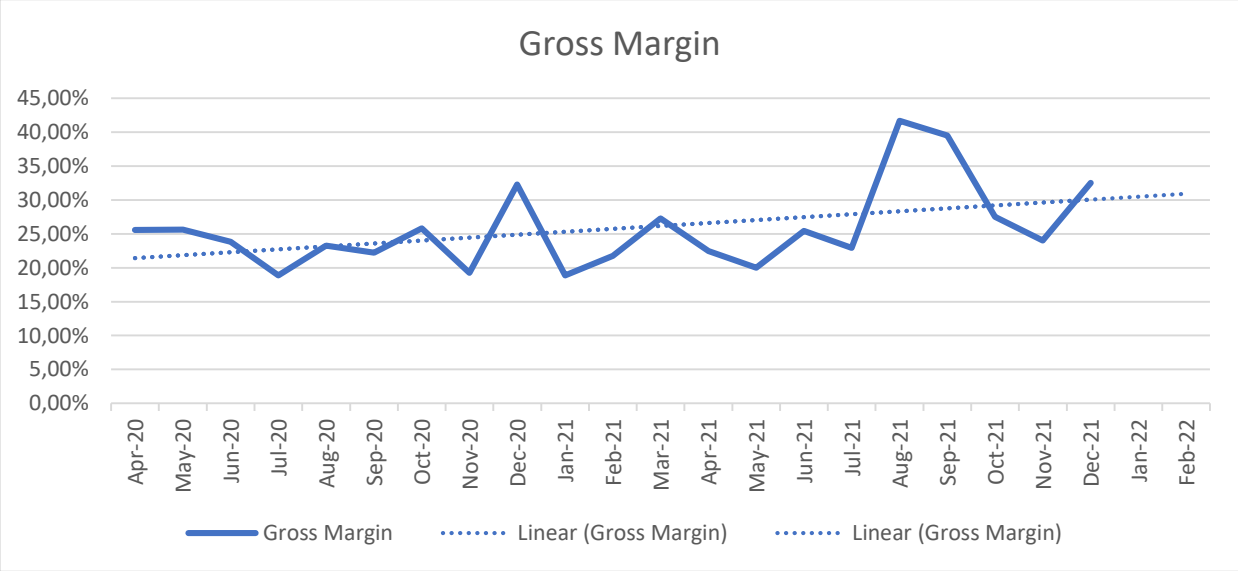


Figure 17: Intelligent Customer Experience (ICX) – Gross Margin (GM)

Over the 21 months, ICX recorded its highest GM growth of 18.75% in August 2021 and its highest GM decline of -13.39% in January 2021, with an overall upward trend in ***Figure 17*** indicating improving profitability.

4.6.3 INTELLIGENT INFRASTRUCTURE (II)

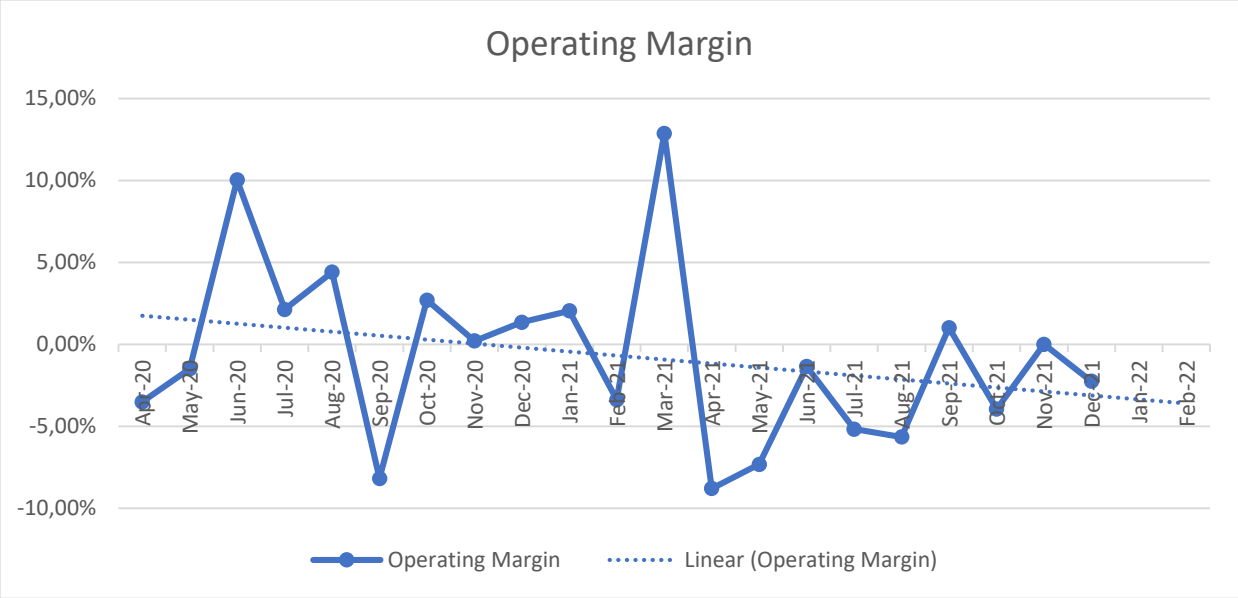


Figure 18: Intelligent Infrastructure (II) – Operating Margin (OM)

Over the 21 months, II recorded its highest OM growth of 16.24% in March 2021 and its highest OM decline of -21.67% in April 2021, with an overall downward trend in ***Figure 18*** indicating impending financial troubles.

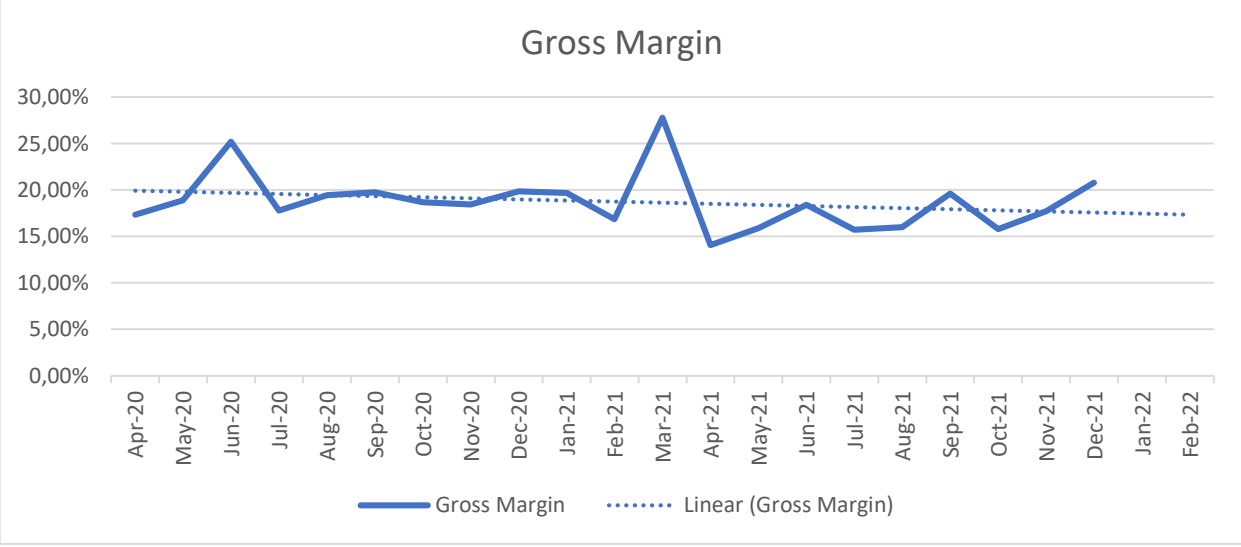


Figure 19: Intelligent Infrastructure (II) – Gross Margin (GM)

Over the 21 months, II recorded its highest GM growth of 10.94% in March 2021 and its highest GM decline of -13.73% in April 2021, with an overall downward trend in ***Figure 19*** indicating declining profitability.

4.6.4 INTELLIGENT WORKPLACE (IW)

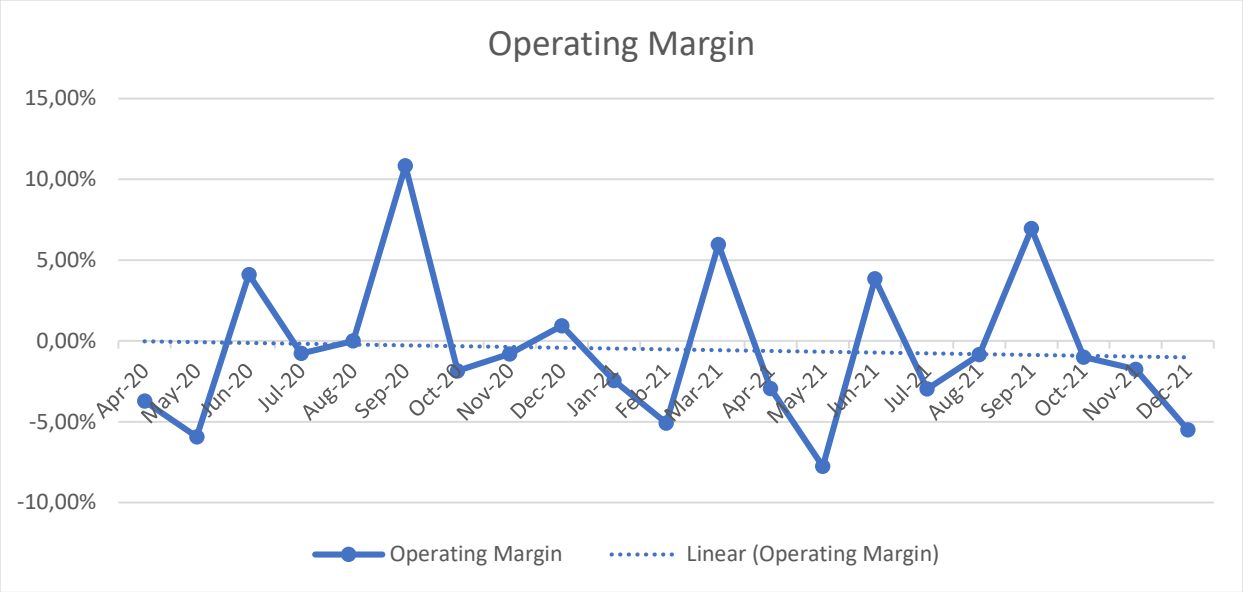


Figure 20: Intelligent Workplace (IW) – Operating Margin (OM)

Over the 21 months, IW recorded its highest OM growth of 11.61% in June 2021 and its highest OM decline of -12.69% in October 2020, with an overall downward trend in ***Figure 20*** indicating impending financial troubles.

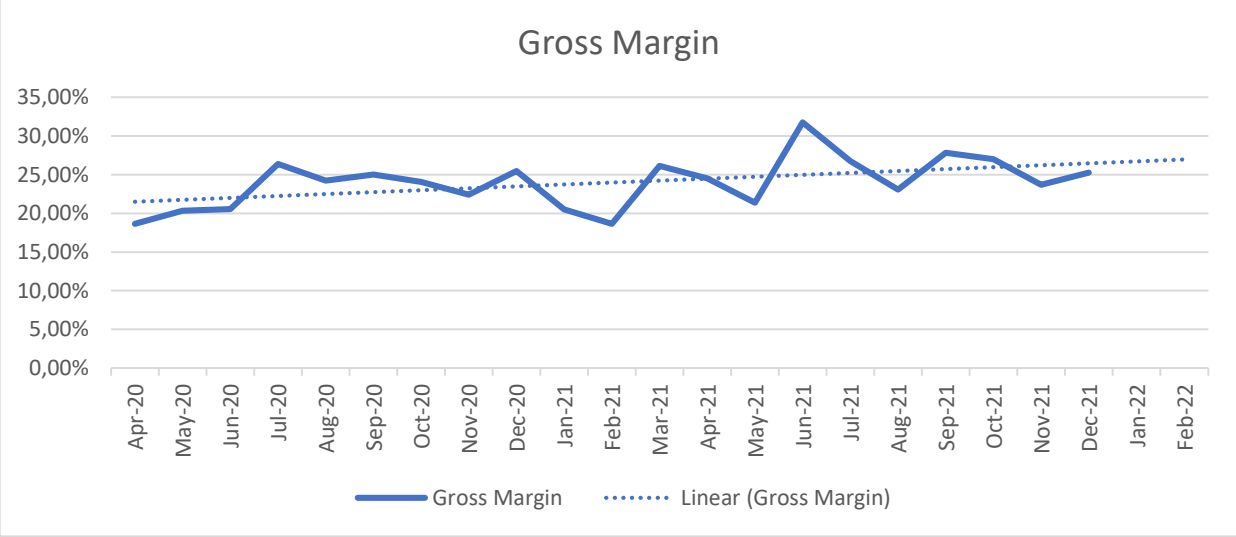


Figure 21: Intelligent Workplace (IW) – Gross Margin (GM)

Over the 21 months, IW recorded its highest GM growth of 10.37% in June 2021 and its highest GM decline of -5.00% in July 2021, with an overall upward trend in ***Figure 21*** indicating improving profitability.

4.7 CORRELATION ANALYSIS

A correlation analysis between digital maturity and organisational performance was done to answer the research questions. The coefficient of determination, also known as R^2 (pronounced “R squared”), was calculated for each linear graph to measure the strength of the relationship between the digital maturity factors and both the operating and gross margin growth. The general guideline for interpreting the strength of a relationship based on its R^2 value is:

- if $R^2 < 0.3$, there is generally considered to be no relationship,
- if R^2 $0.3 < r < 0.5$, there is generally considered to be a weak or low relationship,
- if R^2 $0.5 < r < 0.7$, there is generally considered to be a moderate relationship,
- if $R^2 > 0.7$, there is generally considered to be a strong relationship, (Moore, Notz, & Flinger, 2013)

In other words, R^2 provides information on how well the independent variables (twelve digital maturity factors) account for the variability of the dependent variables (OMG and GMG).

4.7.1 RESEARCH QUESTION 1

The organisational performance was analysed against the GTM maturity scores to establish the relationship between them. The performance was broken down into operational (OM & OMG) and financial (GM & GMG). Linear graphs were developed below to establish the nature of their relationships. These graphs should be reviewed together with ***Table 25*** in Annexure E.

Operational Performance

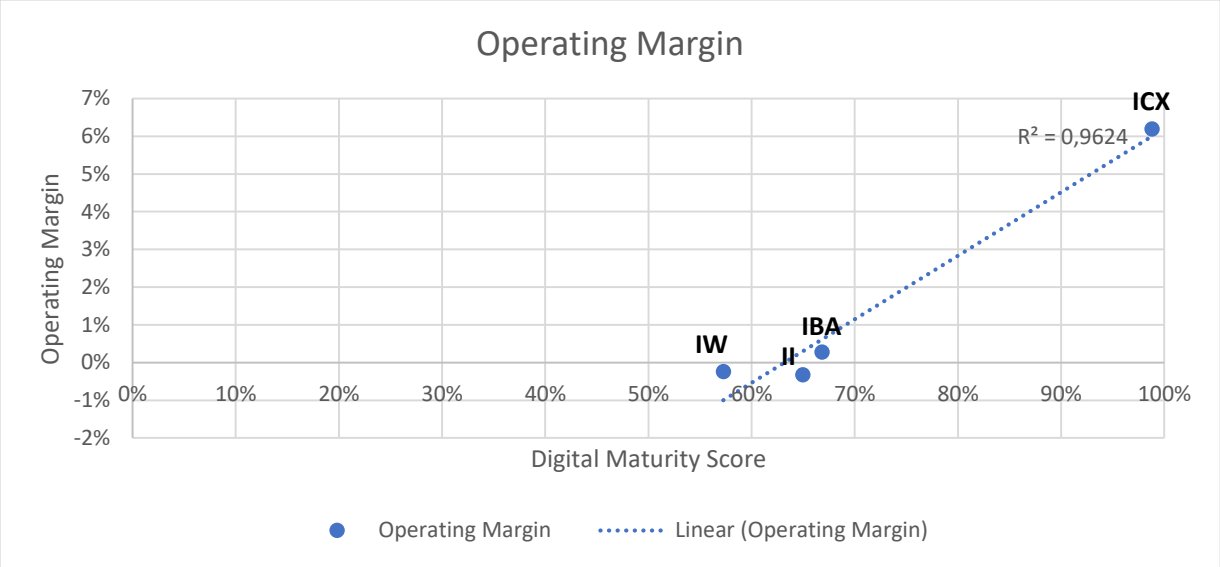


Figure 22: Relationship Between GTM Digital Maturity Score and Operating Margin

The OM R^2 of 0.9624 suggests a strong positive relationship with digital maturity score.

