



**NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF INNOVATION AND KNOWLEDGE MANAGEMENT**

**A SYSTEMATIC ANALYSIS ON
THE RELATIONSHIP BETWEEN DIGITAL
TRANSFORMATION AND INNOVATION MANAGEMENT**

M.Sc. THESIS

James Ogeh YAKUBU

Nicosia

January, 2023

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Approval

We certify that we have read the thesis submitted by JAMES OGEH YAKUBU titled “A SYSTEMATIC ANALYSIS ON THE RELATIONSHIP BETWEEN DIGITAL TRANSFORMATION AND INNOVATION MANAGEMENT” and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Educational Sciences.

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Declaration

I hereby declare that all information, documents, analysis and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

James Ogeh Yakubu

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Abstract

A systematic Analysis on the Relationship between Digital Transformation and Innovation Management

James Ogeh Yakubu
MA, (Innovation and Knowledge Management)
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The present thesis assesses the relationship between Digital Transformation and Innovation Management in Rites Food Limited, Ijebu Ode, Ogun State. The Data was collected from 200 staffs of organization via a questionnaire survey. The thesis objectives are to: (i) examine the influence of digital transformation in the management of Rites Food Limited; (ii) determine the influences of digital transformation on innovation management in Rites Food Limited; (iii) identify the challenges faced by organizations in utilizing digital transformation in Rites Food Limited; and (iv) find out the impacts of digital transformation on organizational decision making in Rites Food Limited. The regression analysis technique was used to test the hypothesis of the study. The outcomes from the findings revealed that that there is a significant relationship between digital transformation and innovation management in Rites Food Limited. It was also revealed that that organizational challenges has a significant effect on utilizing digital transformation in Rites Food Limited. Furthermore, it was also revealed that there is a significant relationship between digital transformation and organizational decision making in Rites Food Limited. This study is limited to Rites Food Limited, Ijebu Ode, Ogun State, Nigeria. Another major constraint of this study is the short time needed to complete this study coupled with the academic work on the part or aspect of the researcher. From the findings of the research, it was concluded that the role of digital technology in sharpening the skills of an employee and management is quite significant. Adapting successfully to disruptions from technological advancements will require being able to unlearn old technologies and practices and relearning new ones. At the same time, new technologies offer innovative modes of education and delivery of learning that have the potential to address the first implication of rapidly changing skills demand.

Keywords: Digital, Transformation, Innovation, Management.

ÖZ

Dijital dönüşüm ve inovasyon yönetimi arasındaki ilişki üzerine sistematik bir analiz

James Ogeh Yakubu
MA, (Innovation and Knowledge Management)
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Bu tez, Rites Food Limited, Ijebu Ode, Ogun State'de Dijital Dönüşüm ve İnovasyon Yönetimi arasındaki ilişkiyi değerlendirmektedir. Veriler, bir anket anketi yoluyla 200 kuruluş personelinin toplanmıştır. Tez hedefleri: (i) Rites Food Limited'in yönetiminde dijital dönüşümün etkisini incelemek; (ii) Rites Food Limited'de dijital dönüşümün inovasyon yönetimi üzerindeki etkilerini belirlemek; (iii) Rites Food Limited'de dijital dönüşümü kullanan kuruluşların karşılaştığı zorlukları belirlemek; ve (iv) Rites Food Limited'de dijital dönüşümün kurumsal karar verme üzerindeki etkilerini öğrenin. Araştırmanın hipotezini test etmek için regresyon analizi tekniği kullanılmıştır. Bulgulardan elde edilen sonuçlar, Rites Food Limited'de dijital dönüşüm ve inovasyon yönetimi arasında önemli bir ilişki olduğunu ortaya koydu. Ayrıca Rites Food Limited'de dijital dönüşümün kullanılmasında organizasyonel zorlukların önemli bir etkisi olduğu ortaya çıktı. Ayrıca Rites Food Limited'de dijital dönüşüm ile örgütsel karar verme arasında önemli bir ilişki olduğu ortaya çıktı. Bu çalışma Rites Food Limited, Ijebu Ode, Ogun State, Nijerya ile sınırlıdır. Bu çalışmanın bir diğer önemli kısıtlaması, araştırmacının bir parçası veya yönü üzerindeki akademik çalışma ile birlikte bu çalışmayı tamamlamak için gereken kısa süredir. Araştırmanın bulgularından, dijital teknolojinin bir çalışanın ve yönetimin becerilerini keskinleştirmedeki rolünün oldukça önemli olduğu sonucuna varıldı. Teknolojik gelişmelerden kaynaklanan aksaklıklara başarılı bir şekilde uyum sağlamak, eski teknolojileri ve uygulamaları öğrenmeyi ve yenilerini yeniden öğrenmeyi gerektirecektir. Aynı zamanda, yeni teknolojiler, hızla değişen beceri talebinin ilk sonuçlarını ele alma potansiyeline sahip olan yenilikçi eğitim ve öğrenim sunum biçimleri sunmaktadır.

