The Impact of Digital Transformation on Business Models: A Study of Industry Disruption

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Abstract

The continual process of digital transformation necessitates the implementation of strategies suited to the needs of the organisation in order to achieve the desired outcomes. Companies believe that gaining and keeping consumers is essential to their success. Businesses are turning their focus from traditional commercial methods to digital ones in order to improve the customer experience. Relationship management, excellent service, engagement, and contentment are all aspects of the customer experience. It affects the choices that clients make. Digital CEOs believe that the customer experience is a critical element of competitiveness. Improving the customer experience is the main motivation behind digital transformation. Digital transformation can improve customer interactions and offerings. It involves managing the client's behaviour. Enhancing the customer experience involves the use of data analysis, strategy, and the customer value proposition. Part of it involves developing avenues for customer communication and techniques for customer involvement. To enhance the customer experience, organisations should integrate digital transformation strategies that use know your customer and anticipate consumer needs. The customer experience is comprised of a company's interactions with its clients as well as the goods or services it provides.

Keywords: Digital Transformation; Industry; Business Analytics.

I. INTRODUCTION

In today's society, information and communication technology, or ICT, is the driving force behind the digital world. Every day, people have simple access to knowledge and information. Organisations have made advantage of digital media, platforms, digital services, and technology that made data collection and analytics possible. Companies realised that data and analytics may provide them a competitive advantage. On the other hand, not much is understood about how businesses need to change their business models and adjust to new technology (Udovita, 2020). Analytics started to improve corporate decision-making and offer performance-boosting, value-driven solutions. Artificial intelligence can be used with analytics technology to automate operations, reorganise companies, and create new business models (Voican, 2020). It is also beneficial for event prediction and pattern analysis. In addition to addressing economic requirements, digital advances will address societal challenges that impact consumers and businesses. Analytics play a crucial role in the digital transformation of an organisation. To thrive

in the digital economy, organisations need to invest in a range of resources, such as personnel, policies, and data analytics technologies (Sibanda et al., 2020). Analytics competency is the capacity to collect, store, and analyse data using knowledge and technology in order to add value, influence business, and transform society (Bresciani et al., 2021). Individuals, businesses, and society as a whole that generate and use data are the data makers in the analytics ecosystem (Ordóñez De Pablos & Labra Gayo, 2019). Data producers need to develop analytics capabilities for their settings in order to add value and bring about changes in the corporate and societal spheres. This process is cyclical. The successful completion of this process is essential to the development of sustainable societies and the digital transformation. Traditional company models have had to adapt as a result of the 21st-century growth of the digital economy and its integration with analytics (Sundaram et al., 2020). Analytics can be used to improve customer experience, boost agility, and develop new business models. Components of DT in Industry shown in Figure 1.

Figure 1: Components of DT in Industry (Source: Web)

As part of the digital transformation process, big data analytics capacity establishment is required. Traditional organisations require new procedures and business concepts. Organisations use analytics as a tool to look through data and find patterns that help them make better decisions. Utilising historical data, descriptive analytics offers lucid visualisations. Its focus was on current occurrences within the sector. Predictions or judgements are not subject to it. That's where analytics get started. It employs statistical metrics such as averages and percent changes. Data mining and aggregation techniques are used in descriptive analytics. Data mining stage used to find patterns and trends.

In this case, the introduction is examined in section 1 of the article. Section 2 describes the review of the work further Section 2 and 3 explains the goal of the work digital technologies, and Section 4 concludes the project.