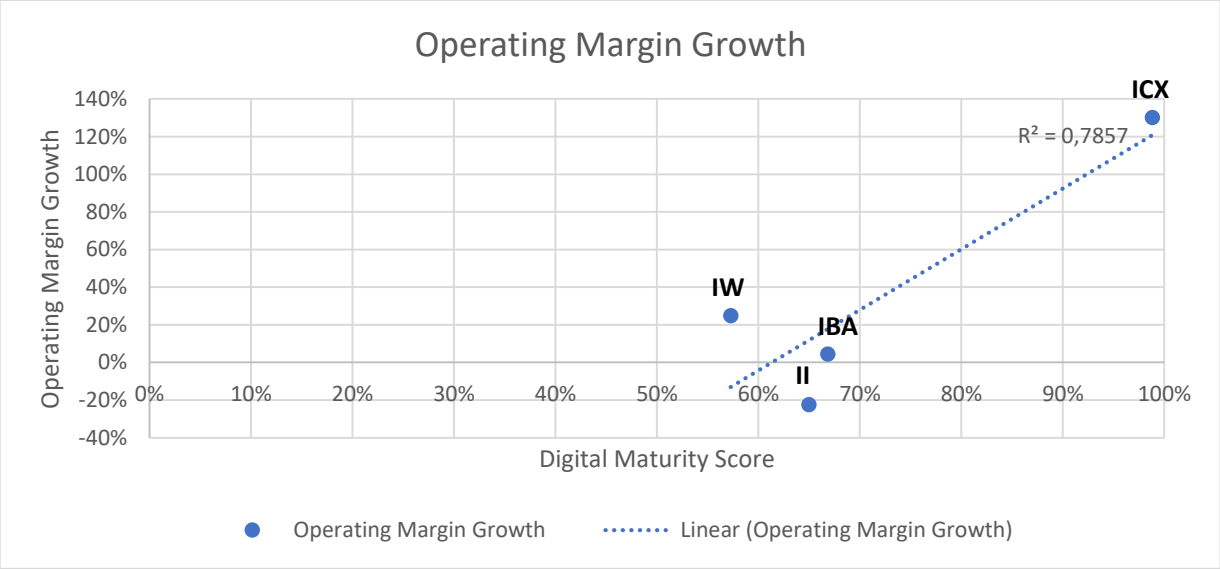


Figure 23: Relationship Between GTM Digital Maturity Score and Operating Margin Growth

The OMG R^2 of 0.7857, although lower than the OM R^2, also suggests a strong positive relationship with digital maturity score.

Financial Performance

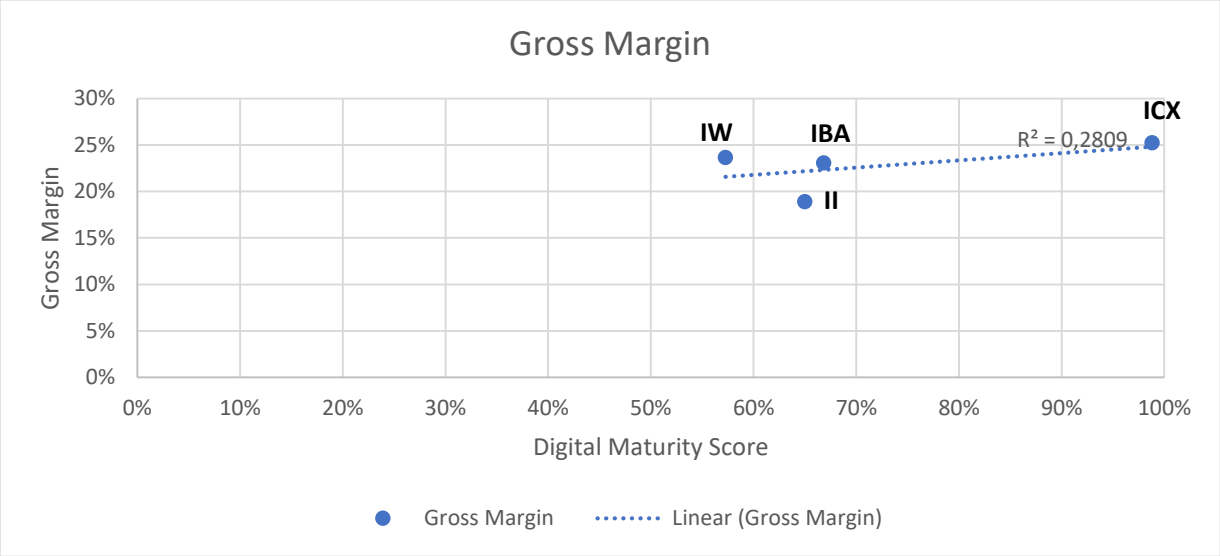


Figure 24: Relationship Between GTM Digital Maturity Score and Gross Margin

The GM R^2 of 0.2809 suggests no relationship with digital maturity score.

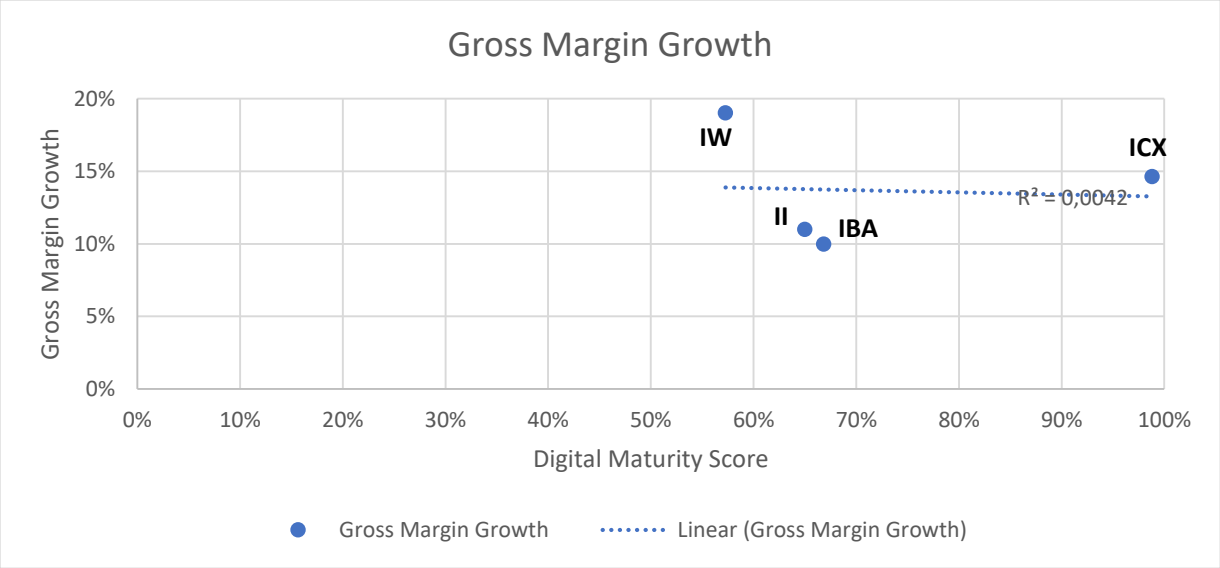


Figure 25: Relationship Between GTM Digital Maturity Score and Gross Margin Growth

The GMG R^2 of 0.0042, significantly lower than GM R^2, also suggests no relationship with digital maturity score.

4.7.2 RESEARCH QUESTION 2

The survey data was further structured into subsequent tables, representing maturity scores of the twelve digital maturity factors relative to the OMG and GMG rates of the GTMs to establish the relationship between them – see ***Table 26*** in Annexure E. To do this, linear graphs were developed below to establish the nature of their relationships.

4.7.2.1. OPERATING & GROSS MARGIN GROWTH ANALYSIS

- **Vision & Strategy**

	Vision & Strategy	Operating Margin Growth	Gross Margin Growth
IBA	0.64	4%	10%
ICX	0.94	130%	15%
II	0.69	-22%	11%
IW	0.64	25%	19%

Table 10: Vision & Strategy Operating and Gross Margin Growth

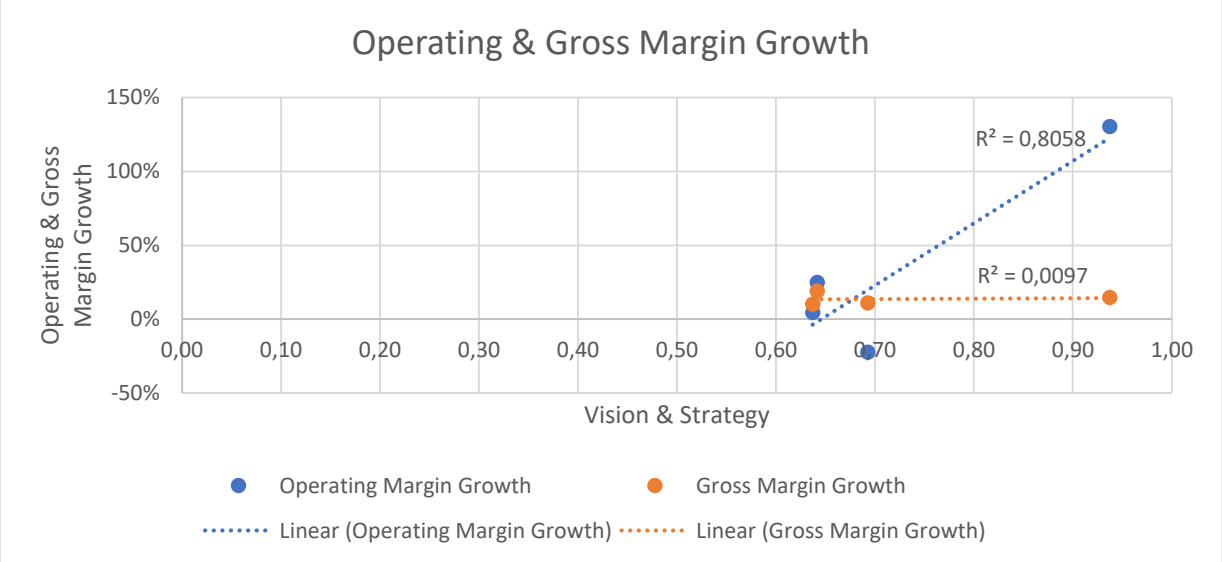


Figure 26: Relationship Between Vision & Strategy and Operating & Gross Margin Growth

The operating margin growth R^2 of 0.8058 suggests a strong positive relationship with Vision & Strategy. The gross margin growth R^2 of 0.0097 suggests no relationship with Vision & Strategy.

- **Culture & Engagement**

	Culture & Engagement	Operating Margin Growth	Gross Margin Growth
IBA	0.71	4%	10%
ICX	1.00	130%	15%
II	0.73	-22%	11%
IW	0.61	25%	19%

Table 11: Culture & Engagement Operating and Gross Margin Growth

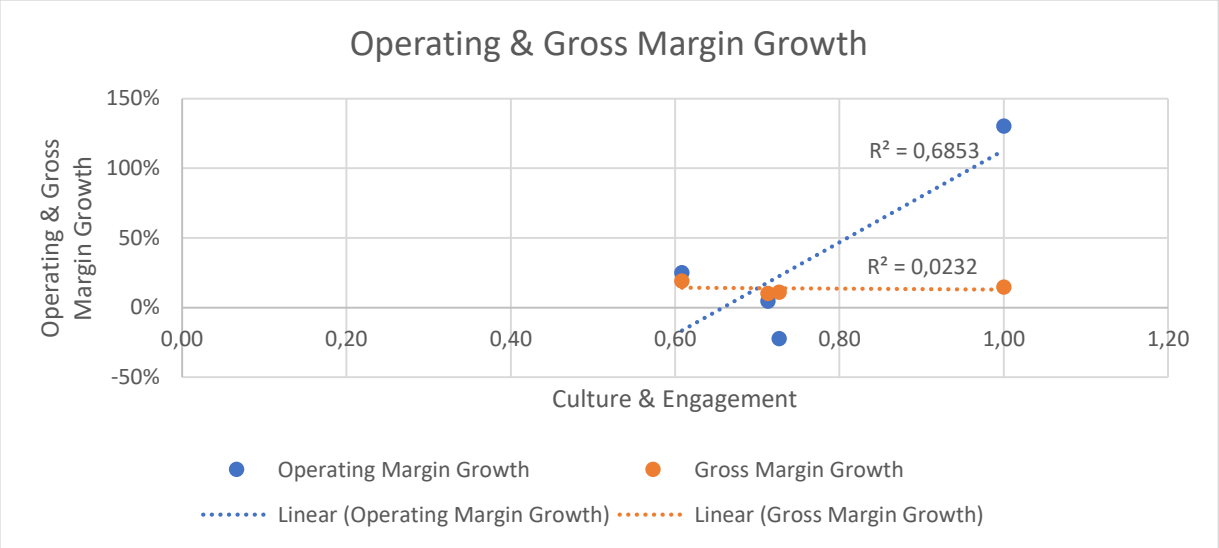


Figure 27: Relationship Between Culture & Engagement and Operating & Gross Margin Growth

The OMG R^2 of 0.6853 suggests a moderate positive relationship with Culture & Engagement. The GMG R^2 of 0.0232 suggests no relationship with Culture & Engagement.

- **Organisation & Governance**

	Organisation & Governance	Operating Margin Growth	Gross Margin Growth
IBA	0.63	4%	10%
ICX	1.00	130%	15%
II	0.64	-22%	11%
IW	0.51	25%	19%

Table 12: Organisation & Governance Operating & Gross Margin Growth

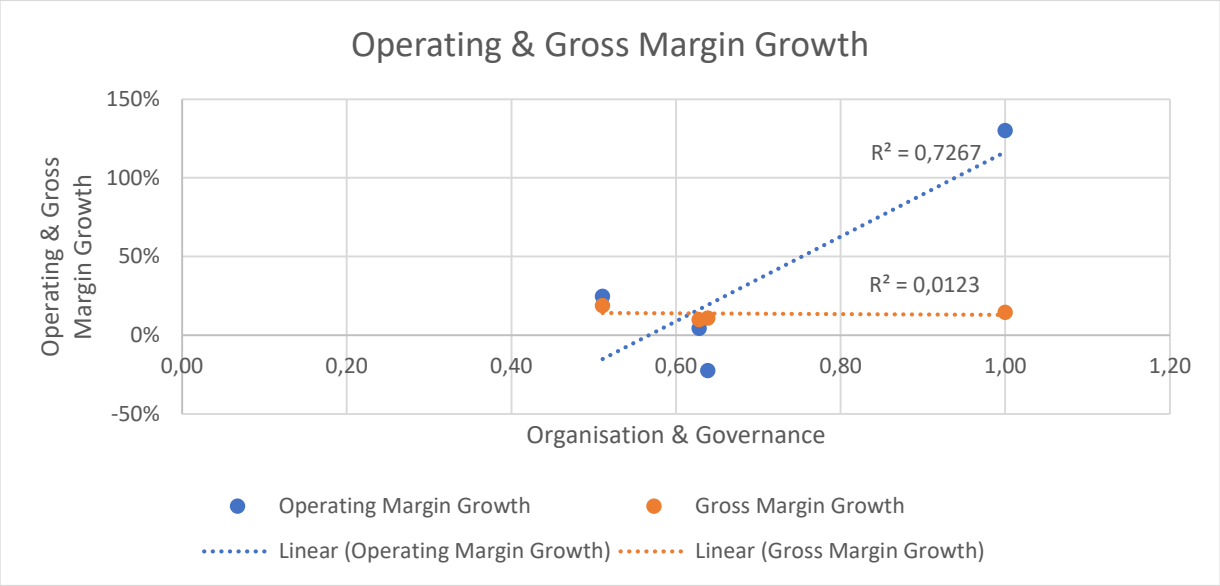


Figure 28: Relationship Between Organisation & Governance and Operating & Gross Margin Growth

The OMG R^2 of 0.7267 suggests a strong positive relationship with Organisation & Governance. The GMG R^2 of 0.0123 suggests no relationship with Organisation & Governance.