Kelimeler: Dijital, Dönüşüm, Inovasyon, Yönetimi.

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List of Abbreviations

| | |
|-----------------|----------------------------------|
| AR: | Augmented Reality |
| CRM: | Customer Relationship Management |
| DT: | Digital Transformation |
| ERP: | Enterprise Resource Planning |
| IIoT: | Industrial Internet of things |
| IM: | Innovation Management |
| IoT: | Internet of Things |
| IT: | Information Technology |
| MoT: | Management of Technology |
| R&D: | Research and Development |
| VR: | Virtual Reality |

CHAPTER I

Introduction

The alternatives for production and innovation have completely changed as a result of digitalization (Botha, 2019). Resulting from the latest wave of digitization, innovation systems and technology management (MoT) now face new difficulties. Digitalization focuses on the utilization of digital technologies effect changes to a business model and produce new income and value. According to Gartner, "digitisation" is "the process of converting from analog to digital form" (Botha, 2019). The need for innovation and the ability to innovate quickly is accelerated by digitalisation processes. We now live in an era of pervasive and mobile high performance computing, as well as the pervasive presence of internet technologies worldwide, including robotics in all types of production, surgery, space exploration, and driving (Muller, 2019).

Today, digital technology is present in almost every facet of life. Change will continue to gain momentum during the next ten years. All facets of life are now networked thanks to quicker data connections, the downsizing of processors and sensors, and the proliferation of simple-to-use devices with cutting-edge application capabilities. The Internet of Things, which is quickly expanding, is a network of physical and tangible objects that can connect and respond to change (IoT).

The fourth age of digital transformation refers to the rapid ascension of digitalization (Schwab, 2016). Starting with at the end eighteenth century through to reaching the beginning of the nineteenth century, the mechanisation revolution considered the approach of substituting agricultural with industry as a result of the foundations of society's economic structure. Different sources of energy such as electricity, gas, and oil became available during the second technical revolution, which sparked the creation of whole new industrial techniques as foreseen by Taylor and Ford at the close of the nineteenth century (Schwab, 2016). The third technological revolution is characterized by the discovery of atomic energy, the development of electronics with junction transistor and microprocessor chips, the emergence of telecommunications and computers, and in business world, high-level automation in production with programmable logic controllers

and robotics. This fourth technology revolution is fundamentally different. It is characterised by a variety of modern technologies that combines the digital, biological and physical worlds, having an impact on all disciplines, economies, and industries, as well as complex conceptions about what it is to be human (Schwab, 2016). As a result of the resulting upheavals and disruptions, we tend to board a time that is both promising and dangerous.

The ability to integrate a vast group of users to digital networks, greatly improve operational efficiency, and even manage assets sustainably could potentially undo the harm provided by previous industrial revolutions. The Industrial Internet of Things (IIOT) provides for constant communication with clients. In no time, key criteria for a new product or design, such as price or value proposition, as well as changes in demand or anticipation, are available (Seetharaman, 2019).

The ability to connect more and more people to digital networks, dramatically increases the effectiveness of business processes, and even manage assets in ways that help the environment regenerate might potentially undo the harm done by previous industrial revolutions. The Industrial Internet of Things (IIOT) provides for constant communication with clients. Value proposition and changes in demand or expectation, for example, are readily available for new goods or designs (Seetharaman et al., 2019). Experts, on the other hand, are concerned that organizations may be unable to adapt to the current revolution, which is inundating our lives, society, cultural, national economy, and hence industries. Governments can fail to harness the benefits of new technology by failing to use and control them. Power shifts can create a critical new security problem. Inequality may worsen, and societies may disintegrate.

The ramifications for many locations with previously established conventional and serious industries pose significant issues. The processes of invention, as well as new business models, are being revolutionized. Organizations can use innovation practices to create a more advanced, unique, and long-lasting collaborative culture that fosters digital transformation. Once the full business functions, processes, and new launches have been implemented, it works its magic. Unlike traditional innovation methods, innovation management encourages organizations to be more responsive and assists them in enhancing their skills as a result of the changes brought about by digital transformation.

As a result, most organizations/businesses regard digital transformation to be an important aspect of their overall strategy.

Statement of the Problem

It is of importance to take cognizance of the procedures which organizations innovate, and in particular, the management of innovation and their relationship with digital transformation. Modern information and communication technologies are altering businesses, but only a few have realized different ways of benefiting from this development. No matter the size or industry, all businesses must undergo the digital transformation (DT). This strategy enables businesses to optimize their operations and improve productivity, profitability, and competitive advantage through the implementation of a new management structure, new working tools, new working techniques, but also new reflections and organizations. This goes far beyond dematerialization of work processes.