II. LITERATURE REVIEW

Investigating your data in-depth to obtain meaningful information is what diagnostic analytics entails. The majority of companies begin their data analysis process with descriptive analytics, a simpler method that records the events that have already happened. Going a step further, diagnostic analytics shows the reasoning behind specific results (Fan & Ouppara, 2022). Predictive analytics is advanced analytics that makes use of statistical analysis, machine learning, and probabilistic models. Algorithms for predictive analytics find relationships among several variables to evaluate risk. A probabilistic model measures the degree of uncertainty among samples in a batch (Naimi-Sadigh et al., 2022). Rather of tracking actual data, probability models are used to determine the possibility that particular events will occur. Algorithms that rely on models and inference from data processing are referred to as machine learning (Cozzolino et al., 2018). Machine learning has been defined as a subset of artificial intelligence, wherein algorithms create a mathematical model based on sample data in order to generate predictions. Planning and gathering data for the purpose of creating surveys and experiment studies is the focus of statistical analysis.

Prescriptive analytics adds wisdom and value to the corporate world. To provide adaptable, automated, and optimal decision-making, it makes use of logic-based models, evolutionary computation, simulation, mathematical programming, and artificial intelligence (Adama & Okeke, 2024). The goal of mathematical programming is to solve complicated problems by finding the best way to allocate scarce resources within a given set of restrictions. Evolutionary computations are population-based trial-and-error problem solvers that yield highly optimised solutions. The process of simulating a hypothetical or real-world scenario using a computer in order to learn how a system operates is known as simulation (Wirtz et al., 2022). Decisions can be made easier and predictions about the system's behaviour can be produced by adjusting certain factors. Logic-based models are conjectural explanations of the series of events that lead to a desired result. Organisations can give a solution for the issue at hand by combining several approaches.

III. DIGITAL TRANSFORMATION IN MANUFACTURING COMPANIES THROUGH ANALYTICS

Technology disruptions have led to constant development in the manufacturing sector. Future value chains and production in all industries are being shaped by new advanced manufacturing techniques. Businesses and factories can be reshaped by SMEs as part of a new wave of digital transformation. Globalisation facilitates the collaboration of SMEs to establish state-of-the-art manufacturing facilities while maintaining human capital and sustainability for their innovations. The Internet of Things (IoT) assists manufacturers in forming alliances and partnerships to influence how production is done in the future. Big businesses are embracing digital transformation (DT) by endorsing a start-small strategy. In the manufacturing sector, digital transformation (DT) entails changing the mindset of the workforce and using data and analytics to solve problems rather than automating tasks. DT in Manufacturing Examples Implementing eCommerce solutions for Business to Business and Business to Customer operations marked the beginning of a digital transition for a US-based salt mill. General Electric

used analytics tools in their inventions for material consumption rates, which resulted in a 20% boost in production capacity. A fruit provider located in California was able to enhance production by fifty percent through the use of data analytics reporting, alert notification, and historical analysis. Dairy processing equipment maintenance can be precisely predicted using real-time data and cloud computing platforms like Microsoft Azure (Matzler et al., 2018).

Manufacturers are adapting digital transformation in three key areas:

- Customer experience
- Manufacturing/operations processes
- Business models

Digital technologies and analytical tools are being adopted by industries slowly. They understand the need of internet-of-things-based real-time analytics for digital transformation. As data enters a system, real-time data analytics enables users to review and identify it. Once the data enters their system, mathematical models are applied to allow users to make decisions in real time and take appropriate action.

Analytics can assist industry manufacturing unit to

- A few of these include: a) anticipating customer expectations in advance;
- enabling machines to engage in proactive maintenance, which reduces downtime;
- methodically identifying and eliminating faulty raw materials to enhance production quality;
- modifying operating parameters to correct errors, optimising asset performance to maximise throughput and minimise workforce time; and
- automating production in response to changes in supply chains, distribution networks, and consumer demands.

Businesses can use the A-B-C-D research framework to guide their digital transformation and obtain the best insights for changing and integrating analytics into everyday operations. Awareness: Managers of SMEs must assess their company's short-, medium-, and long-term needs and determine how analytics may be used as a DT tool. Business and customer analytics will offer details on e-commerce sites, organisational sources, and technological platforms for data leveraging. It will offer a more comprehensive view of situational analysis. Operational analytics and inventory insights are provided by descriptive analytics. Departmental self-assessments for workforce readiness in DT can be conducted by industries (Herrmann et al., 2018).