- **Investment & Innovation**

	Investment & Innovation	Operating Margin Growth	Gross Margin Growth
IBA	0.63	4%	10%
ICX	0.97	130%	15%
II	0.63	-22%	11%
IW	0.50	25%	19%

Table 13: Investment & Innovation Operating & Gross Margin Growth

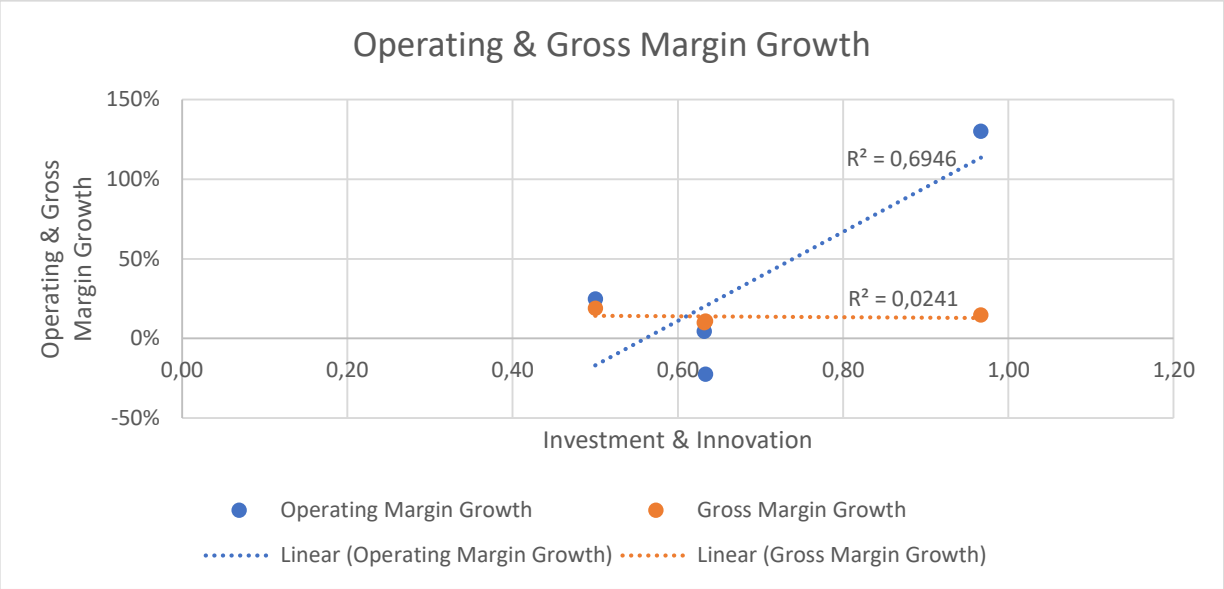


Figure 29: Relationship Between Investment & Innovation and Operating & Gross Margin Growth

The OMG R^2 of 0.6946 suggests a moderate positive relationship with Investment & Innovation. The GMG R^2 of 0.0241 suggests no relationship with Investment & Innovation.

- **New Value Streams & Business Models**

	New Value Streams & Business Models	Operating Margin Growth	Gross Margin Growth
IBA	0.66	4%	10%
ICX	1.00	130%	15%
II	0.64	-22%	11%
IW	0.62	25%	19%

Table 14: New Value Streams & Business Models Operating & Gross Margin Growth

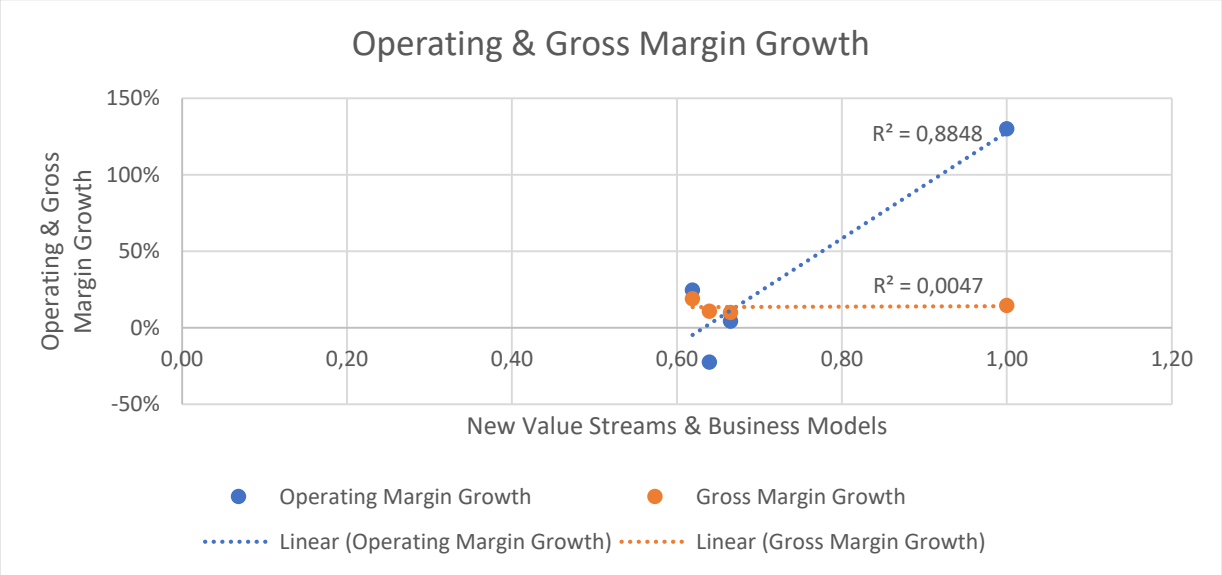


Figure 30: Relationship Between New Value Streams & Business Models and Operating & Gross Margin Growth

The OMG R^2 of 0.8848 suggests a strong positive relationship with New Value Streams & Business Models. The GMG R^2 of 0.0047 suggests no relationship with New Value Streams & Business Models.

- **Digital Ethics**

	Digital Ethics	Operating Margin Growth	Gross Margin Growth
IBA	0.61	4%	10%
ICX	1.00	130%	15%
II	0.61	-22%	11%
IW	0.48	25%	19%

Table 15: Digital Ethics Operating & Gross Margin Growth

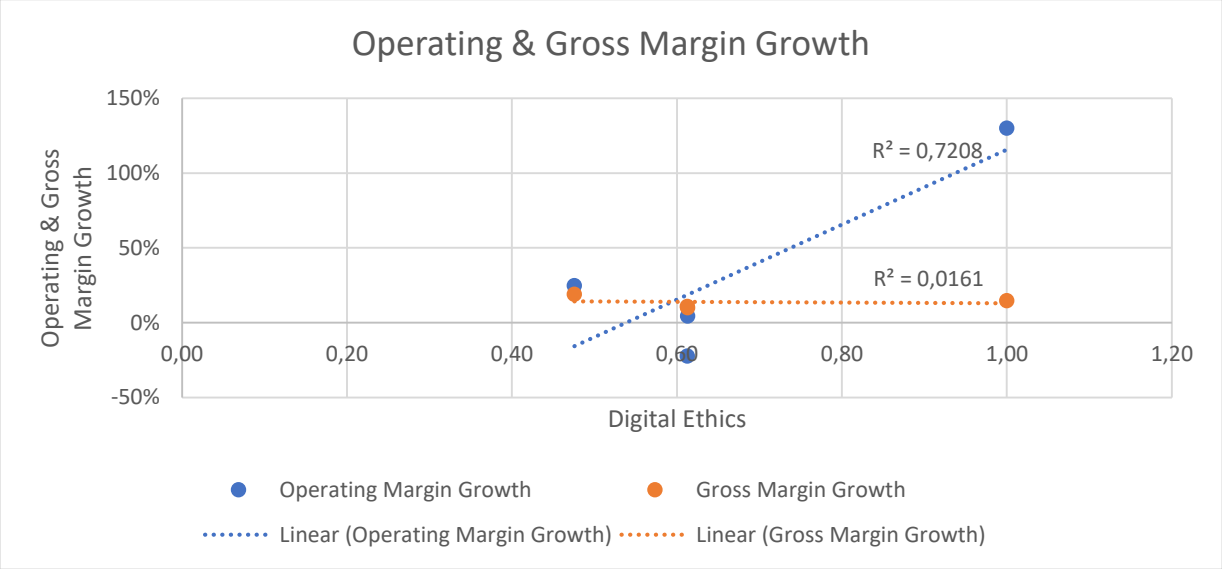


Figure 31: Relationship Between Digital Ethics and Operating & Gross Margin Growth

The OMG R^2 of 0.7208 suggests a strong positive relationship with Digital Ethics.

The GMG R^2 of 0.0161 suggests no relationship with Digital Ethics.

- **Customer Orientation & Engagement**

	Customer Orientation & Engagement	Operating Margin Growth	Gross Margin Growth
IBA	0.72	4%	10%
ICX	1.00	130%	15%
II	0.69	-22%	11%
IW	0.65	25%	19%

Table 16: Customer Orientation & Engagement Operating & Gross Margin Growth

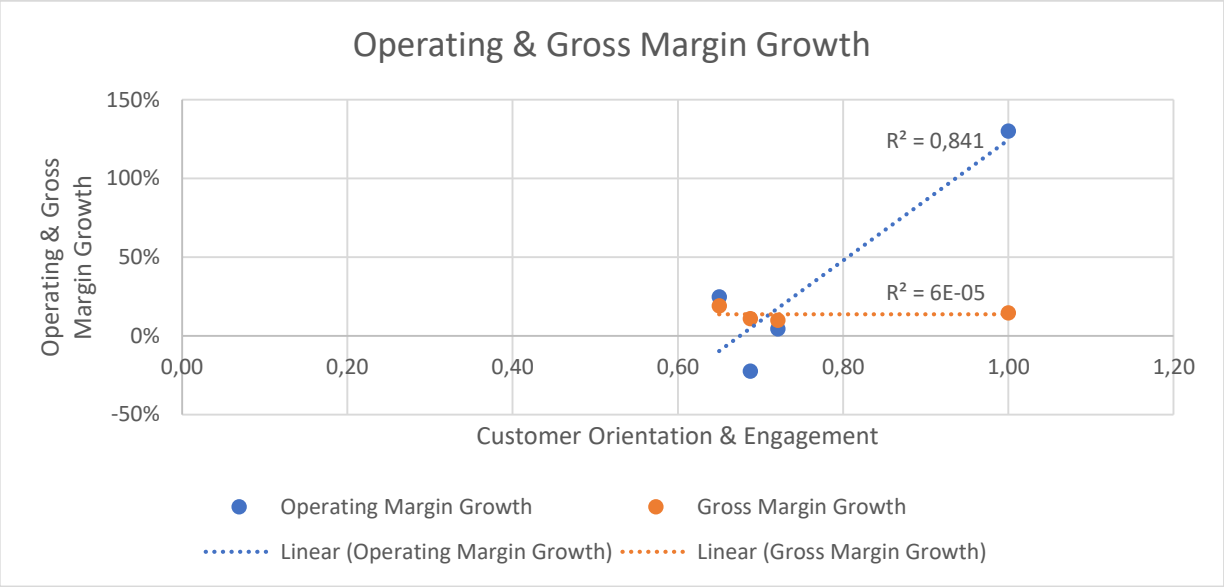


Figure 32: Relationship Between Customer Orientation & Engagement and Operating & Gross Margin Growth

The OMG R^2 of 0.841 suggests a strong positive relationship with Customer Orientation & Engagement. The GMG R^2 of 0.00006 suggests no relationship with Customer Orientation & Engagement.

- **Digital Product Innovation**

	Digital Product Innovation	Operating Margin Growth	Gross Margin Growth
IBA	0.55	4%	10%
ICX	0.93	130%	15%
II	0.49	-22%	11%
IW	0.53	25%	19%

Table 17: Digital Product Innovation Operating & Gross Margin Growth

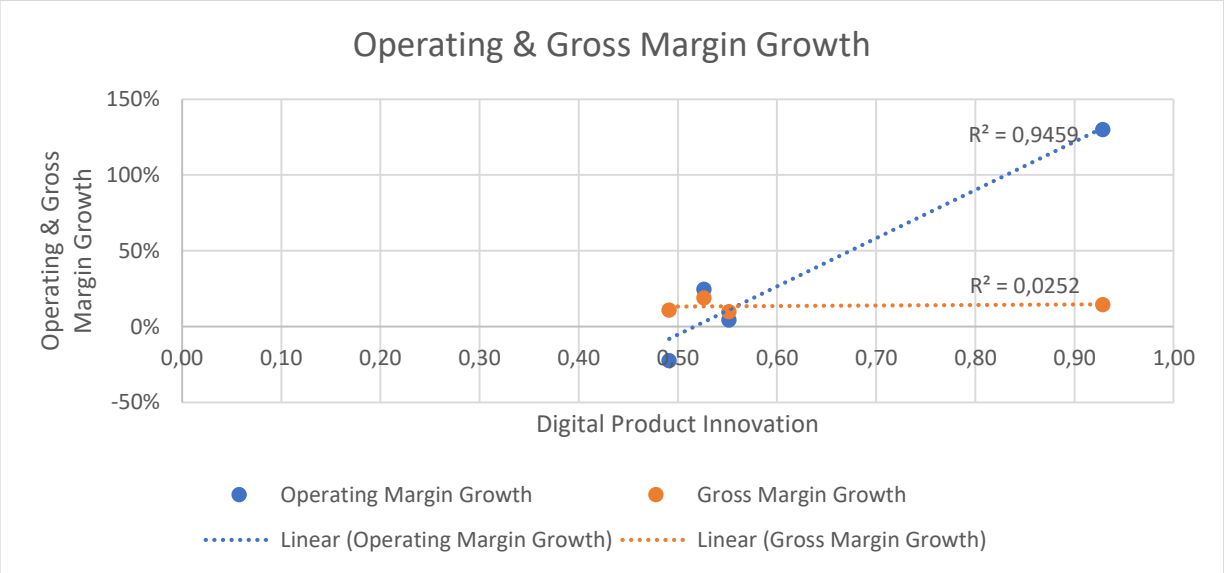


Figure 33: Relationship Between Digital Product Innovation and Operating & Gross Margin Growth

The OMG R^2 of 0.9459 suggests a strong positive relationship with Digital Product Innovation, almost a perfectly positive linear correlation. The GMG R^2 of 0.0252 suggests no relationship with Digital Product Innovation.