Digital transformation is becoming a major worry for both companies and policy-makers since it has the ability to lead to both growth and depletion. For many businesses, digital transformation has emerged as a crucial area of focus and a strategic problem. Beyond their regular operations, it gives businesses new chances by fostering faster growth, long-lasting competitive advantages, and operational security.

It is unclear which organizational choices will help firms incorporate new digital competencies more successfully. Therefore, it is still unclear how digital technologies affect the fundamentals of organizational learning, absorptive capacity, combinative capabilities, and dynamic capabilities, or how they influence open innovation and technical complementarities.

Despite the good features that accompanies Digital Transformation and its evolvement. Do organizations also evolve with it? Do organizations actually make the full use of the rewards that come with Digital Transformation? Is there a relationship between organization's innovation management and Digital Transformation?

Resulting from the stated problems that this study seeks to carry out a systematic analysis on the relationship between digital transformation and innovation management.

Aim of the Study

The primary goal of this research is to investigate the connection between digital transformation and innovation management at Rites Food Limited in Nigeria. The following are the study's specific objectives:

To examine the influence of digital transformation in the management of Rites Food Limited.

To determine the influences of digital transformation on innovation management in Rites Food Limited.

To identify the challenges faced by organizations in utilizing digital transformation in Rites Food Limited.

To find out the impacts of digital transformation on organizational decision making in Rites Food Limited.

Research Questions

To achieve this main aim, there is need to achieve the research questions stated below:

What is the influence of digital transformation in the management of Rites Food Limited?

What are the influences of digital transformation on innovation management in Rites Food Limited

What are the challenges faced by organizations in utilizing digital transformation in Rites Food Limited?

What are the impacts of digital transformation on organizational decision making in Rites Food Limited?

Research Hypothesis

To further analyze the relationship the following hypothesis needs to be considered.

Ho1: There is a significant relationship between digital transformation and innovation management in Rites Food Limited.

Ho2: The challenges faced by organizations has a significant effect on utilizing digital transformation in Rites Food Limited.

Ho3: There is a significant relationship between digital transformation and organizational decision making in Rites Food Limited.

Significance of the Study

The nature of company is completely shifting due to digital technologies. In today's digital environment, implementing digital transformation is the only way to stay competitive. Along with a few other elements, innovation management is among the key drivers of digital transformation. It is a thorough instrument that provides knowledge and guides a business through a digital transition.

Organizations may develop a more sophisticated, distinctive, and long-lasting collaborative culture that supports digital transformation by utilizing innovation strategies. When used for all business operations, procedures, and new launches, it does its magic.

Today, virtually every business operation is going through digitalization and digital transformation. Innovation through the digital transformation enables an organization to understand changes in customer behaviors and expectations which sometimes lead to new requirements and obligations for such organization. Innovation helps to build on the existing strategies and also formulate new technologies to cater for market requirements.

Future researchers will benefit from these findings because the study represent a reference for their related research works in the near future. Also findings from this research will serve as a knowledge base to new and existing organizations on how they can fully utilize the benefits of digital transformation.

Limitations of the study

The scope of this study is limited to Rites Food Limited, Nigeria. Apart from the limitation identified, another significant limitation faced in carrying out this study is the short time needed to complete this study coupled with the academic work on the part or aspect of the researcher.

Definition of Terms

Digital Transformation: Digital transformation is the integration of digital technologies into every aspect of a business, it fundamentally changes the mode of operation and in turn ensure customers get value. It is characterized by a cultural change that necessitates

organizations to continually challenge the existing mode of operation, experiment, and get uncomfortable with failure. Digital Transformation therefore involves a process of innovating new business applications that assimilate digitalized data.

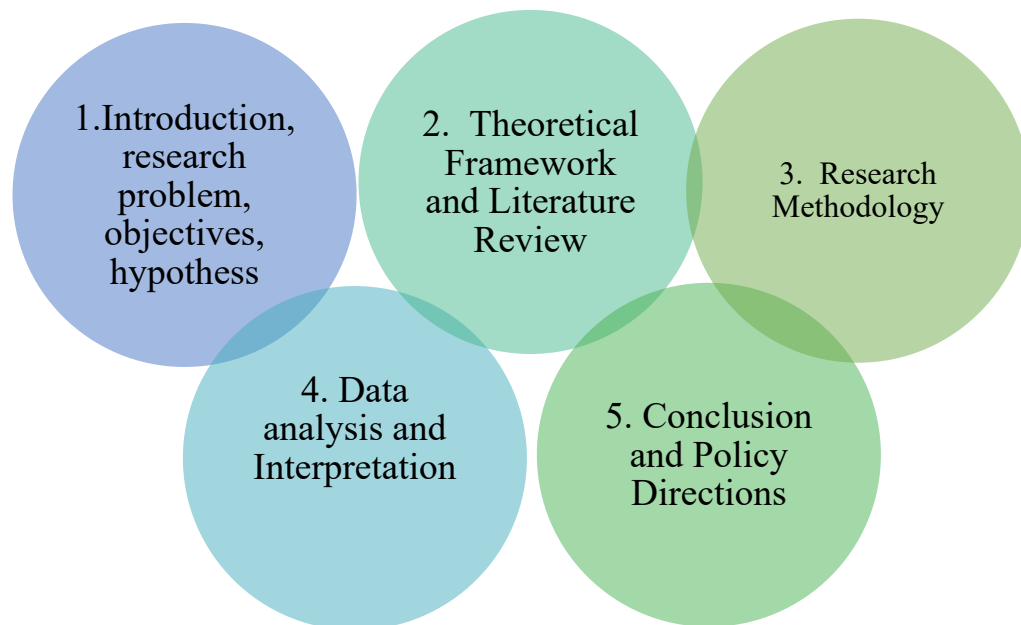
Innovation Management: This describes a procedure intends to promote an organization's adoption of a repeatable, sustainable innovation process or culture. Managing a task and coordinating actions to accomplish a stated purpose and set of goals is a simpler way to describe innovation management.