Start: Data will be transformed into insights and visualisations using diagnostic analytics technologies. Using analytics and business intelligence systems, diagnostic analytics adds value. Following situational analysis, SMEs can employ diagnostic analytics, including experience, infrastructure, and plant optimisation analytics. Once problems have been identified, visualisation will assist in determining the correlation and the single root cause. Finding relationships between the variables will be aided by linear regression**.**

Capacity: Selecting the appropriate KPIs and assessing their effects will assist SMEs in making choices and enhancing DT. Predictive analytics offers significant insights into machine load

predictions, reliability, and forecasting. Data generated by connected equipment and devices is used to forecast the number of pieces that can be produced before a machine needs to be maintained. Manufacturing analytics and data minimise downtime in operations.

Drive: Prescriptive analytics will offer suggestions for streamlining corporate processes to achieve the intended outcomes and stimulate the demand curve. Prescriptive analytics simulates several outcomes and recommends the optimal course of action for businesses using modelling, machine learning, artificial intelligence, and algorithms.

Table 1: Analytics Tools for Manufacturing Digital Transformation

Descriptive & Diagnostic Analytics	Predictive Analytics	Prescriptive Analytics
Data Aggregation	Statistical Models	Optimization Models
Data Mining	Simulations	Problem Solving

IV. UNDERSTANDING NEW BUSINESS MODEL

A helpful framework for connecting concepts and technologies for financial results is the business model. It is the series of actions a business takes in order to benefit its clients and turn a profit. It is a tool used by businesses to bring in money and make profits. A company's operational and structural traits that enable it to turn a profit make up its business model. It is a formula for making money that combines a learning system, economic activity patterns, and cash coming in and going out of the business for different reasons in order to give investors appealing returns (Genzorova et al., 2019). Formulation of Digital Transformation in Industry shown in Figure 2.