- **Workforce Enablement & Performance**

	Workforce Enablement & Performance	Operating Margin Growth	Gross Margin Growth
IBA	0.65	4%	10%
ICX	1.00	130%	15%
II	0.66	-22%	11%
IW	0.59	25%	19%

Table 18: Workforce Enablement & Performance Operating & Gross Margin Growth

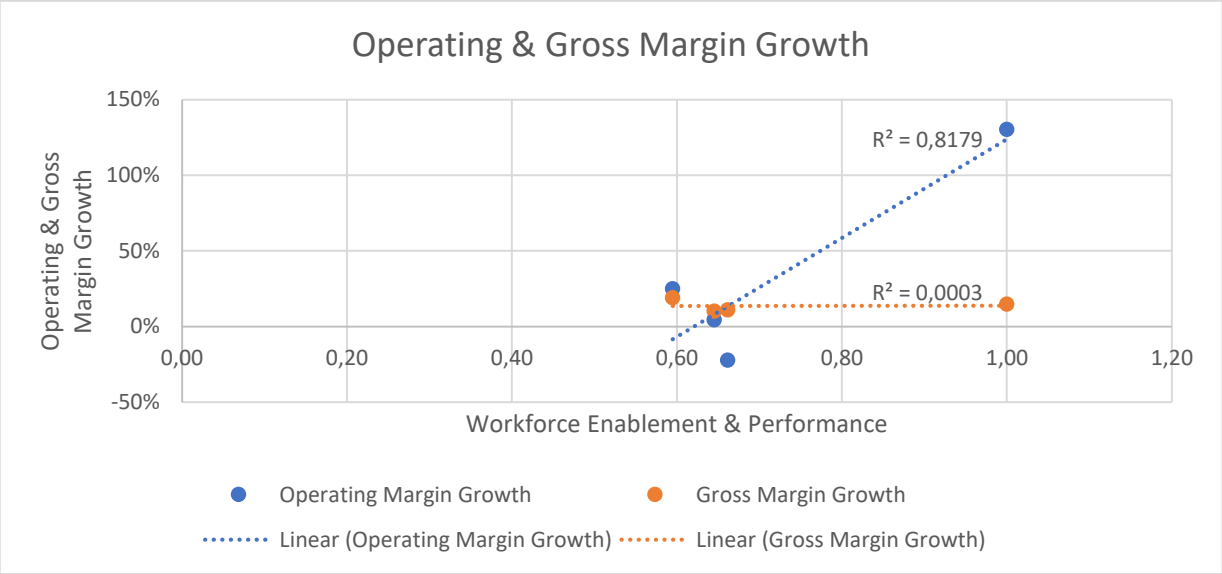


Figure 34: Relationship Between Workforce Enablement & Performance and Operating & Gross Margin Growth

The OMG R^2 of 0.8179 suggests a strong positive relationship with Workforce Enablement & Performance. The GMG R^2 of 0.0003 suggests no relationship with Workforce Enablement & Performance.

- **Core Processes Digitalisation**

	Core Processes Digitalisation	Operating Margin Growth	Gross Margin Growth
IBA	0.61	4%	10%
ICX	1.00	130%	15%
II	0.58	-22%	11%
IW	0.51	25%	19%

Table 19: Core Processes Digitalisation Operating & Gross Margin Growth

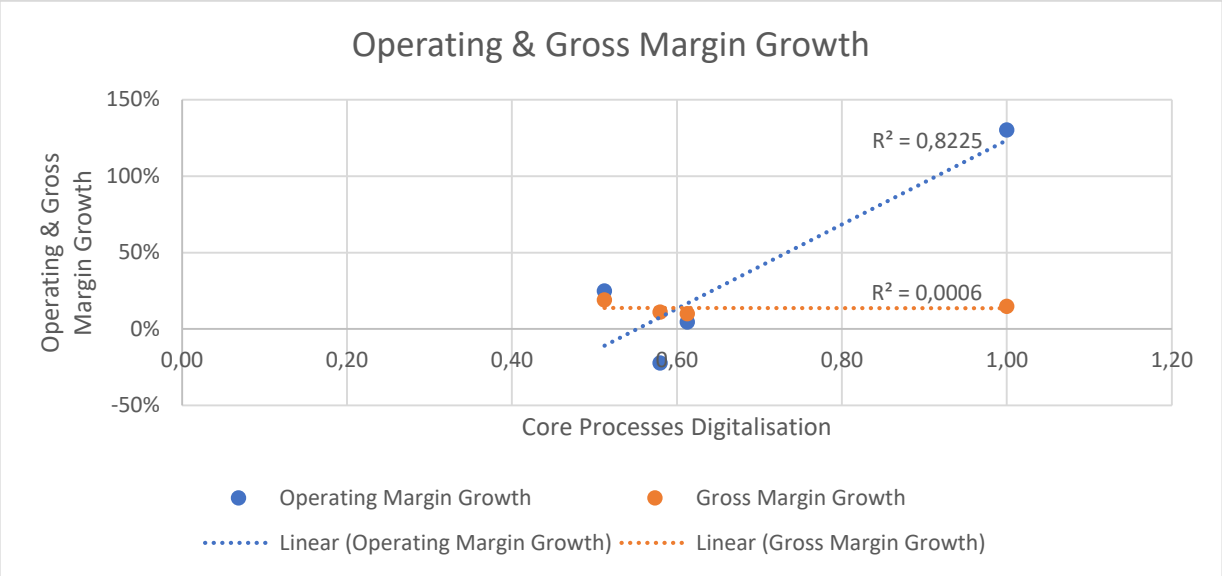


Figure 35: Relationship Between Core Processes Digitalisation and Operating & Gross Margin Growth

The OMG R^2 of 0.8225 suggests a strong positive relationship with Core Processes Digitalisation. The GMG R^2 of 0.0006 suggests no relationship with Core Processes Digitalisation.

- **IT/IS Excellence**

	IT/IS Excellence	Operating Margin Growth	Gross Margin Growth
IBA	0.80	4%	10%
ICX	0.98	130%	15%
II	0.71	-22%	11%
IW	0.65	25%	19%

Table 20: IT/IS Excellence Operating & Gross Margin Growth

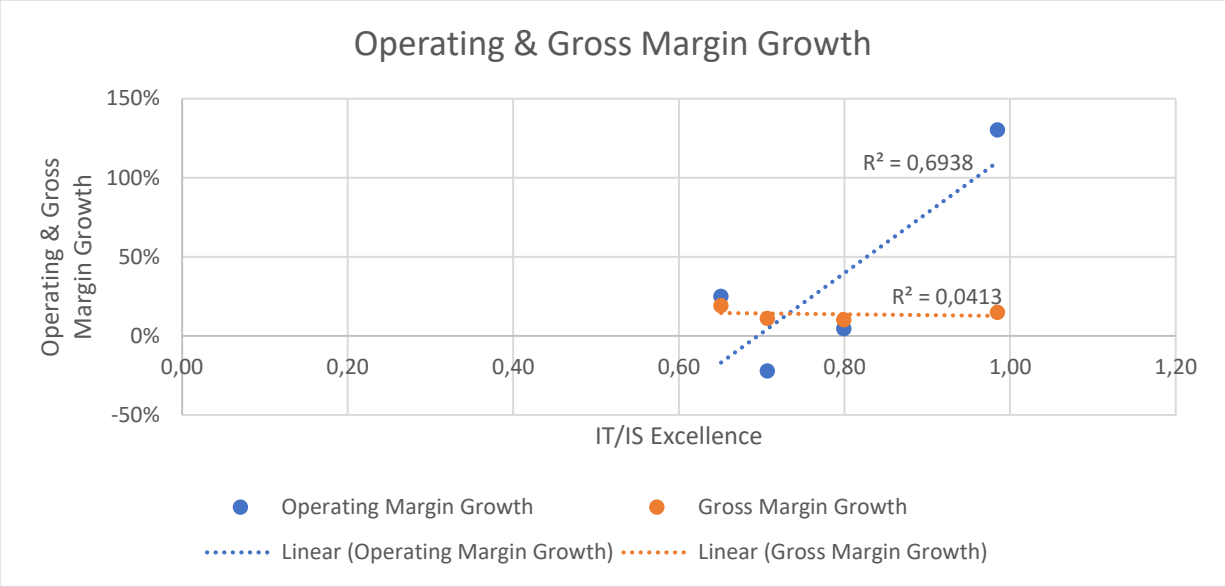


Figure 36: Relationship Between IT/IS Excellence and Operating & Gross Margin Growth

The OMG R^2 of 0.6938 suggests a moderate positive relationship with IT/IS Excellence. The GMG R^2 of 0.0413 suggests no relationship with IT/IS Excellence.

- **Results**

GTM	Results	Operating Margin Growth	Gross Margin Growth
IBA	0.66	4%	10%
ICX	1.00	130%	15%
II	0.57	-22%	11%
IW	0.54	25%	19%

Table 21: Results Operating & Gross Margin Growth

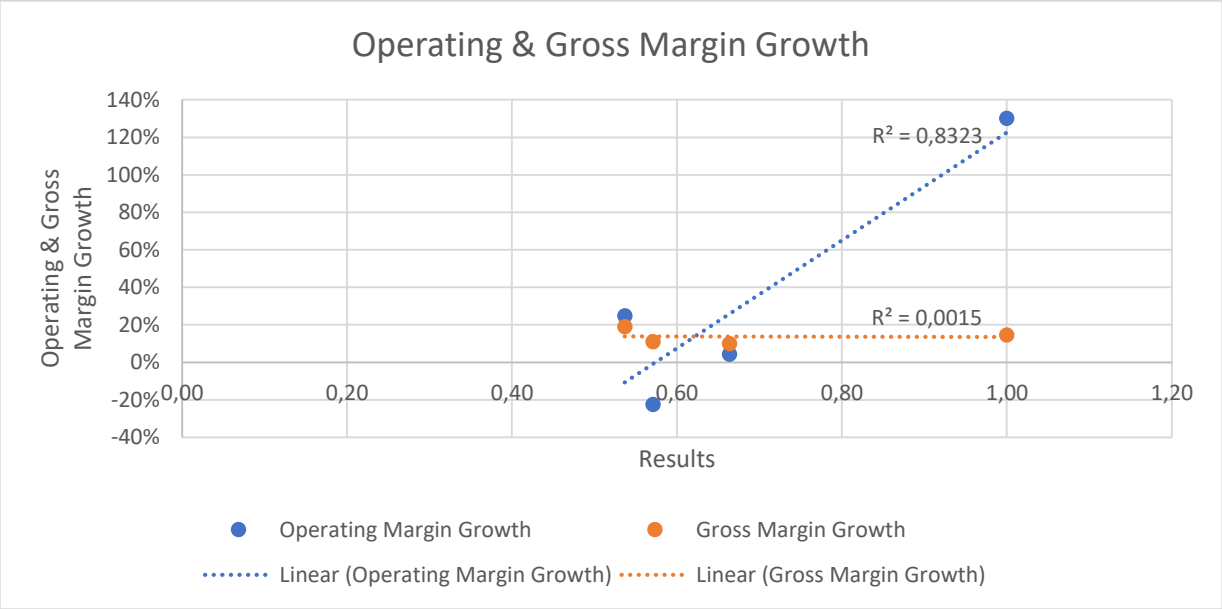


Figure 37: Relationship Between Results and Operating & Gross Margin Growth

The OMG R^2 of 0.8323 suggests a strong positive relationship with Results. The GMG R^2 of 0.0015 suggests no relationship with Results.

CHAPTER 5. DISCUSSION

Digital transformation and its application of digital technologies to business processes undoubtedly develops new business processes and models (Anthony et al., 2017).

Although studies produced indefinite results when examining the correlation between business process and model innovation and organisational performance, Latifi et al. (2021) found that a direct and significant relation between business model innovation and organisational performance. This finding is consistent with the findings of Ladib and Lakhal (2015) and Gio et al. (2017) who also found similar results.

As this field of research is still developing, this study sought to contribute to the understanding of the impact of digital transformation on organisation performance, specifically in terms of the influence of digital maturity factors on operational and financial performance.

Accordingly, two research questions were formulated and the insights from the quantitative study are presented below.

5.1 RESEARCH QUESTION 1

Is there a link between digital maturity and organisational performance?

An understanding of whether this link exists will indicate whether digital maturity provides a competitive advantage which allows an organisation to improve its organisational performance. This question explores digital maturity's influence on both operational and financial performance.

What emerged from the quantitative study is that the GTM most focussed on customer experience (ICX) scored the highest digital score of 98.82%, while also recording the highest operating margin growth (130%) and the second highest gross margin growth (15%).

Supporting this, Garg et al. (2014) showed that positive customer experience influences customer satisfaction and loyalty. Arnold et al. (2005) stated that "Customer satisfaction has been linked to several important outcomes, including increased market share, profitability, customer retention and loyalty, purchase intentions, usage rates, and the benefits associated with positive word-of-mouth effects". Arnold et al. (2005) further claimed that a higher level of customer satisfaction would result in unshakeable customer loyalty.

As can be seen in ***Table 6***, an organisation's digital maturity is closely linked with the quality of its leadership and strategy as well as its ability to implement the digital strategy. While these results suggest that both leadership and execution have a significant effect on digital maturity, ***Table 9*** suggests the following:

1. Culture and Engagement digital maturity factor (scoring a mean of 0.68) has a greater influence on Leadership and Strategy, and
2. IT/IS Excellence digital maturity factor (scoring a mean of 0.72) has a greater influence on Digital Application and Impact.

It is no surprise that ICX is plotted in the Optimised quadrant of the digital maturity model, suggesting that digital transformation is fully integrated with the ICX culture. These findings confirm the interconnected nature of digital maturity and organisational performance. However, when a further observation is made of digital maturity's link between the organisation's operational performance and financial performance, an interesting observation was that digital maturity is strongly positively correlated with operational performance (OMG R^2 of 0.7857 representing a strong relationship), but not with financial performance (GMG R^2 of 0.0042 representing a very weak relationship).

The low GMG R^2 indicates inefficiencies (which may be influenced by exogenous factors) and/or significant profits being reinvested back into the organisation to spend on digital transformation initiatives, which negatively impacts the organisation's short-term financial stability but improves operational stability. The organisation has not yet maximised profitability from digital transformation as significant upfront and ongoing costs have been incurred towards the application of digital technologies to forge new business models and change the way value

is created. When digital transformation was launched, related costs rose sharply leading to significant increases in management expenses which offset any short-term financial benefits. As such, the intensity of digital transformation has initially had a negative net effect on financial performance. However, a certain threshold is expected to be reached where economies of scale will be achieved between the GTMs and growth will begin to accelerate.

The high OMG R^2, therefore, is a reflection on the organisation's satisfactory operational efficiency, which is often almost immediately influenced by digital transformation and supported by direct investments in digital technologies. Digital transformation has helped improve the organisation's operations by reducing transaction costs, increasing employee productivity, improving asset efficiency, and optimising its supply chain. The organisation has improved its operational performance by migrating its core business applications to the cloud, significantly reducing the associated costs with running these applications. Moving to the cloud has helped the organisation shift to agile product development rather than managing a data centre footprint, which attracts significant capital and overhead expenditure. Similarly, the organisation has gained new insights to improve product performance and service quality through a deliberate focus on data and analytics by enabling digital technologies such as Artificial Intelligence to elevate the efficiency of its corporate assets.

5.2 RESEARCH QUESTION 2

Is there a relative impact of each of the factors of digital maturity on organisational performance?

An understanding of the relative impact that each of the 12 digital maturity factors have on organisational performance will indicate which factors an organisation should prioritise or focus on to leverage optimal performance outcomes. This question explores each digital maturity factor's influence on both operational and financial performance.