Structure of the Thesis

The thesis work will structured as follows; (i) chapter one involves the research problem, thesis structure, objectives and hypotheses are stated above; (ii) chapter two entails the theoretical framework and literature review of the study; (ii) the third chapter discusses the research methodology to be used in this thesis; (iv) the fourth chapter covers the data analysis and discussions of findings.; and (v) limitations and implications of the thesis is also discussed in this chapter and also presents the conclusion and policy suggestions. Figure 1 depicts the study structure.

Figure 1.

Thesis Structure



Source: Researcher's Survey, 2023

CHAPTER II

Theoretical Background and Literature Review

Theoretical Background

Digital Transformation in Academic Literature

The idea of (DT) digital transformation hasn't gotten much attention in academic studies so far (Matt, 2015). In addition to having a variable definition, research on this subject is primarily management or organizational in nature. However, experts have provided a definition of digital transformation in their scholarly writings. According to Matt (2015), digital transformation is the process of changing products, procedures, and organizational structures as a result of newly developed technology. Digital transformation is the development of a firm using "technology to significantly increase performance or reach of organizations" (Westerman, 2011). By further defining this idea as the "digitalization of formerly analog machine and service operations, organizational activities, and managerial processes," (Iansiti & Lakhani, 2014), they further clarify this idea and allow both start-ups and established companies to "compete in new ways." As previously distinct devices, activities, people, and businesses become networked, it can be concluded based on the existing definitions that digital transformation is all about interconnectivity and re-combination of assets (Iansiti & Lakhani, 2014; Fitzgerald, 2013). (Berman, 2012).

According to Mithas et al. (2013), the very complex innovation problems brought on by digital technology will disrupt entire companies' organizational structures. Therefore, new information technology implementation tactics must be used to encourage innovations for business growth (Bharadwaj et al., 2013). (Matt, 2015). Thus, (Matt, 2015) distinguished four parts of digital transformation strategies: the use of technologies, adjustments to the company's value generation, structural adjustments to the organizational structure inside the company, and financial considerations. By utilizing new and emerging technologies, the business switches its attention to their implementation and to the public adoption of information systems. The company's ability to create value will be impacted by changes in its supply chain. An existing company's basis and organizational logic can be changed through digital transformation, and new goods and services can be created and launched. New technology and value chains have an impact

on how businesses are organized, necessitating structural modifications. The funding of currently operating business activities is combined with the integration of digital activities into a company's organizational structure, such as its production methods, internal partnerships, and communication systems.

The technological infrastructure and information systems are of high relevance for enhancing the value development of a corporation utilizing information technology (Cooper, 2000). Information systems, which link information technology with people, procedures, and organizational structures, are viewed as strategic assets in many businesses (Piccoli, 2007). (Chen et al, 2010). Additionally, "Information systems are also used to promote or define an organization's competitive strategy, its plan for acquiring and retaining competitive edge," according to Chan & Huff (1992). It might be viewed as a requirement for a strategy for developing a digital business.

Digital Transformation as a Business Innovation Strategy

The instances of the media industries demonstrate that adopting digital advances and transforming businesses are not just tactical options but rather a necessary undertaking that all businesses must undertake (El Sawy, 2010). Digital transformation can be viewed as an inevitable prospect for a company's business growth rather than just an up-and-coming trend because it is defined by the application of new digital technology to enable major business advantages (Fitzgerald, 2013). Businesses can achieve their objectives by implementing digital technologies because these innovations allow for the expansion of existing businesses into new markets (Nylen & Holmstrom, 2015). Business development allows companies to find new growth opportunities and use that knowledge to focus on developing new growth drivers while maintaining current business operations (Lorenzi & Sorensen, 2014). Processes, commodities, markets, and business models are the four main characteristics that business development involves while looking for new growth opportunities. Growing interest has been shown in how information technology may help businesses by opening up new prospects (Coester et al, 2011). According to this line of thinking, digital technologies transform not only how a company is managed but also how its operations are carried out both internally as well as externally in relation to its clients and suppliers. In literature, there is conflicting evidence about the claim that information

technology enhances competitive advantage (Kohli & Devaraj, 2003; Brynjolfsson & Hitt, 2000). (Piccoli & Ives, 2005). Evidences over the past few years, IT has dramatically changed several businesses (Carlsson et al, 2011). Digitalization has revolutionized not only procedures but also goods, entire organizations, and the borders of individual firms (Coester et al, 2011).