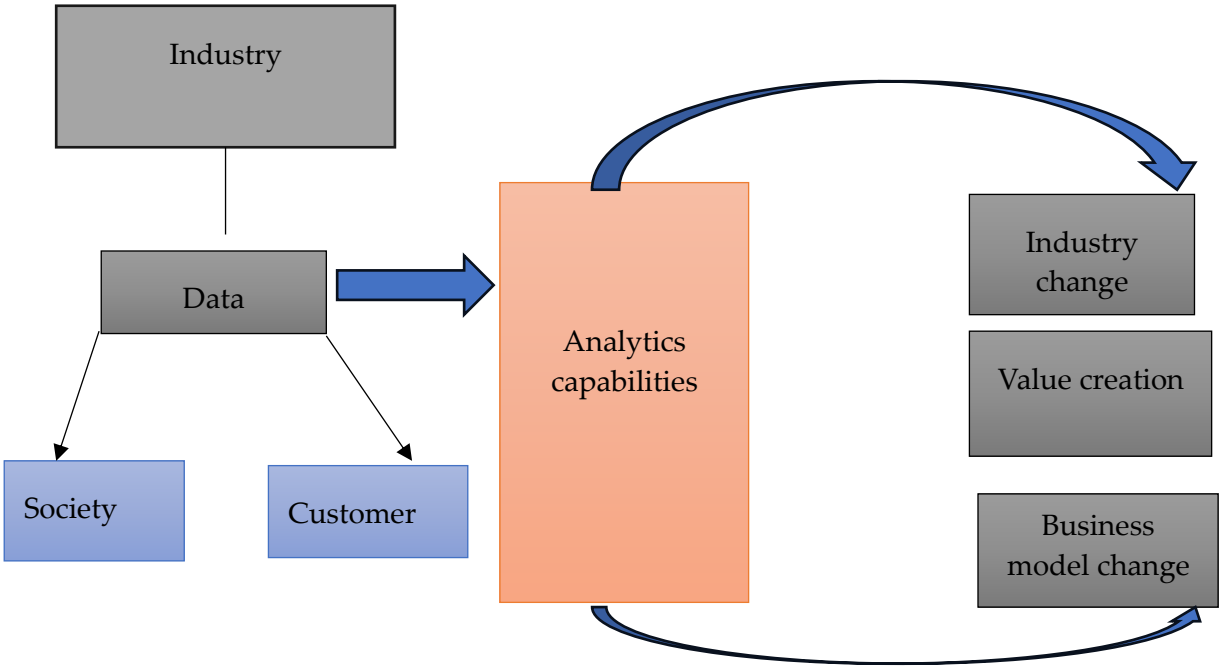

Figure 2: Formulation of Digital Transformation in Industry

It is digital transformation that makes new business models possible. It creates new opportunities for product development, customer acquisition, value creation and delivery, and profit margins. When Netflix originally began offering DVD shipping, they handled distribution and logistics. The business was doing well when they decided to attempt a new business strategy after realising that past performance does not guarantee future success. They used an algorithm to gather data, and the company used Amazon Web Services to generate streaming services. They developed a high-end new product to take the place of television. Create a lucrative and scalable business to revolutionise the organisation. Starbucks developed an app to handle payments for meals and coffee in its establishments. The business launched a loyalty program and created tailored experiences and offers for its networked customers. The company implemented an omnichannel strategy and created new digital offerings for their physical stores. Nike has improved customer experiences by utilising machine learning, software, and algorithms. They created the leg scan and help the buyer select the best pairs of shoes. The application gathers information from scans and recommends the best pairs of shoes. By digitising footwear materials, Nike transformed its internal operations and gained the agility to adapt to changing market needs (Vaska et al., 2021).

Covid-19 has compelled SMEs to alter their business plans. For example, omni channel and e-commerce platforms were used by small shops. Retailers began to display their inventory products and take orders using digital tools like Google Sheets. Following delivery to clients, digital payments are collected for these orders. This digital revolution served as a springboard for many enterprises. The pharmaceutical industry has shifted its old sales strategy, which relied on in-person meetings with doctors, to internet communication. Distributors of agricultural fertilizer's maintained contact with their farmers using Facebook and Zoom. A startup in agriculture called Kheyti.com created and implemented low-cost farming solutions in order to boost revenue (Mărăcine et al., 2020).

V. DISCUSSION OF DIGITAL TRANSFORMATION IN INDUSTRY THROUGH BUSINESS ANALYTICS

Banking is defined as the commercial practice of serving customers by taking personal deposits and lending them money in order to make a profit. To enhance the client experience, they have recently added services including digital lockers, ATMs, debit and credit cards, and online fund transfers. A medium-sized private bank made the decision to restructure its Small and Medium Enterprise (SMEs) and Retail divisions. The goal of the digital strategy was to increase deposits and client engagement by enhancing digital channels and procedures. To guarantee the success of the DT strategy, the bank chose the International Finance Corporation (IFC) as a partner. IFC helped management identify prospects for current and savings accounts and devised a program for creating value for account holders. The plan was tailored to SMEs. In order to recruit more SMEs, the bank launched a digital transformation strategy that included digital channels, mobile banking, and process digitalisation. IFC helped the bank by holding workshops on fresh digital projects and reorganising procedures to increase the volume of digital transactions and draw in new clients. The application of business analytics to digital transformation is the main topic of this case. The foundation of the bank's digital strategy was the

adaptation of card payments through employee and customer incentives. In order to comprehend digital transactions using random samples, the IFC team started with customer analytics. The research revealed that the age range of digital users is between 25 and 34 years old. Customers using digital banking have demonstrated a greater propensity to stay engaged and add value to the bank (Fielt et al., 2018). Digital Transaction shown in Figure 3.