The maturity scores of each of the 12 factors were examined relative to OMG and GMG, the results were as follows:

- Vision and Strategy – The vision and strategy of the organisation are possibly more geared towards attainment of operational excellence as opposed to improving profitability in the short to medium term. This is evidenced by the steep OMG slope (R^2 = 0.8058) and a flat GMG slope (R^2 = 0.0097) in ***Figure 26***. This may be influenced by an industry-wide focus of digital transformation investment and adoption for future sustainable revenue and margin improvements.
- Culture and Engagement – The alignment of vision and strategy towards operational excellence justifies the positive correlation of culture and engagement with OMG (R^2 = 0.6853) in ***Figure 27***. High employee engagement leads to less absenteeism, better productivity and retention which contribute to better performance and profitability. However, the weak correlation with GMG (R^2 = 0.0232) is worrisome as the financial standing of the organisation decreases when the engagement level among employees decreases.
- Governance and Organisation – In a study by Thunputtadom et al. (2018), it is stated that the independence of a board plays a role in the company's performance by monitoring and controlling its management to protect the interests of the shareholders and to enhance the effectiveness of operational performance. As such, the correlation with OMG (R^2 = 0.7267) in ***Figure 28*** is positive. On the other hand, good corporate governance leads to ethical business practices, which leads to financial viability. The correlation with GMG (R^2 = 0.0123) is concerning as this suggests some pending financial issues.
- New Value Streams and Business Models – The success of any business model includes a wide range of financial performance benefits such as revenue growth and profitability. The correlation with GMG (R^2 = 0.0047) in ***Figure 30*** suggests that these benefits have not yet been realised. Subsequently, the correlation with OMG (R^2 = 0.8848) suggests a positive impact on operational excellence of the organisation.

- Investment & Innovation – A study by Kafetzopoulos and Psomas (2015) found that “innovation capability” directly contributes to product quality and operational performance, while indirectly impacting financial performance through operational performance. These finding affirm the findings of this research. The correlation with OMG (R^2 = 0.6946) in ***Figure 29*** suggest a direct relationship and an indirect relationship with GMG (R^2 = 0.0241).
- Digital Ethics – Business ethics play a critical role in world led by digital transformation. Both individuals’ behaviour and company performance have profoundly changed. A company’s sustainable and long-term growth is influenced by complying with ethical standards when making decisions relate to digitalisation (Roša, 2021). The correlation with OMG (R^2 = 0.7208) in ***Figure 31*** supports this assertion while the GMG (R^2 = 0.0161) affirms the assertions by Halamka and Teplý (2017) that (1) organisations applying ethics have lower volatility in profits than others and (2) a significant effect of ethics was only associated with volatility of Return on Equity.
- Customer Orientation and Engagement – A study by Rahman et al. (2022) finds that the number of negative customer engagement incidents a firm experiences affects its brand equity, which in turn impacts its financial performance. The correlation with GMG (R^2 = 0.00006) in ***Figure 32*** suggests that the organisation has a poor customer engagement which impacts its financial performance. The correlation with OMG (R^2 = 0.841) then suggests that the organisation is potentially investing in its digital channels to provide an improved customer engagement and experience.
- Digital Product Innovation – Investments in advancing digital technologies not only enable operations, but also stimulate product, service, and business model innovation (Guo & Xu, 2021). The correlation with OMG (R^2 = 0.9459) in ***Figure 33*** suggests a significantly positive relationship and focus on improving this capability, supported by a weak correlation with GMG (R^2 = 0.0252) indicating a reinvestment of profits towards digital product innovation.
- Workforce Enablement and Performance – A study by Jashari (2020) found that the financial and overall performance of organisations will

increase by improving the way how workers perform their tasks (Jashari, 2020). The correlation with OMG (R^2 = 0.8179) in ***Figure 34*** indicates that workforce productivity and performance have a positive relationship with operational performance of the organisation. Whereas, the correlation with GMG (R^2 = 0.0003) suggesting a negative relationship. Factors such as the type of training methods and design, the type of employees trained, the time spent by employees in training and how training results are measured, analysed or evaluated also influence the extent of these outcomes (Thang et al., 2010).

- Core Processes Digitalisation – A study by Abou-foul et al. (2020) found that process digitalisation plays a significant role in enhancing financial performance through embedding digital technologies in the organisation's offerings. This is said to enhance the customer experience, reduces time and cuts costs as organisations transition into a more data-driven operations and customer-centric business model (Abou-Foul et al., 2020), affirming the correlation with OMG (R^2 = 0.8225) in ***Figure 35***. Although the correlation with GMG (R^2 = 0.0006) suggests a weak relationship, the study calls out the use of process digitalisation to enable selling an "outcome as a service" rather than a one-off sale as an opportunity for organisations to improve their financial performance, in terms of revenue generation, profit and market value.
- IT/IS Excellence – A study by Masli et al. (2011) investigated the impact of unique IT capabilities on sustainable competitive advantages and found that organisations are able to achieve superior firm performance if they are able to maintain high levels of IT capability over time. While the positive correlation with OMG (R^2 = 0.6938) in ***Figure 36*** supports this finding as IT/IS Excellence is an enabler of operational excellence, the weak correlation with GMG (R^2 = 0.0413) isn't surprising as IT/IS Excellence requires significant financial investments.
- Results – A study by Ionaşcu et al. (2022) found that financial markets recognise and reward companies that advance their digital transformation strategies, with investors providing more capital to companies that digitise their activities and are more socially responsible. The study also found that these organisations achieve higher market values than those which do not

advance their digitisation strategies (Ionaşcu et al., 2022). These findings are supported by the positive correlation with OMG ($R^2 = 0.8323$) in ***Figure 37***, consistent with the results of all the other digital maturity factors. The weak correlation with GMG ($R^2 = 0.0015$) supports the findings of the study by Ionaşcu et al. (2022) that digital transformation improves the market value of an organisation which is influenced by exogenous factors rather than directly by its financial performance.

The abovementioned factors all contribute significantly to digital transformation of an organisation but are less impactful when implemented individually. The best results are realised when all factors are implemented collectively. However, the results of this study show that digital transformation has a much more immediate impact on operational performance (OMG) than on financial performance (GMG).

5.3 SUMMARY

The GTM digital maturity results have provided a basis upon which the current state of transformation within the organisation can be interpreted. Apart from ICX, all the GTMs show slow progress towards improving and reaching higher levels of digital maturity. However, ICXs digital maturity should be interpreted with caution. The OMG R^2 score of 0.7857 suggests a strong positive relationship with digital maturity scores of the GTMs. Whereas the GMG R^2 score of 0.0042 suggests no relationship with digital maturity scores of the GTMs. These results are consistent with the relationship comparison between the digital maturity scores of the digital maturity factors and organisational performance.

The relationship between the digital maturity factor scores and operational performance (i.e. OMG) is significantly strong and positive. Digital Product Innovation scored the highest R^2 result of 0.9459, followed by New Value Streams and Business Models with an R^2 score of 0.8848. These strong positive results show that digital transformation elevates the process-oriented operating performance of an organisation. This is attributed to the fact that digital transformation impacts core internal operations of the organisation.

There is no relationship between the digital maturity factor scores and financial performance (i.e. GMG). IT/IS Excellence scored the highest R^2 result of 0.0413, followed by Digital Product Innovation with an R^2 score of 0.0252. These results suggest that digital transformation possibly has a U-shaped relationship with the profit-based financial performance of the organisation. This may be attributed to the fact that financial performance is influenced by many exogenous factors that were not considered in the evaluation of the organisation's digital maturity.

CHAPTER 6. CONCLUSION

This research report investigates the impact of digital transformation on organisational performance, specifically in terms of the influence of digital maturity factors on operational and financial performance. It shows that digital transformation has a much more immediate impact on operational performance (OMG) than on financial performance (GMG). This study aims to contribute positively to the body of knowledge, particularly to organisations that are finding it challenging to digitally transform in terms of the digital maturity. The research questions which strived to be answered in the thesis are:

Q1: Is there a link between digital maturity and organisational performance?

Q2: Is there a relative impact of each of the factors of digital maturity on organisational performance?

Although there is a lot of research available on the link between digital transformation and/or maturity and organisational performance, the evidence remains more anecdotal than scientific. The main objective of this study was to address a significant gap in the literature regarding the impact of digital transformation on organisational performance, which is further categorised as operational and financial performance.

The COVID-19 pandemic has resulted in the most rapid transformation of the workplace, with many employees working from home and many organisations adopting new business models to maintain operations. Even before the pandemic, investments in digital transformation were largely increasing. Working from home has become the new normal, and organisations have been propelled forward by trends such as automation, digitalisation, and innovation. These are contributing towards ensuring greater service effectiveness and efficiency, and to helping organisations respond to evolving service models and the different ways that their clients wish to consume technology today.

Digital technologies such as AI, IoT, Machine Learning, RPA, Cloud and Big Data Analytics promise to transform traditional organisations into the digital economy

to achieve innovation and sustainable growth. Digital technologies impact not only the transformation of products, business processes, or sales but also entire business models. As the convergence of voice, video, and data continues, and the IT market moves more towards software, outsourcing, communications-as-a-service, and as more operations shift to workloads, trends like IT-as-a-service, cloud computing, mobility, and big data continue to become pervasive. These trends and technologies can redefine how an organisation operates and, insodoing, introduce a higher cybersecurity risk. Cybersecurity must, therefore, be a key part of an organisation's digital transformation plan from day one.

A survey was administered in the organisation to gather data to measure the current digital maturity level of an IT organisation's GTMs against their performance results to establish a correlation. The quantitative research method was preferred to gather the most appropriate data to explain which digital maturity factors and dimensions influence the organisation's performance. This research aimed to deepen the theoretical understanding of the organisational performance effects of digital transformation and provides relevant guidance for organisations to achieve improved performance through digital transformation.

The digital maturity scores of each of the organisation's GTMs, across all the digital maturity factors, were plotted on a digital maturity model to measure the output of their digital transformation activities. The matrix pivoted the GTMs against two dimensions/axes, Application and Impact and Leadership and Strategy. Although the GTMs operate independently and had different scores, they all achieved optimised level of maturity, suggesting that they are integrated with digital transformation making it a part of company culture.

Apart from the commercial advantages, digital transformation is broadly perceived as a driver of change, particularly in the context of enhancing an organisation's operational performance. Operational performance is linked with New Value Streams and Business Models (e.g. Platform business model usage), Digital Product Innovation (e.g. Products and UX differentiated by emerging and disruptive technologies), Culture and Engagement (e.g. Organisational learning: exploration and experimentation) and Investment and Innovation (e.g. Lean and open innovation). On the other hand, financial performance is linked with Vision

and Strategy (e.g. Sufficient investment & resource allocation in digital transformation) and Workforce Enablement and Performance (e.g. Digital skills development). This suggests that an organisation's digital transformation strategy that focuses only on implementing digital technologies is insufficient, as it remains crucial to consider other factors as contributors to the organisation's overall performance.

The financial reports of the GTMs were gathered to analyse their financial and operational performance over 21 months (since the beginning of the organisation's digital transformation journey). The OMG and GMG rates were then calculated to measure improvement over the period to help track performance, plan and set goals, and make predictions or forecasts. Growth is crucial to the organisation's long-term survival as it enables the acquisition of assets, attracts new talent, and fund investments. It also drives long-term business performance and profit.

Correlations were further investigated to establish a relationship between digital maturity and organisational performance. The results found a positive correlation between digital maturity and operational performance, inferring that digital maturity does indeed improve the organisation's operational performance. However, a negative correlation was found between digital maturity and financial performance.

Digital transformation helps improve the operations of a business by increasing employee productivity, reducing transaction costs, optimising the supply chain, and improving asset efficiency. Despite the benefits, digital transformation is known to increase the operating costs of a business, i.e. fixed investment in digital resources such as infrastructure, talent, and services. Therefore, the contention is that digital transformation reduces operating costs and improves operating efficiency despite the operating expenses. New operating and business models emerge as a result, shifting from traditional CAPEX and OPEX to 'as-a-service'.

Unlike the investments in traditional IT, which are predominantly capex driven, digital transformation investments require operational investments (not capital investments) which are made incrementally to realise more considerable benefits

over time. The benefits increase at the rate of digital transformation intensity as improved operational processes indirectly contribute to better financial performance. Investing in digital technologies enables existing business operations and boosts innovation and firm growth. This allows digital transformation to elevate financial performance further; however, it does not guarantee profitability because it incurs operating and integration costs which rise rapidly at first, leading to a significant increase in management expenses.

When digital transformation intensity is low, the marginal integration costs exceed the marginal benefits. The increase in digital transformation intensity has a negative net effect on financial performance. When the intensity of digital transformation reaches a certain threshold, the marginal costs will be outweighed by the marginal benefits, which helps improve operations and accelerate growth. At this intersection, digital transformation can fuel new forms of innovation and entrepreneurial initiatives, which generate revenues and profits that offset the integration costs. Digital transformation would, at this intersection, have a positive net effect on financial performance.

This study illustrates that achieving higher levels of digital maturity requires an evaluation of current digital maturity, which must be sponsored and driven by management to succeed. Change management has been identified both in literature and this study to be an important managerial implication, which, if not carefully implemented, will sabotage any chances of success. Although digital transformation delivers efficiencies, innovation, and competitiveness, the process should not be underestimated because it contains risks like every other organisational initiative.

A substantial contributing factor to reaching digital maturity is not just about transforming technology and processes; it is mainly about transforming the organisational culture to empower talent to develop better innovations and nurture the process of innovation.

6.1 MANAGERIAL IMPLICATIONS

This study proves the role that digital maturity plays in the improvement of organisational performance. The main implications of this study derive from the findings related to the research questions, a summary of which is presented in section ***4.7 (CORRELATION ANALYSIS).*** The data analysis from the completed survey questionnaire derived some interesting insights related to the perceptions and opinions of digital transformation associated with each digital maturity factor.

Vision and Strategy

The outlook of the organisation's vision and strategy was largely positive, scoring a mean of 65%. The respondents felt that the organisation had a well-defined digital vision and leaders of the organisation have a compelling long-term vision. However, this did not translate to commitment, prioritisation, sufficient investment and/or adequate resource allocation towards digital transformation initiatives.

Culture and Engagement

This factor scored a mean of 68%, with collaboration across company boundaries and cross-functional knowledge sharing being prominent indicators. Leaders of the organisation were also acknowledged for actively identifying and realising new opportunities to foster collaboration while encouraging experimentation and risk-taking to encourage a culture of innovation.

Governance and Organisation

Although scoring 60%, this factor scored well on some indicators. The organisation was acknowledged for its ability to integrate upstream and downstream value-chain partners, enterprise-wide change management capability and well-established organisational structures for digital governance.

Investment and Innovation

This factor scored 59%, highlighting that employees are encouraged to ideate new digitised working methods by using prototypes to learn quickly. Through lean

innovation practices, employees can develop new ideas while the organisation allocates funding for digital transformation initiatives. However, key metrics are not in place and monitoring is still immature.

New Value Streams and Business Models

Platform business models are a core part of the organisation's strategy and the organisation looks to create value through platforms and external networks. Data was viewed as a strategic asset, leveraging opportunities for coopetition as a new source of value. Scoring a mean of 63%, there is room for more deliberate attempts for further action in pursuing new value and revenue streams.

Digital Ethics

Although scoring 56%, one of the lowest scoring factors, ethics are viewed as an important business enabler and are visible at board and executive level. The highest scoring indicator was the existence of well-defined digital ethics principles. The lowest scoring indicator signalled a lack of an internal supervisory body – this is an area for improvement.

Customer Orientation and Engagement

With a mean score of 65%, the respondents applauded the organisation for its optimised digital channels and digitising customer touchpoints. The organisations use of analytics for personalisation and targeting also scored well. However, customer involvement in innovation processes and product development was largely criticised.

Digital Product Innovation

By far the lowest scoring factor at 51%, all indicators scored low. The organisation was criticised for not embedding emerging and disruptive technologies in its products, not using digital technologies to enhance and differentiate user experience and/or product features.

Workforce Enablement and Performance

This factor scored a mean of 62%, highlighting digital skills development and employee empowerment as mature practices in the organisation. Problematic areas were identified as lack of management accountability, short-term performance being celebrated rather than long-term outcomes and minimal use of advanced tools for knowledge-sharing and communication.