As a result, widespread digitization presents fresh chances for innovation "through developing contacts, experiences, and organizational firms" (Yoo et al, 2012). However, in order for businesses to remain competitive, they must reinvent themselves (Bennan & Marshall, 2014). In order to find potential strategies aimed at incorporating new prospects of digital tool to create and extracting value, the established business model must be continuously reshaped (Iansiti & Lakhani, 2014; Voelpel, 2004). (Garrison, 2009). In the opinion of Westerman, (2011), the objective of digital transformation is to generate either individually or in conjunction with better customer engagements and involvement, streamlined operational procedures, and altogether new business models.

In conclusion, a completely digital firm built on digital technology offers a comprehensive approach rather than small, incremental changes (Littler & Sweeting, 1987). Businesses can be transformed while keeping in mind the crucial aspects of procedures, commodities, markets, and business models by connecting business innovation literature with information systems and technology.

Review of Related Literature

The digital revolution

The digital revolution brought new kinds of rivalry to both small and medium-sized businesses and huge enterprises and as a result of the expansion in computing capacity. Since cheap computing power suddenly made it possible for small businesses to use the computational resources that were previously only available to large ones, a major restriction to entry suddenly stopped existing, the digital revolution initially targeted the computer manufacturers before spreading to other businesses. By producing improved commodities and services at reduced price rates, businesses all around the world reduced their operating expenses, enhanced their IT capabilities, and enhanced their own business models. Since many of these new businesses came from the margins of established

markets, they grew and improved their business models without drawing the attention of more established companies. The entire economy has grown significantly as a result of this new digital strength, but it has also given the largest corporations in the world new rivals. Due to computerized design, manufacturing, and distribution networks, formerly regarded luxuries could now be purchased at mass market prices. The trend toward more extensive commoditization has also been accelerated by this digitization process. Carrefour, Tesco, Home Depot and Wal-Mart were among the first to fully understand taking advantage of the new capabilities of computers to assist in the management of a tremendously complex global enterprise, and this new computer-based generation/era of manufacturing and distribution became peculiar to their success (Lngdom, 2011).

The Internet War existing between Microsoft, Facebook, and Google, today represents the latest development in the digitisation of the economy. It demonstrates how the digital revolution consistently alter tools used to produce and utilize information, and how this will have a significant impact on the successful and unsuccessful business models. The arts, entertainment, business, and society are all impacted by digitization, which is also essential to how goods are created, produced, and delivered. In the same way that it is crucial to how businesses manage their finances and operations, it is also crucial to how consumers gather and exchange information and obtain entertainment. It is even a fundamental tool for farmers, who use satellite data to plough and fertilize their crops and to choose how, where, and at what price to sell their harvest. The maize heartland of Nebraska, rural India, coastal China, and central Brazil all share this truth. In actuality, digitization has a huge impact on every sector of society (Lngdom, 2011). In the age of digitalization, innovation is required.

Digital Transformation as a new concept

In the past few years, the idea of digital transformation has gained significant acceptance among researchers and practitioners. We are seeing a true revolution brought about by organizations in the process of ongoing transformation. The phrases digitization, digitalization, and digital transformation must be defined and made clear in order to comprehend the notion of digital transformation. Since most scholars use these terms interchangeably, despite the fact that there is a considerable difference between them, their use up until now has led to some uncertainty among the scientific community. The

differences between the three terms must be made clear. Converting an analog format to a digital format is known as digitization, which is the process of visualizing the data in a binary language (0 and 1). It is how information is portrayed in any computer system. For instance, we can use a scanner to scan a photo and put it on a CD.

Automation is the use of a computer system to continuously or intermittently automate jobs, whereas digitalization relates to the use of digital data and technology to simplify data processing and optimize processes. From this perspective, "computerization" and "digitalization" are comparable concepts that are sometimes used interchangeably.

However, the term "digital transformation" is relatively new and is commonly used by academics and industry professionals. However, depending on the context, it can take many different forms.

We have discovered that the term "digital transformation" is commonly used erroneously as we read through the academic literature as there are no generally approved definitions for it. Many authors have made an effort to explain and describe it, and the below table provides some interesting definitions.

Table 1.