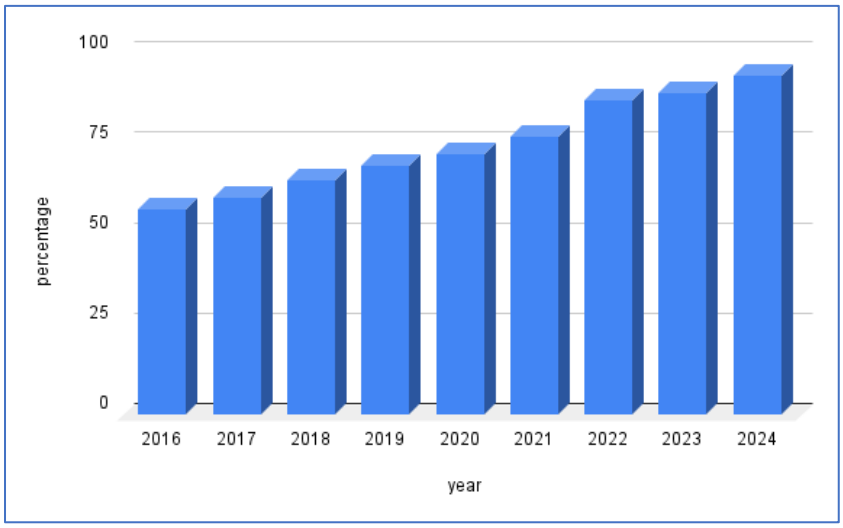

Figure 3: Digital Transaction

Employees at the bank are spending more time processing transactions, according to the IFC time and motion case study. There was less time for customer acquisition and business development. In order to increase transaction processing efficiency, bank management made the decision to invest. The bank anticipated enhanced value creation and client experience through the use of these solutions. The bank introduced a cutting-edge initiative to enhance the digital channel user experience via digital platforms. The goal was to draw in new clients and boost the utilisation of current ones. For National Electronic Funds Transfer and Real Time Gross Settlement for their suppliers, small and medium-sized business owners favoured online banking shown in Figure 4.

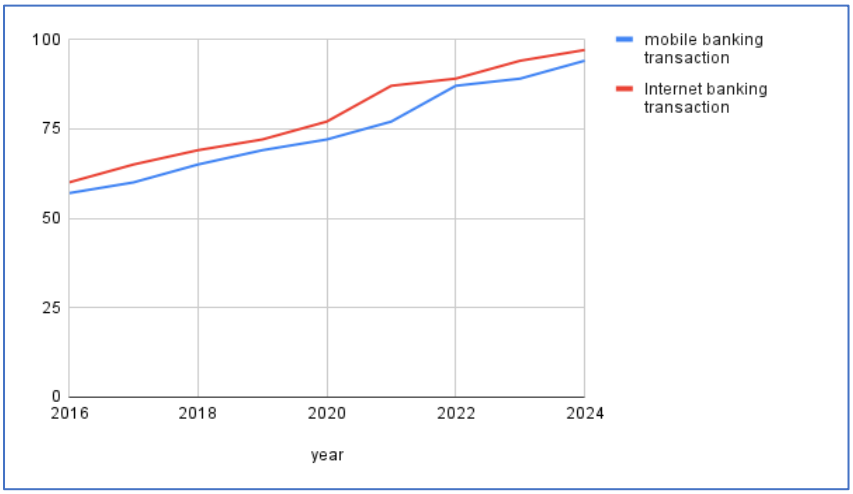

Figure 4: Comparison between Mobile Banking & Internet Banking

Customers prefer mobile banking for small-value financial transfers. It enhanced the interaction and experience of customers. The average amount of online banking has gone up. Account utilisation was enhanced by digital activities. An examination of the data reveals an 80% rise in debit transactions and a 55% increase in credit transactions in savings and current accounts. The average amount in current and savings accounts climbed, in turn. Compared to 2016, bank employees can now handle a higher volume of transactions in 2018. Operational costs were decreased by using digital platforms. The branch employees still had a lot on their plates. Bank management recognises that in order to be competitive, digital expansion must be accelerated.

- ***Automated Teller Machine (ATM) and Debit Card Program***

The bank made the decision to install ATMs in order to enhance client experience and decrease the need for branches for minor transactions. The bank implemented a rewards program for employees who issued debit cards to current clients.