Core Process Digitalisation

The second lowest scoring factor at 55%, a positive indicator that scored well was the organisations ability to use digital technologies to link customer-facing and operational processes in new ways through automation and leveraging modern architectures. An area for improvement is the use of analytics, algorithms and machine learning to make meaningful operational decisions.

IT/IS Excellence

The best performing factor, scoring 72%, acknowledged the organisation's cybersecurity efforts specifically in situational awareness, threat & vulnerability management, and identity & access management. However, the integration of its enterprise management and core business systems was a risk

It would be useful for the organisation to compare itself with those who have reached higher levels of digital maturity and determine whether it would be beneficial to transform further. If the organisation is falling behind the desired level of digital maturity, benchmarking could be used to see which areas are lacking and which capabilities are needed to be prioritised.

6.2 LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The findings of this study rest primarily on the empirical data from one large organisation (more than 4000 employees) in a single industry, and therefore the

findings cannot be compared to smaller organisations in other industries. The study also focused on an organisation that is actively participating in the digital transformation process; therefore, this study may not be relatable to an organisation that has made no efforts to transform digitally.

The data is in this study was gathered in South Africa, whereas the company has operations across the African continent. Thus, the responses may not be representative of the entire organisation. Some critical digital actions were never disclosed in the organisation's financial reporting, and similarly, some key information of digital transformation may not be reflected at the organisational level. Therefore, the validity of the organisation's digital transformation actions requires further verification.

As with most studies that gather data via surveys, this study may suffer from common method bias, depending on self-reported opinions. Lastly, financial analysis is quantitative rather than qualitative. Therefore, it does not address certain factors that can play a huge role in determining an organisation's prospects. For example, a survey cannot analyse the quality of an organisation's management team. This means that, although financial analysis can be hugely useful, it only tells a part of the story.

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ANNEXURE A: SURVEY INTRODUCTION

Measuring our Digital Maturity!

A survey is being conducted to gather insights from our employees on the subject of Digital Maturity. You have been carefully selected to participate in this survey based on your role in the organisation.

The survey includes questions about our organisation's Digital Maturity to identify gaps to mitigate and opportunities to exploit to accelerate our transformation.

The results of this survey will measure our Digital Maturity against a Unified Digital Maturity Model. The outcome of this survey will enable our organisation to determine the status of our digital initiatives, our performance in each dimension, the specific actions required to transform to higher levels of Digital Maturity and gain a clear understanding of our desired Digital Maturity state.

It will take approximately 20 minutes to complete the survey. The survey is open until Friday, December 3 2021 at 11:59:59 pm. Click here to complete the survey.

Your responses are completely confidential. They will only be presented as part of the overall organisational profile. A copy of the research results can be made available to you at your request.

Thank you for your valuable contribution.

Best Regards,

Name.Surname
Managing Director - Southern Africa

Figure 38: Survey Introduction Email

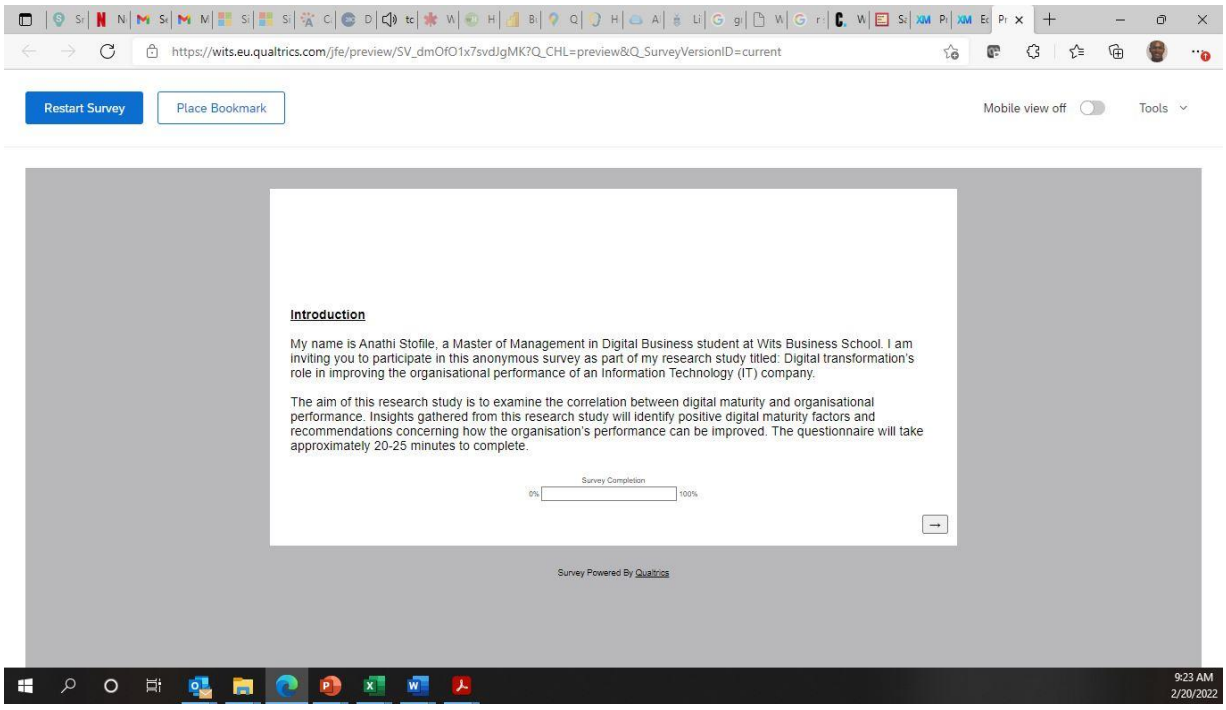


Figure 39: Survey Introduction

ANNEXURE B: PARTICIPANT INFORMATION SHEET & CONSENT FORM/STATEMENT

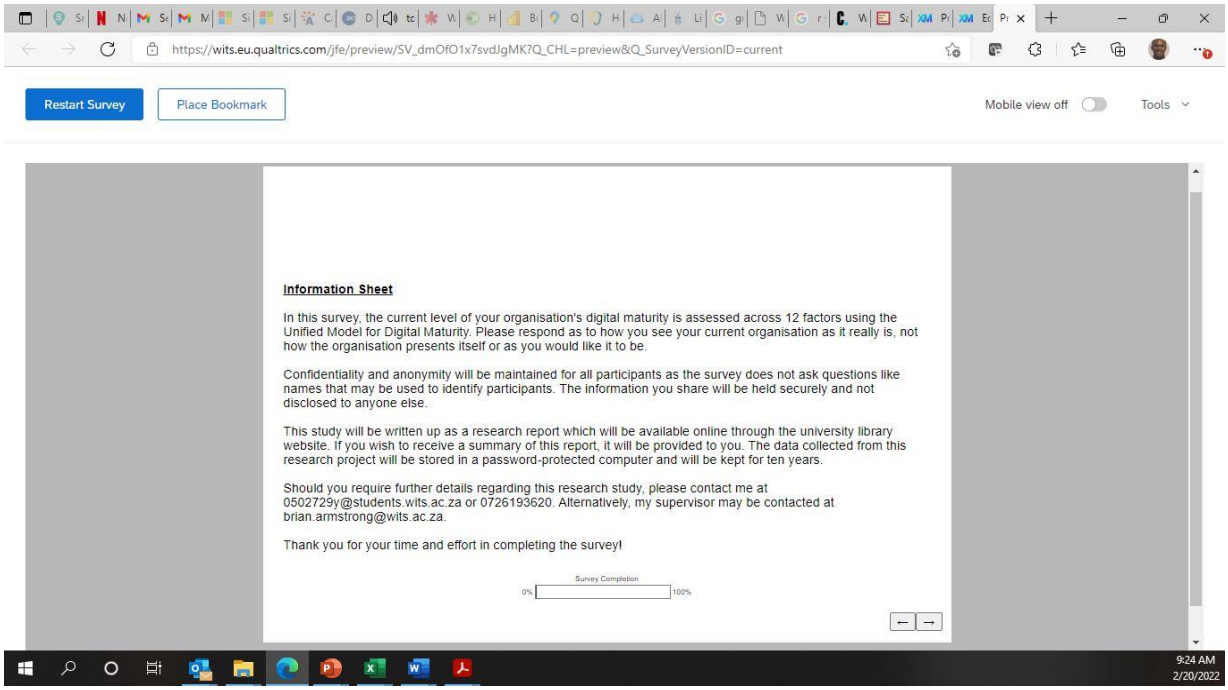


Figure 40: Participant Information Sheet

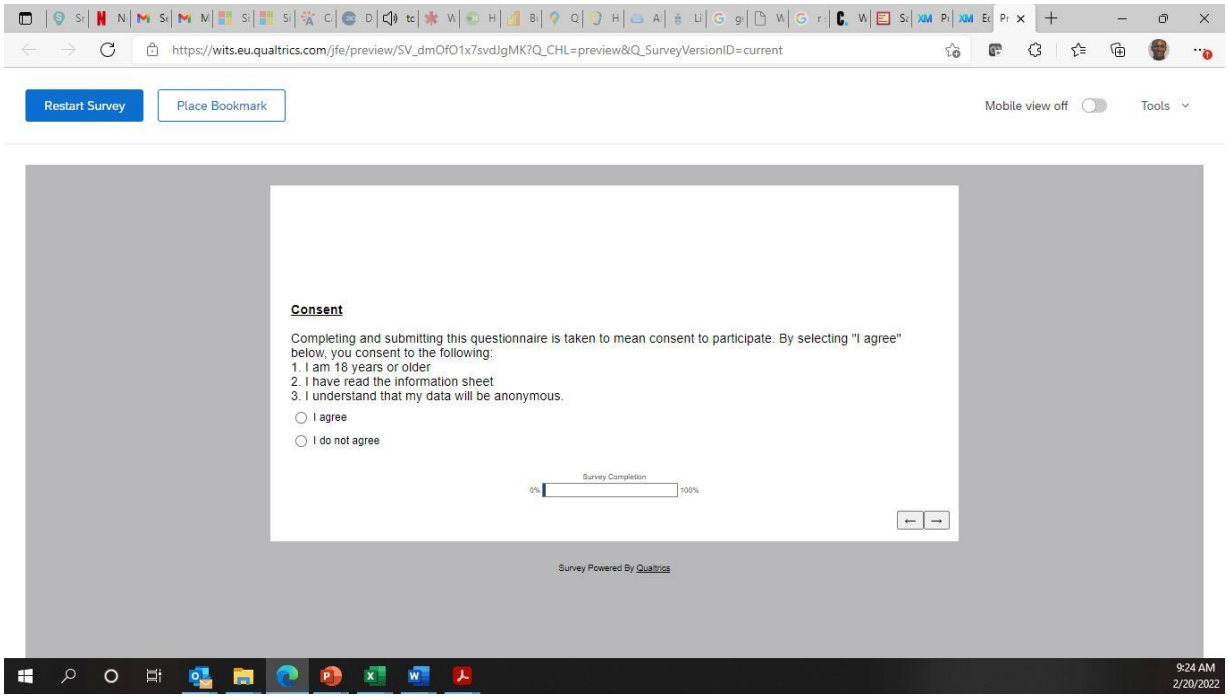


Figure 41: Participant Consent Form/Statement

ANNEXURE C: RESEARCH QUESTIONNAIRE

Vision & Strategy

1. Senior executives and the Board have a transformative vision of the digital future of the organisation
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

2. Please select the most appropriate response for the organisation that describes its current transformation objectives:
   ☐ Our objectives do not consider digital transformation
   ☐ Our objectives are narrowly targeted in a limited number of specific areas such as the digital workplace and improving operations
   ☐ Our objectives include re-thinking and re-designing our business processes as well as several coordinated initiatives related to the digital customer experience
   ☐ Our objectives encompass re-thinking and re-designing our business models and processes and we are pursuing a mastery of the digital customer experience

3. The digital transformation vision incorporates customer experience priorities, product offering renewal/evolution and internal operations
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

4. The Board, senior executives, middle managers, and employees share a common vision of the digital future of the organisation and the digital transformation journey to get there
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

5. Please select the most appropriate response for the organisation that corresponds to its current leadership approach:
   ☐ Our leadership makes digital transformation a key consideration, but digital initiatives are still loosely coordinated and aligned with one another
   ☐ Our leadership makes digital transformation a necessity, and we pursue digital initiatives in a well-coordinated manner
   ☐ Our leadership makes digital transformation a necessity, enforces behaviours, and keeps programs chartered and aligned with the external perspective in mind

6. The digital vision is well integrated into the core strategy of the organisation
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

7. The digital vision and strategy have well-articulated objectives and measures of success which are captured on the organisation's scorecard and cascaded through the business
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

8. Please select the most appropriate response for the organisation that describes the overall priority of your digital transformation initiatives:
   ☐ It is not among our top 3 priorities
   ☐ It is among our top 3 CEO-level priorities
   ☐ It is among our top 3 Board-level priorities

Culture & Engagement

1. The senior leadership in the organisation are tech-savvy. They are aware of technology developments and use new technology products comfortably in their daily and personal lives
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

2. Please select the most appropriate response for the organisation that describes its current culture with regard to change
   ☐ We are inflexible and heavily committed to our current ways of working and thinking
   ☐ We are open to change when the business case is compelling
   ☐ We embrace substantial and continuous change and reinvention as being inevitable and a necessary ingredient of future success

3. To what extent does the organisation tolerate failure and encourage risk-taking?

   ☐ Failure is not an option (NASA) and is a Career Limiting Move (CLM)

   ☐ Failure and Risk are encouraged, but in name only and not tracked or quantified

   ☐ Failure and risk-taking are allowed and measured but sandboxed in Skunkworks or very defined boundaries (e.g., Lockheed skunkworks).