Definitions of Digital Transformation

| Definition | Source |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| A road plan for managing contributions made on by the adoption of technology technology and modifications to operations after a transformation is called a digital transformation strategy. | (Matt, 2015). |
| The phrase "digital transformation" describes prospective adjustments to a firm's operations resulting from new products, updated organizational structures, or automated business processes. A good sign of these developments is the rise in Internet-based media consumption, which has altered traditional company structures. | (Hess, 2016). |

Table 1 (continued).

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Promoting substantial commercial breakthroughs through the use of cutting-edge digital technology (such as mobile devices analytics ,social media, or embedded technologies) (such as improving customer experience, streamlining operations, or creating new firm structures). | (Netheler, 2018). |
| the conversion of a business's marketing and communication channels into digital formats, as well as the digitization of its operations (products and offerings), which may supplement or completely replace physical offerings. Another component of digital transformation is the adoption of digital business models, which enable novel value capture strategies as well as strategic and operational choices informed by data-driven insights. | (Horlach, 2017). |
| The use of technology to greatly boost the effectiveness or accessibility of a company. | (Westerman, 2014) (Karagiannaki, 2017) |

Source: (Matt, 2015; Hess, 2016; Netheler, 2018; Horlach, 2017; Westerman, 2014; Karagiannaki, 2017).

It has been used since 2000 (Patel & McCarthy, 2000) and was identified with digitalization, but it is currently used to define a phenomenon associated with new consumer applications and distinctive items that have a substantial impact on current business models and organizations. In their book (Fors A. and Stolterman E., 2004), Fors and Stolterman provided the first precise definition of the word, defining it as "the changes that digital technology involves or impacts in all facets of human life."

Digital transformation is regarded by some researchers as the use of technology to significantly increase an enterprise's performance or reach as well as the development of new business prospects using digital data and technology (Westerman et al., 2011). The

shift now has an impact on all business operations, support activities, and the organizational structure itself. It is no longer only procedures or macro processes. These procedures are only focused on producing value. In fact, companies are being urged to reconsider their business practices and how they connect with their stakeholders, as well as to adapt to new consumer trends and utilize technological advancements for increased productivity and creativity. The process of digital transformation involves disruptive or gradual change. Before moving on to a company's implicit holistic transformation or deliberate pursuit of value creation, it starts with the adoption and application of digital technologies (Henriette et al., 2016). Three major components can be distinguished across the many definitions of "digital transformation" (DT): Technological – DT is based on its use of new digital technologies like mobile, analytics, social media, or embedded systems. Organizational – DT calls for the variation of organisational processes or the creation of new business models. Social – DT is an idea that is having an impact on all areas of human life by, for example, enhancing the customer experience (J. Reis, 2018).

In addition, transformational changes in structure, management, and organizational culture are necessary to achieve the digital transition. Any organization's DT effects can be divided into three categories based on their severity: changes to customer experiences, adjustments to business operations, and changes to business models.

Numerous digital touch points between the business and its consumers, effective customer communication during the selling process, in-depth assessment of segments of the market and their behavioural patterns in the marketing space, consumer habits and commitment, and interactive customer communication are all illustrations of how the organization is modifying how users view its products and services (Schwertner, 2017). Customers are expecting more from businesses, and they look to them to pay close attention to, understand, and respond to their evolving requirements. Users in businesses assume that by utilizing new technology in a personal context, they will do the same at work. Particularly for younger generations that are reared in a digitally advanced environment and are also termed as "digital natives" (Pardo, 2014). In order to provide his customer with a satisfactory connection, the business must consider the dependability of its communication channels and include new market monitoring tools, such as the analysis

of vast amounts of data from the Internet. For this, new skills and a creative infrastructure are needed.

The development of the organization's business processes includes the automation of Research & development activities, production, and distribution tasks. Digital technologies also give employees the ability to work at various levels in many functional departments. In the opinion of Schwertner, (2017), automating, standardizing, and sourcing activities abroad can help organizations become more adaptable, responsive to shifts in demand, and better prepared to boost and sustain profitability. Decision-making for the availability of products in various manufacturing units is accelerated by extending remote work at workers' homes and basing decisions on accurate customer relationship data.

The business model is changed by new digital businesses, digital globalization, and modifications to existing digital businesses. These procedures involve the addition of digital content to already-available goods and services as well as the introduction of new digital solutions (Schwertner, 2017).

Form and Impact of Digital Transformation

The majority of digitalization initiatives are focused on achieving operational excellence. In the end, this results in increased efficiency and cost position. Companies take steps to standardize and automate business processes in order to meet those objectives. As a result of such implementation efforts, market share leaders in the industry may experience pressure from rivals who are more focused on digitalization.

However, businesses who can successfully navigate the digital transformation can offer their clients a new value proposition thanks to improved and more dependable data management. Effectively growing your operations across diverse market and customer groups requires this, in a nutshell.