- ***Aadhaar Based Digital Account Opening***

The Aadhaar infrastructure made it possible to automate the account opening procedure with the least amount of bank employee involvement. This service shift worried the management. Clients were given tablets by the bank, which enabled quick account opening with Aadhaar authentication. Instant account opening is made possible through the connection of tablets to key banking systems and business process management systems.

Customers must spend hours opening an account through the manual process that is still in place today. The classic model entails going to the bank, waiting, and filling out an application. To pick up their debit card and open an account, the customer must come in more than once. Customer time was decreased and customer experience was enhanced by digital transformation. Bank management realised that a shift to digital banking was necessary, and analytics enabled the bank to make the right decisions regarding change. IFC raised staff understanding of the importance of digital transformation. Next, start using DT to address pain areas. By integrating technology into operational procedures, the bank increased capacity (Müller et al., 2020). The bank began implementing new initiatives for digital transformation to support operations, procedures, platforms, and digital transactions after successfully achieving one aim. Business analytics can offer insightful information that banks can use to better understand their customers' demands and provide for their needs. The banking sector began utilising machine learning, blockchain technology, and analytics. AI is being used by banks to improve customer service, operational effectiveness, and fraud detection.

In this study, the random sampling method is applied. To draw conclusions about a population, samples of observations are chosen from it. Samples are drawn at random from the manufacturing and service sectors. The purpose of a research survey form is to efficiently conduct research. The first set of five questions was intended to gather information regarding the company's name, type of business, respondent designation, and age. Understanding the principles of digital transformation, organisational focus, and change readiness are all addressed in questions six through eight. Key performance indicators (KPIs) including customer experience, technology, agility, innovative business models, and company performance are related to questions 9–14. The purpose of questions 15 through 22 is to delve deeper into the topics of analytics and digital transformation shown in Figure 5.

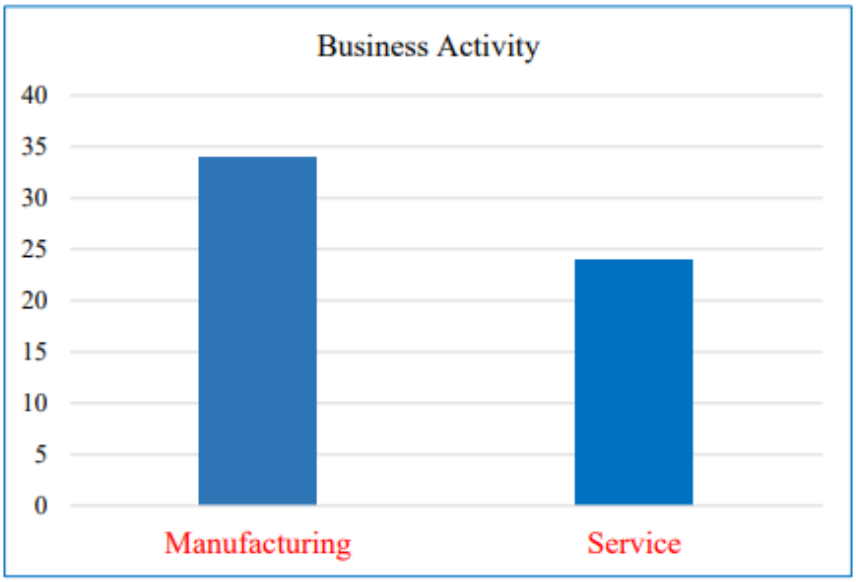

Figure 5: Data Collection (Sampling Unit)

To explore digital transformation with reference to Small and mid-sized enterprises researcher interacted with top, middle & first-line operational leaders. Understanding of Digital Transformation shown in Figure 6.