   ☐ Failure and risk-taking are expected, pervasive, measured and even celebrated across the organisation (e.g., Amazon, Google, P&G Heroic Failure Award)

4. Please rate the organisation in terms of the following behaviours

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We actively promote data-driven decision making	☐	☐	☐	☐	☐	☐	☐
We actively promote the exploration of new ideas and experimentation at all levels	☐	☐	☐	☐	☐	☐	☐
Leadership is adopting new behaviours required for digital transformation	☐	☐	☐	☐	☐	☐	☐
We encourage rapid and independent decision making	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
Employees can collaborate digitally with other employees as needed	☐	☐	☐	☐	☐	☐	☐
Employees actively share their knowledge through collaborative digital platforms (e.g., Slack, Jira, Skype)	☐	☐	☐	☐	☐	☐	☐
It is easy and commonplace to collaborate across boundaries in the organisation	☐	☐	☐	☐	☐	☐	☐
We live out the ethos that learning from mistakes is more important than not making them	☐	☐	☐	☐	☐	☐	☐
We reward the behaviours that comprise our desired digital culture, like data-driven decision making or digital-first mindset	☐	☐	☐	☐	☐	☐	☐

Governance & Organisation

1. Change Management: Please select the most appropriate response for the organisation that describes its change management program:

   ☐ We have limited and/or fragmented change management capabilities across the organisation

   ☐ We have a formal enterprise-wide change management capability, but have not yet fine-tuned it for our digital transformation initiatives

   ☐ We have a formal enterprise-wide change management capability, which has been fine-tuned for the broader and deeper change impacts brought about by digital transformation initiatives

2. Digital Governance Structures: Please select the most appropriate response for the organisation that describes its digital governance program:

   ☐ We have limited and/or fragmented organisational structures for digital governance

   ☐ We have some organisational structures for digital governance, such as committees or individual roles, but are not yet addressing all our traditional silos

   ☐ We have well-established organisational structures for digital governance which include specialized committees as well as individual roles

3. Coordination of strategic digital activities: The initiatives are coordinated across silos (Divisions, BUs, functions)

   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

4. Roles & Responsibilities: Roles and responsibilities for governing digital interventions or initiatives are well defined and understood

   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

5. KPIs: Digital Initiatives are assessed through a common set of KPIs, and broader organisational KPIs have been adjusted to align with the organisation's digital vision and objectives

   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

6. Organisational agility: The organisation is agile through staff empowerment, decentralised decision-making, and active use of agile management methods

   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

7. Distribution of digital skills: Please select the most appropriate response for the organisation that describes its current level and distribution of digital skills:

   ☐ We have limited digital skills, and these are confined in isolated pockets in the business

   ☐ We have moderate to good digital skills located in some strategic areas or initiatives, but they are not available to the broader organisation

   ☐ We have good digital skills in identified centres of excellence, and these are made available to the broader organisation

   ☐ We have strong digital skills embedded in throughout the organisation and in all strategic areas and programs

8. Assess the firm in terms of the following Organisational attributes and behaviours

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We have an open & flat organisation & culture	☐	☐	☐	☐	☐	☐	☐
It is quite easy to self-organize cross-functional teams throughout our organisation	☐	☐	☐	☐	☐	☐	☐
We actively work with a wide ecosystem of partners (start-ups, incubators, technology firms, competitors) to co-develop solutions	☐	☐	☐	☐	☐	☐	☐
We employ a diversity of staffing models with a talent ecosystem to ensure we have the right skills on demand	☐	☐	☐	☐	☐	☐	☐
We embrace a diversity of sourcing models and seek to own only valuable, differentiating assets.	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We integrate strategically, and digitally, with our upstream and downstream value-chain partners	☐	☐	☐	☐	☐	☐	☐

9. Structure: Does the organisation operate with large, hierarchical structures or small, multi-disciplinary, self-organizing teams?
   ☐ Traditional corporate hierarchy with large, specialized groups operating in silos.
   ☐ Some small, multi-disciplinary teams operating at the edges, away from the core.
   ☐ Some small, multi-disciplinary teams accepted and embraced within the core organisation
   ☐ Small, multi-disciplinary, networked, self-organizing teams are the primary operating structure across the organisation

Investment & Innovation

1. Innovation: Please select the most appropriate response for the organisation that describes its innovation program:
   ☐ We have limited and/or fragmented innovation programs across the organisation
   ☐ We have a formal enterprise-wide innovation program, but have not yet tuned it for our digital transformation objectives
   ☐ We have a formal enterprise-wide innovation program, which has been fine-tuned for our digital transformation objectives, and which enables continuous and collaborative innovation

2. What innovation processes are used in the organisation?

   ☐ Innovation is not deliberately pursued and only happens by chance or because of individual persistence

   ☐ Innovation processes are linear, traditional and "waterfall" in nature

   ☐ Lean Innovation / Lean start-up is spoken about and occasionally pursued, but in silos and inconsistently

   ☐ Lean Innovation / Lean start-up methodologies are the organisation-wide approach to innovation and are actively encouraged and pursued

3. Where does innovation happen for the organisation?

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
In dedicated innovation or R&D teams inside the core business	☐	☐	☐	☐	☐	☐	☐
In dedicated innovation labs/disruptor units at the edges or outside the business	☐	☐	☐	☐	☐	☐	☐
Everywhere in the organisation - we expect and enable everyone to be an innovator	☐	☐	☐	☐	☐	☐	☐
In and with our partner ecosystem	☐	☐	☐	☐	☐	☐	☐

4. Which metrics do you track about your organisation and your product innovation portfolio? (e.g., Lean Start-up Analytics)
   ☐ Only traditional KPIs monthly/quarterly/annually (e.g., sales, costs, profits).
   ☐ Some real-time, traditional metrics from transactional systems like ERP.
   ☐ All real-time, traditional metrics and use some Lean Start-up metrics
   ☐ All real-time traditional metrics and Lean Start-up (value and learning) like repeat usage, monetization, referral and NPS

5. Please select the most appropriate response for the organisation that describes its current level of investment allocated to digital transformation:
   ☐ We have little or no investment specifically allocated to digital transformation
   ☐ We have investments allocated to short-, medium- and long-term horizons, including several focused on digital transformation
   ☐ We have major investments specifically allocated to digital transformation

6. The organisation has a clear view of how much of its current business (revenue, profit) is likely to be disrupted in the short, medium, and long term?
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree ☐ Completely Agree

7. The organisation has determined how much it needs to be investing now to prepare for these future disruptions to its existing business
   ☐ Completely Disagree ☐ Disagree ☐ Somewhat Disagree ☐ Neither Agree or Disagree ☐ Somewhat Agree ☐ Agree

☐ Completely Agree

New Value Streams & Business Models

1. Please select the most appropriate response for the organisation that describes how it pursues new value streams:
   ☐ We use digital technologies and practices to optimise the performance of our existing products and channels
   ☐ We use digitalisation opportunistically to access new market segments and extend our customer reach and coverage
   ☐ We use digitalisation deliberately and systematically to access new market segments and extend our customer reach and coverage
   ☐ We are executing a strategic process of using digitalisation to materially extend existing value streams and find new ones

2. Please select the most appropriate response for the organisation that describes its use of platform business models:
   ☐ We have no current use or plans for platform business models
   ☐ We are actively investigating platform business models and their technical architectures
   ☐ Platform business models are already a core part of our digital transformation strategy

3. Please select the most appropriate response for the organisation that describes its use of new and disruptive business models, including new revenue models
   ☐ We do not invest in new business models
   ☐ We make small and sporadic investments in new business models

☐ We actively invest significantly in new business models in a deliberate and structured way

4. Please select the most appropriate response for the organisation that describes its use of new business models:
   ☐ We have not considered or experimented with new ways of "packaging", pricing or selling our offerings
   ☐ We have experimented with new business models and new ways of "packaging", pricing, or selling but have not move to scaling these experiments up or making them new ways of doing business
   ☐ We have launched some new business models and new ways of "packaging", pricing and selling or these are now a small part of our revenue mix
   ☐ We have launched new business models and new ways of "packaging", pricing or selling and these are now a major part of our revenue mix
   ☐ Our business is based entirely on new business models and new ways of "packaging", pricing or selling

Digital Ethics

1. Digital Ethics processes and structures present in the organisation

	Never	Occasionally	Most of the time	Always
Suggestion box or other anonymous issue reporting system. Whistle-blower mechanism.	☐	☐	☐	☐
Provision of internal ombudsman service.	☐	☐	☐	☐

	Never	Occasionally	Most of the time	Always
Customer focus groups for insight into digital ethics perspectives	☐	☐	☐	☐
External expertise and Interdisciplinary advisory board in the development and assessment of digital ethics principles.	☐	☐	☐	☐
Explicit, well explained digital ethics principles.	☐	☐	☐	☐
Publicly holding firm to account on well-explained digital ethics principles	☐	☐	☐	☐
Regular internal survey of continued relevance and application of principles.	☐	☐	☐	☐

2. Integration of Digital Ethics considerations into product design and business processes: To what extent does the organisation exhibit the following practices?

	Never	Occasionally	Most of the time	Always
Digital Ethics checkpoints throughout process and product design stages.	☐	☐	☐	☐
Post-release follow-up of digital ethics compliance	☐	☐	☐	☐
Accountability of digital ethics within product and process governance structure.	☐	☐	☐	☐
Regular internal survey of continued relevance and application of principles.	☐	☐	☐	☐

3. Participation in and access to Digital Ethics processes and governance structures in the organisation

	Never	Occasionally	Most of the time	Always
Commitment to visiting committee review and accreditation	☐	☐	☐	☐
Firmwide participation, engagement with business partners & stakeholders, engagement with customers and the wider public.	☐	☐	☐	☐
Engagement by representatives of the market the firm operates in.	☐	☐	☐	☐
Optional training and development for staff who wish to become more proficient in digital ethics	☐	☐	☐	☐

Customer Orientation & Engagement

1. Customer Centricity: Please select the most appropriate response for the organisation that describes its current approach to customer-centricity in its transformation journey:
   ☐ It drives some of our initiatives, but is inconsistently and irregularly applied
   ☐ It drives and informs most of our initiatives, and provides a regular touchstone for focus
   ☐ It drives all of our initiatives and we continuously adjust based on changing demands

2. Customer Involvement: Please select the most appropriate response for the organisation that describes its current approach to customer-involvement in its transformation journey:
   ☐ We base our decisions on market research and customer feedback

☐ We constantly commission research and monitor social media and customer feedback to inform our decisions

☐ We actively involve customers in our decision processes

3. Please describe the organisation in terms of how it is using technology and "digital" methodologies to understand and engage with customers

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We use analytics to better segment our customers	☐	☐	☐	☐	☐	☐	☐
We regularly conduct customer research to update our understanding of the needs and behaviours of our customers	☐	☐	☐	☐	☐	☐	☐
We use digital channels (such as online, social media and mobile to market our products and services	☐	☐	☐	☐	☐	☐	☐
We use digital channels to sell	☐	☐	☐	☐	☐	☐	☐
We test promising ideas quickly as proof of concept/minimum products	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We use digital technologies to integrate different channels together	☐	☐	☐	☐	☐	☐	☐
We use IoT, AI and/or data analytics to improve the customer experience	☐	☐	☐	☐	☐	☐	☐
We use IoT, AI and/or data analytics technologies to understand customer usage patterns of products and services	☐	☐	☐	☐	☐	☐	☐
We use IoT, AI and/or data analytics technologies to provide pre-emptive customer service remotely/on site	☐	☐	☐	☐	☐	☐	☐

Digital Product Innovation

1. Digital nature of Products & Services: To what extent are the organisation's products/services information based?
   ☐ Product/services are physical in nature
   ☐ Products/services are physical, but their delivery and/or production is information-based (e.g., Amazon)
   ☐ Products/services are physical, but services are information based and revenue generating (e.g., iPhone/App store).

☐ Entirely information-based (e.g., LinkedIn, Facebook, Spotify, Netflix).

2. Digital differentiation of Products and Services: To what extent does the organisation use digital technologies to....

	Insignificant	Significant	Truly differentiating
…enhance and differentiate your product features or performance	☐	☐	☐
…enhance and differentiate the user experience of you customers	☐	☐	☐
…reduce the intrinsic cost of production and support of your products and services	☐	☐	☐

3. Social functionality in Products & Services: To what extent is Social functionality and collaboration a central element of the organisation's product/service offering?
   ☐ None of these aspects is designed into our products/services (e.g., buying a lawnmower).
   ☐ These structures are bolted onto existing products/services (e.g., products have a Facebook page or Twitter feed).
   ☐ This functionality is used to enhance or deliver product/service offerings (e.g., 99Designs, Indiegogo, Taskrabbit).
   ☐ These inputs actually build our products/services offering (e.g., Yelp, Waze, Foursquare).

4. Data as an asset: Does the organisation share strategic data assets internally across the organisation or expose them externally to the community?
   ☐ We don't share data, even between departments

☐ Data shared between departments (i.e., use internal dashboards, activity streams and wiki pages).

☐ We expose some data to key suppliers (e.g., EDI interfaces or via APIs).

☐ We expose some data to our external ecosystem via open APIs (e.g., Flickr, Google, Twitter, Ford).

5. Social, mobile, analytics and cloud technologies: Please select the most appropriate response for the organisation that describes how emerging and disruptive technologies are embedded in its products:

   ☐ We don't exploit or embed SMAC (social, mobile, analytics and cloud) technologies in our products and services

   ☐ We occasionally exploit or embed SMAC (social, mobile, analytics and cloud) technologies in our products and services

   ☐ We often exploit or embed use SMAC technologies, as well as occasionally using next-generation enablers (such as the IoT and intelligent automation) SMAC (social, mobile, analytics and cloud) technologies in our products and services

   ☐ We consistently exploit or embed SMAC technologies as well as a strategic set of next-generation enablers (such as the IoT and intelligent automation) in our products and services

Workforce Enablement & Performance

1. Staff as a "Community": How does the organisation engage its Staff as a Community?

   ☐ No engagement beyond standard Human Capital services (e.g., traditional HCM).

   ☐ Community is centralized and communication is “one to many”

   ☐ Community is decentralized and communication is “many to many” but passive & single purpose (e.g., LinkedIn, Facebook).

   ☐ Community is decentralized, communication is “many to many” and drives peer-to-peer value creation

2. Empowering Digital Talent: Please rate the organisation in terms of how it treats modern ("Digital") talent:

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
Employees take ownership in the operational implementation of new and innovative ideas	☐	☐	☐	☐	☐	☐	☐
Employees do not have to deal with bureaucracy to submit ideas	☐	☐	☐	☐	☐	☐	☐
We provide digital talent the required tools to collaborate	☐	☐	☐	☐	☐	☐	☐
We connect and engage in conversation regarding digital transformation	☐	☐	☐	☐	☐	☐	☐
We manage diverse opinions and resistance with openness and are trustworthy	☐	☐	☐	☐	☐	☐	☐

3. Tapping into the external community: How does the organisation actively convert “the Crowd” (general employees) into Community members?

   ☐ Standard techniques like internal PR to increase awareness

   ☐ Leveraging social media for internal communication and engagement purposes

☐ Gamification and incentive competitions

☐ Our systems and processes are inherently designed to convert crowd into Community.

4. Learning and Development 1: Please rate the organisation in terms of how it acquires and develops talent

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We use personal touch and HR analytics to understand employees' preferences (e.g., career development, training)	☐	☐	☐	☐	☐	☐	☐
We use foresight and HR analytics to identify the skills needed both today and into the future	☐	☐	☐	☐	☐	☐	☐
Upskilling/reskilling on digital skills is a top priority for our company	☐	☐	☐	☐	☐	☐	☐
Leadership actively promotes digital skills learning and development for our employees	☐	☐	☐	☐	☐	☐	☐
We actively recruit and hire new talent with strong digital skills	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We have a formal program for digitally reskilling employees (e.g., training, mentoring)	☐	☐	☐	☐	☐	☐	☐

5. Learning and Development 2: Please rate the organisation in terms of how it acquires and develops talent

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We know which new skills we need to develop in the next 3–5 years	☐	☐	☐	☐	☐	☐	☐
We have the necessary learning infrastructure to upskill our employees	☐	☐	☐	☐	☐	☐	☐
We create an environment that prioritizes, and rewards learning and establish a supportive and cooperative atmosphere	☐	☐	☐	☐	☐	☐	☐

6. Performance management: Please rate the organisation in terms of how it manages performance (including at operational levels)

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We use dashboards and data as the foundation of managing performance	☐	☐	☐	☐	☐	☐	☐
To help bring about a culture shift, we ensure we are giving continuous feedback on our employees' performance, especially when we expect them to do things in a different way than they are doing today. We need to encourage the new behaviours for this new way of working".	☐	☐	☐	☐	☐	☐	☐
The way we manage performance encourages teamwork and cross-functional collaboration	☐	☐	☐	☐	☐	☐	☐
We have adapted, and continue to adapt, our metrics and performance	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
measures to reflect the changing context and strategy							
We reward managers appropriately for long term outcomes and don't overly prioritise short-term performance	☐	☐	☐	☐	☐	☐	☐

7. Knowledge sharing and exploitation: Does the organisation use advanced social tools for knowledge-sharing, communication, coordination and/or collaboration?
   ☐ No, email is our primary communication vehicle.
   ☐ Some teams use social tools, but not across the organisation
   ☐ Most business units use social tools (and some external vendors/partners, though often unauthorized
   ☐ Use is mandated across the organisation as policy

Core Processes Digitalisation

1. Dashboards: To what extent does the organisation use real-time dashboards to track and optimise operational performance?
   ☐ We use traditional weekly/monthly measurements to track operational performance.

☐ We use daily charts for some measures with real-time readouts of key operational metrics available at their point of control (i.e., traditional process control).

☐ Our key operational processes all have real time dashboards for optimisation at the point of control, with limited reporting up into the organisation

☐ We have organisation-wide, real time measures of all key operational indictors (including those of key partners), visible across the organisation and to external partners as necessary

2. Data-driven process management: To what extent does the organisation use analytics, algorithms, and machine learning to make meaningful operational decisions?