While investing time and money in automation and standardization has clear benefits, most firms struggle to manage the internal implementation process. Findings from the MIT research, only one in four established organizations have completely digitalized their internal operations to date. Given that automation and standardization are viewed as a reasonable first step on the route to achieving digital transformation,

(Markovitch & Willmott, 2014; Ross, 2017) claim that the seeming lack of digital competence among enterprises might be problematic for company.

The true extent of digital transformation is difficult for all concerned firms due to its complexity. It has to do with the exponential growth of technology and hot topics like social media, big data analytics, artificial intelligence, and smart cities. Companies may find it difficult to recognize and handle these trends in a systematic and persuasive manner in consideration of the varied and colorful digital transformation landscape. Additionally, new market rivals look for opportunities presented by market shifts by quickly and broadly providing value.

Using the strategically important innovation management element to gain sustainable competitive advantage by utilizing the new playing field created by the digital era is the essence of being a new digital leader (Kiehne & Olaru, 2017 and Maier, 2013; 2014). In this approach, businesses may offer both a novel consumer experience and an improved value proposition, which ultimately has the inherent ability to fundamentally alter how business is done. (Ross, 2017, Newman, 2018, and Richards, 2018; Schlalmo et al., 2016).

In broad sense, digital transformation is a global phenomena that affects business operations at multinational corporations. Although boundaries do not completely halt the power of change, it should be recognized that the effects of digital transformation are not disseminated equally throughout all nations and areas of the world. A nation's digital agenda can be greatly influenced by the regulatory and policy framework that is developed by policymakers and corporations. Additionally, a nation's capacity to advance its digital evolution is influenced by the general level of economic sophistication.

Features of the Digital Transformation

One of the subjects that will take up a lot of time on the study and management agendas of many businesses is the digital transformation. It is a long-lasting pattern that keeps evolving as new digital technology generations are developed. Digital transformation can be characterized by three factors.

First and foremost, the digital transition is unstoppable. New digital technologies or latest technological deployment strategies may behave worse than existing technologies or their deployment strategies in the early stages of their market debut. However, as the

transformation matures, the situation is getting better and pre-established solutions are losing their monopoly on the market. The convenience that using a digital invention provides, then, is something that the user does not want to give up. For many people, even momentarily giving up modern technologies is inconceivable.

Second, the digital age is here to stay. To address the issues of urbanization and globalization of commercial activity, the contemporary societal and economic framework forces inventive usage of digital technologies. In order to better accept the new digital ecosystem and make the shift to the contemporary age, all organizations are now expected to go through this adjustment. With the advancement of digital technology, firms may now develop solutions to challenging issues. The maturity of the digital transition has reached a point where many previously insoluble issues can be resolved.

Finally, despite the fact that they are still in the early stages of development, digital transformation procedures cannot be avoided. It is challenging to anticipate which businesses will be successful in their transformation due to the quick rate of technological advancement in digital fields and their implications across numerous industries. We can also see that innovation and change are speeding up. Many businesses now make the claim that they are always reinventing themselves. The physical product no longer serves as the primary determinant of competitiveness; rather, it must be integrated into an ecosystem of cognitive services.

The transition to a digital world is unavoidable, irrevocable, and unstoppable. These three traits serve as an example of how the economy and society are being transformed by digital technology in an unstoppable and ongoing process. The digital is accompanied by substantial and quick changes in trades, even as it is in the course of fundamentally altering the economy and the environment of work in general. The opportunities presented by emerging digital technologies are forcing businesses to continuously assess their capacity for expanding their current business models.

Technology trends in the digital transformation

Technologies such as big data, cloud computing, the Internet of things, and blockchain help to shape and have a significant impact on the technological foundations of the digital transformation. Their applications span a wide range of industries and

classifications. Although digital technologies provide many benefits, they also present a big challenge for the company. The use of new technologies, in particular, necessitates the linking of many specialized subgroups and the creation of new supervisory skill sets.

Big Data

"Big data" denotes a substantial or complex volume of rapidly shifting data that is unable to be processed using traditional methods and data processing technologies.

Reichert, (2014) opined that this also includes all data processing innovations and analytical techniques created recently to gather and assess a significant or complex amount of data. Doug Laney can utilize the three "V's" of volume, variety, and velocity to describe the characteristics of big data. (Laney, 2001).

All data from contact centers, social networks, genomics, biological research, and medicine is considered to be part of big data. The sector is being fueled by large amounts of data thanks to the development of sensors. The information describing huge data is always changing. In this new environment, firms' ability to recognize changes and respond swiftly and wisely is crucial to their success. The fundamental requirements for company in the 20th century were stability and scalability; the new benefits are focused on discovery and agility. The ability to continually utilize fresh and current data sources to adduce models and possibilities in this setting determines performance. (2012) "Davenport et al."