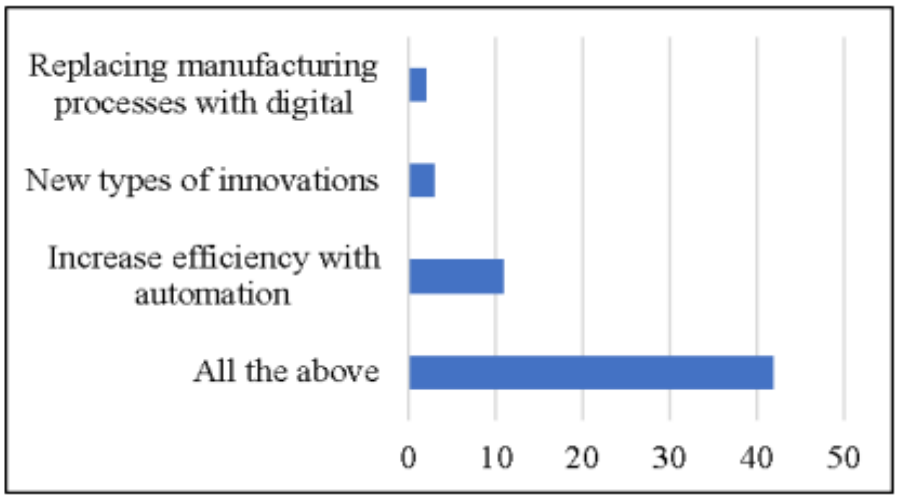

Figure 6: Understanding of Digital Transformation

The majority of respondents agreed that digital transformation entailed replacing conventional procedures with digital technology, requiring innovations and automation to increase organisational efficiency. Digital Transformation Focus shown in Figure 7.

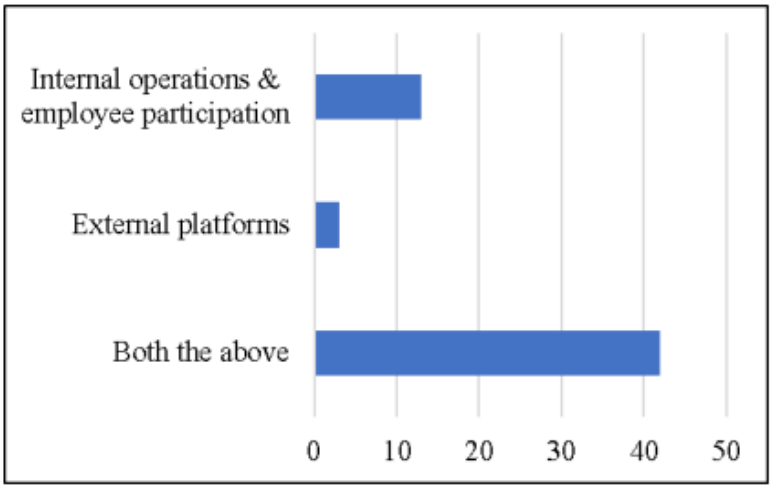

Figure 7: Digital Transformation Focus

It is imperative for organisations to prioritise internal operations, employee engagement, and external platforms. Platforms for consolidated data are useful for SMEs. Data lakes and cloud computing provide data storage, while networking services provide flexibility. The Internet of Things (IoT) facilitates customer connectivity and understanding. Platforms for e-commerce provide positive consumer experiences. Analytics platforms enable company transformation by generating insights into business operations.

VI. CONCLUSION

Digital transformations will tackle social problems that affect businesses and customers in addition to economic ones. Information and communication technology, or ICT, is what powers the digital world in today's civilisation. People can easily obtain knowledge and information on a daily basis. Businesses have benefited from digital platforms, media, services, and technology that enabled data analytics and collection. Businesses discovered they might have a competitive advantage using data and analytics. However, little is known about how companies must adapt to new technology and modify their business strategies. Analytics began to provide value-driven, performance-enhancing solutions and to enhance corporate decision-making. Analytics technology and artificial intelligence can be combined to automate procedures, transform businesses, and establish new business models. Pattern analysis and event prediction can also benefit from it.

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