   ☐ We don't do any meaningful analysis; operational managers and operators make decisions on the basis of their insight and experience.

   ☐ We collect and analyse data mostly via reporting systems; operational managers and operators use this to inform their decisions

   ☐ We use analytics and machine learning algorithms to analyse data and drive actionable decisions by operational managers and operators.

   ☐ Our core processes are built around algorithms and machine learning

3. Does the organisation constantly optimise processes through experimentation, A/B testing and short feedback loops? (e.g., Lean Start-up methodology).

   ☐ No, we use traditional business process management (BPM).

   ☐ We use the Lean approach (or similar) for customer facing areas like marketing.

   ☐ We use the Lean approach for product innovation and product development.

☐ We use the Lean approach for all core functions (innovation, marketing, sales, service, HR, even legal!).

4. Please assess the organisation in terms of how Digital Technologies are integrated into Operations

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We are constantly identifying innovations in our value chain due to digital technologies	☐	☐	☐	☐	☐	☐	☐
Digital technology is allowing us to link customer-facing and operational processes in new ways	☐	☐	☐	☐	☐	☐	☐
We have an integrated view of customer and operational information	☐	☐	☐	☐	☐	☐	☐
Customers can engage and transact with us entirely digitally, without any person in the loop	☐	☐	☐	☐	☐	☐	☐
Partners and suppliers can engage, transact, and deliver to us entirely digitally, without any person in the loop	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
We have implemented AI into our operations	☐	☐	☐	☐	☐	☐	☐
We use analytics to identify bottlenecks and inefficiencies and technologies like AI, RPA, IoT, robotics, to eliminate them	☐	☐	☐	☐	☐	☐	☐
We have implemented IoT technologies into our operations	☐	☐	☐	☐	☐	☐	☐

IT/IS Excellence

1. IT - Business Alignment

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
The IT unit's performance meets the needs of the company	☐	☐	☐	☐	☐	☐	☐
Business and IT leaders work together as partners	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
The CIO, IT, and business teams are all aligned with the objectives of the program	☐	☐	☐	☐	☐	☐	☐
Our business functions and IT departments work with each other and their objectives are aligned	☐	☐	☐	☐	☐	☐	☐

2. Enterprise Architecture: Please assess the organisation in terms of the extent of integration of its enterprise management and core business systems.

   ☐ Our enterprise architecture is ad-hoc and dominated by legacy systems

   ☐ Our enterprise architecture is well defined and-fit for-purpose for our digital transformation, but we are only part-way complete in implementing the target enterprise architecture

   ☐ Our enterprise architecture is well defined and-fit for-purpose for our digital transformation and has been fully implemented

3. Enterprise Systems Integration: Please assess the organisation in terms of the extent of integration of its enterprise management and core business systems

   ☐ Our main enterprise systems are not integrated; we integrate data using spreadsheets and manual systems

☐ Our core enterprise management systems are integrated but several ancillary systems are not. The core systems in divisions or business units are not integrated

☐ All of our enterprise management and core business systems are integrated

4. IT Infrastructure: Please assess the organisation in terms of the following factors

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
Systems are implemented in the Cloud	☐	☐	☐	☐	☐	☐	☐
All parts of the business are digitally connected (quality, speed, reliability)	☐	☐	☐	☐	☐	☐	☐
All parts of the business are provided with appropriate, current generation IT tools (hardware and software)	☐	☐	☐	☐	☐	☐	☐

5. IT Organisational performance: Please assess the organisation in terms of the following factors

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
The IT Organisation delivers on-time and on-budget	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
The IT organisation responds to the needs of the business and is agile and business-oriented	☐	☐	☐	☐	☐	☐	☐
The IT organisation delivers systems and infrastructure which perform as required and meet the needs of the business	☐	☐	☐	☐	☐	☐	☐

6. Cybersecurity: Please assess the organisation in terms of the following factors

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
Risk Management – We have an effective management strategy for identifying, analysing, and managing risk	☐	☐	☐	☐	☐	☐	☐
Asset, Change, and Configuration Management – We keep inventories of	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
information technology, operational technology, and information assets; establishing configuration baselines for assets; evaluating and logging changes to assets							
Identity and Access Management – We effectively provision and deprovision identities for asset users; granting and revoking access; managing privileges	☐	☐	☐	☐	☐	☐	☐
Threat and Vulnerability Management – We Identify and respond to threats; identify and reduce vulnerabilities	☐	☐	☐	☐	☐	☐	☐
Situational Awareness – We perform logging and monitoring; collect information about the organisation's current state of cybersecurity; and communicate the current state of cybersecurity to stakeholders	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
Information Sharing and Communications – We completely fulfil cybersecurity reporting obligations; sharing cybersecurity information with internal and external stakeholders; participating in information sharing and analysis centers	☐	☐	☐	☐	☐	☐	☐
Event and Incident Response, Continuity of Operations – We are effective at detecting, analysing, and escalating events; responding to incidents; maintaining and exercising incident response plans; sustaining operations during incidents; recovering from incidents	☐	☐	☐	☐	☐	☐	☐
Supply Chain and External Dependencies Management – We identify important customer and	☐	☐	☐	☐	☐	☐	☐

	Completely Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Completely Agree
supplier dependencies; we manage risks due to dependencies; and establish cybersecurity requirements for suppliers							
Workforce Management: We assign clear responsibility for cybersecurity activities; conducting personnel vetting; training cybersecurity personnel; providing cybersecurity awareness activities for all personnel	☐	☐	☐	☐	☐	☐	☐
Cybersecurity Program Management – We have created a cybersecurity program strategy and program; obtained sponsorship for the cybersecurity program; established a cybersecurity architecture; performed secure software development	☐	☐	☐	☐	☐	☐	☐

Results

1. Please select the most appropriate response for the organisation that describes its business results to date with digital transformation:
   ☐ We have realized limited or no results to date
   ☐ We have already realized incremental benefits (1x)
   ☐ We have already realized transformational benefits (10x)

2. Benefits delivery: Please assess the extent to which digital transformation activities can be seen in the performance of the organisation

	Not at all	In isolated pockets in the organisation	Widespread across the organisation, and some of these improvements are mutually reinforcing or interconnected	Pervasive across the organisation and these improvements are mutually reinforcing or interconnected
Digital transformation activities have delivered no discernible improvement in business performance	☐	☐	☐	☐
Digital transformation activities have delivered a discernible improvement relative to the prior trend	☐	☐	☐	☐

	Not at all	In isolated pockets in the organisation	Widespread across the organisation, and some of these improvements are mutually reinforcing or interconnected	Pervasive across the organisation and these improvements are mutually reinforcing or interconnected
Digital transformation activities have delivered a material improvement relative to the prior trend, which is of strategic significant at a sub-organisational, BU or functional level.	☐	☐	☐	☐
Digital transformation activities have delivered a transformational improvement which differentiates the organisation from competitors at the overall organisational level.	☐	☐	☐	☐

ANNEXURE D: ETHICS APPROVAL

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB0502729y/842
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below

Project title	Digital transformation's role in improving the organisational performance of an information technology (IT) company
Investigator / Researcher	Mr Anathi Stofile
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	2021-09-26
Expiry date	Date of submission of the project report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

27 September 2021
Date:

Figure 42: Ethics Approval

ANNEXURE E: STATISTICAL TABLES

	Factor	Indicators
Leadership & Strategy The drivers of digital transformation and the frameworks within which the transformation journey happens	Vision & Strategy	• Transformative scope of vision • Leadership alignment and commitment, from board to floor • Vision integrated to business strategy and translated to digital strategy plan • Sufficient investment & resource allocation in digital transformation
	Culture & Engagement	• Approach to risk taking and failure • Organisational learning: exploration and experimentation • Leadership culture and transformation • Collaboration culture
	Governance and Organisation	• Agile, empowering organisational structure • Digital organisation and structures • Ecosystem engagement • Change Management • Data governance
	New Value Streams & Business Models	• Platform business model usage • Use of data as a strategic asset • Value proposition evolution • Coopetition as a new source of value, asymmetric competitors as new threats
	Investment & Innovation	• Lean and open innovation • Level and accessibility of funding • Strategic approach to innovation

	Digital Ethics	• Participation and access • Integration into product design and business processes • Transparency and awareness • Culture alignment
Digital Application & Impact The manifestations of digital transformation, alternatively stated as the 'what' of digital transformation	Customer Orientation & Engagement	• Customer participation and engagement • Use of analytics for personalisation and targeting • Digital engagement and marketing • Digital channels and omnichannel • Use of tech in customer touchpoints • Customer value focus
	Digital Product Innovation	• Social functionality built into products • Products and UX differentiated by emerging and disruptive technologies • Information based products and services • Products an UX differentiated by digital features • Products monetise data assets
	Workforce Enablement & Performance	• Employee awareness and alignment • Employee empowerment • Use of digital tools • Breadth and depth of current digital skills • Digital skills development • Learning and KM Environment • Performance measurement and management • Flexible workplace

	Core Processes Digitalisation	• Dashboards • Automation of core processes • Self-provisioning & external interfaces • Automation, algorithms for decision making • Continuous optimisation
	IT/IS Excellence	• IT performance • IT alignment • IT digital readiness • IT agility • IT security
	Results	• Digital initiatives generating value directly • Legacy business expanding • Functional/process improvements

Table 22: Digital Maturity Factors – Descriptions and Indicator

	IBA	ICX	II	IW	xGTM	Mean	Max	Min	StDev
Vision & Strategy	0.64	0.94	0.69	0.64	0.62	**0.71**	0.94	0.62	0.13
Culture & Engagement	0.71	**1.00**	**0.73**	0.61	0.64	**0.74**	1.00	0.61	0.16
Governance and Organisation	0.63	**1.00**	0.64	0.51	0.57	**0.67**	1.00	0.51	0.19
Investment & Innovation	0.63	0.97	0.63	0.50	0.57	**0.66**	0.97	0.50	0.18
New Value Streams & Business Models	0.66	**1.00**	0.64	0.62	0.59	**0.70**	1.00	0.59	0.17
Digital Ethics	0.61	**1.00**	0.61	**0.48**	0.50	**0.64**	1.00	0.48	0.21
Customer Orientation & Engagement	0.72	**1.00**	0.69	**0.65**	0.54	**0.72**	1.00	0.54	0.17
Digital Product Innovation	**0.55**	**0.93**	**0.49**	0.53	**0.46**	**0.59**	0.93	0.46	0.19
Workforce Enablement & Performance	0.65	**1.00**	0.66	0.59	0.57	**0.69**	1.00	0.57	0.17
Core Processes Digitalisation	0.61	**1.00**	0.58	0.51	0.47	**0.63**	1.00	0.47	0.21
IT/IS Excellence	**0.80**	0.98	0.71	**0.65**	**0.71**	**0.77**	0.98	0.65	0.13
Results	0.66	**1.00**	0.57	0.54	0.47	**0.65**	1.00	0.47	0.21

Table 23: GTM Digital Maturity Factor Scores

	Operating Margin	Change		Gross Margin	Change
Apr-20	-2.89%		**Apr-20**	18.71%	
May-20	-1.66%	1.23%	**May-20**	20.50%	1.79%

	Operating Margin	Change		Gross Margin	Change
Jun-20	7.60%	9.26%	**Jun-20**	24.12%	3.62%
Jul-20	1.43%	-6.17%	**Jul-20**	19.98%	-4.14%
Aug-20	3.51%	2.08%	**Aug-20**	21.04%	1.06%
Sep-20	-4.69%	-8.20%	**Sep-20**	21.25%	0.21%
Oct-20	1.97%	6.66%	**Oct-20**	20.11%	-1.15%
Nov-20	-0.40%	-2.37%	**Nov-20**	19.15%	-0.95%
Dec-20	2.14%	2.54%	**Dec-20**	21.83%	2.67%
Jan-21	0.39%	-1.75%	**Jan-21**	19.48%	-2.35%
Feb-21	-2.94%	-3.33%	**Feb-21**	18.04%	-1.44%
Mar-21	12.05%	14.99%	**Mar-21**	27.57%	9.53%
Apr-21	-5.65%	-17.70%	**Apr-21**	17.56%	-10.01%
May-21	-6.11%	-0.46%	**May-21**	17.71%	0.15%
Jun-21	0.83%	6.94%	**Jun-21**	21.81%	4.10%
Jul-21	-3.27%	-4.10%	**Jul-21**	19.03%	-2.77%
Aug-21	-4.06%	-0.79%	**Aug-21**	19.10%	0.06%
Sep-21	3.36%	7.42%	**Sep-21**	22.98%	3.89%
Oct-21	-4.66%	-8.02%	**Oct-21**	19.07%	-3.92%
Nov-21	0.38%	5.05%	**Nov-21**	19.95%	0.88%
Dec-21	-1.78%	-2.16%	**Dec-21**	22.94%	2.99%

Table 24: Operating & Gross Margin Growth – 1 April 2020 to 31 December 2021

	DMS	Rev (‘000)	COS (‘000)	GP (‘000)	OP (‘000)	OM	OMG	GM	GMG
IBA	66.84%	R 2,179,000	R 1,676,000	R 503,000	R 6,000	0.28%	4%	23.08%	10%
ICX	98.82%	R 1,049,000	R 784,000	R 265,000	R 65,000	6.20%	130%	25.26%	15%
II	64.97%	R 9,840,000	R 7,979,000	R 1,861,000	-R 32,000	-0.33%	-22%	18.91%	11%
IW	57.26%	R 2,535,000	R 1,935,000	R 600,000	-R 6,000	-0.24%	25%	23.67%	19%

Table 25: GTM Digital Maturity Scores and Financial Performance

Where:

- DMS = Digital Maturity Score
- Rev = Revenue
- COS = Cost of Sales
- GP = Gross Profit
- OP = Operating Profit
- OM = Operating Margin
- OMG = Operating Margin Growth Rate
- GM = Gross Margin
- GMG = Gross Margin Growth Rate

Factor	Description	OMG R^2	GMG R^2
Vision & Strategy	Vision & Strategy captures the drivers of the digital transformation process and effectively defines the ideological and intellectual structure of the transformation	0.8058	0.0097
Culture & Engagement	Culture & Engagement defines the behavioural structure	0.6853	0.0232
Governance & Organisation	Governance & Organisation defines the organisational structures	0.7267	0.0123
New Value Streams & Business Models	New Value Streams & Business Models shapes the commercial structures	**0.8848**	0.0047
Investment & Innovation	Investment & Innovation describes the investment structures and innovation architecture of the organisation as it applies to digital transformation	0.6946	0.0241
Digital Ethics	Digital Ethics defines the ethical structure in which digital transformation occurs	0.7208	0.0161
Customer Orientation & Engagement	Customer Orientation & Engagement includes the digitalisation of the customer domain and the customer orientation of the digital transformation	0.841	0.00006
Digital Product Innovation	Digital Product Innovation includes the digital transformation of the product portfolio, both in terms of the evolution of existing products as well as the development of new products and customer value propositions	**0.9459**	**0.0252**

Factor	Description	OMG R^2	GMG R^2
Workforce Enablement & Performance	Workforce Enablement & Performance includes changes to ways of working and managing, to enable and empower the workforce (including operational managers) and optimise their performance	0.8179	0.0003
Core Processes Digitalisation	Core Processes Digitalisation includes the digitalisation of core processes	0.8225	0.0006
IT/IS Excellence	IT/IS Excellence includes ensuring the IT/IS platforms and organisation and their performance are fit for purpose to underpin the digital transformation of the overall organisation and are utterly aligned with the business transformation strategy and objectives	0.6938	**0.0413**
Results	Results includes measuring the outcomes of the transformation strategy and its constituent interventions in terms of business outcomes	0.8323	0.0015

Table 26: R^2 Values of Digital Maturity Scores and Operating & Gross Margin Growth