Internet-of-Things

The Internet of Things (IoT) is the networking of physical items with the Internet or other networked systems using sensors and actuators. It enables autonomous object communication and task performance for the user. Additionally, users have the ability to track, check on, and even remotely manipulate objects. In addition, networked sensors watch over individuals and the surroundings (Manyika, 2015, Fedyk 2016). Once processed, the data can be combined with other data, such as that from the company's ERP or CRM systems, using big data analytic techniques.

It handles difficult issues, automates manual operations, and makes innovations based on these fresh policies and procedures. The Internet of Things is just getting started. Despite the nine billion estimated networked devices in 2015, it is projected that by 2025,

there will be between 25 and 50 billion devices (Manyika et al., 2015). Experts predict that the Internet of Things will have a big impact on daily life (Manyika et al., 2015). The extent to which life is being networked is seen in the ubiquitous use of gadgets like smartphones and so-called wearables, or body-worn technology like watches.

In the context of its use in manufacturing and industry, the Industrial Internet of Things (IIoT) is also known as "Industry 4.0," "Smart Factory," "Industrial Internet of Things," or the fourth industrial revolution. The independent exchange of information and networking of business resources, such as operational resources or storage systems, are denoted by these expressions (Kagermann, 2014). Networking in the industrial setting will also have an influence on the planning, operation, and value creation structures in factories, allowing for the development and automation of production processes (Kagermann, 2014).

Blockchain

The Gartner hype cycle now places blockchain at the very top (Cearley, Walker, Burke, & Searle, 2017). Therefore, it should come as no surprise that the technology, best recognized for serving as the foundation for the cryptocurrency Bitcoin (Nakamoto, 2008), has the potential to transform other sectors of the economy: Programmable contracts that are executed without the use of a middleman or human intervention (so-called smart contracts) should either replace traditional banking, insurance, or the interaction of robots in manufacturing (Tapscott & Tapscott, 2016). When the price of one unit of the cryptocurrency Bitcoin first topped the price of one ounce of gold in March 2017, it was known as Gold 2.0. (Vigna & Eisen, 2017). As of August 2017, the two most valuable cryptocurrencies—Bitcoin and Ethereum—have a combined market value of over \$80 billion and are already recognized as a form of payment in some nations (CoinMarketCap, 2017).

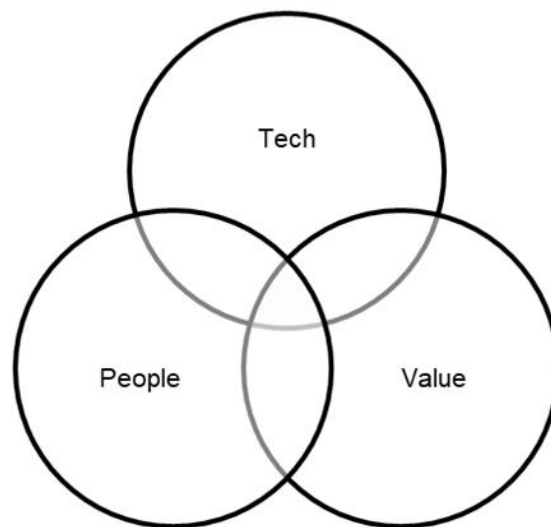
Digital Transformation Process

As per Omer (2021), digital transformation entails the utilization of digital resources to enhance productivity, value creation, and sales. The term "digital transformation" does not imply that technology remains the only factor at play. It includes

the development of people as individuals. A company faces three different kinds of difficulties linked to technology, money, and staff during the digital transition. Therefore, during the digital transformation process, a business must concentrate on coordinating all three components toward the same objective (Omer, 2021). The Digital Transition Handbook's Figure 2 (Gamage, 2021) depicts the trilemma of a company's digital transformation.

Figure 2.

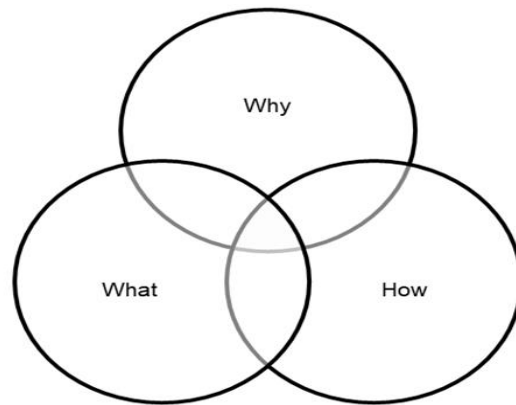
The Company's Trilemma of Digital Transformation



Source: Omer, A. “The Digital Transformation Handbook”.

In order to identify why, what, and how in the digital transformation, employees must jointly navigate their trilemma. The first step toward a smooth and seamless transformation is for the people to have a clear grasp of the why, what, and how (Omer, 2021). Figure 3 (Gamage, 2021) from the book *The Digital Transition Handbook* illustrates the employee's trilemma of the digital transformation (Omer, 2021).

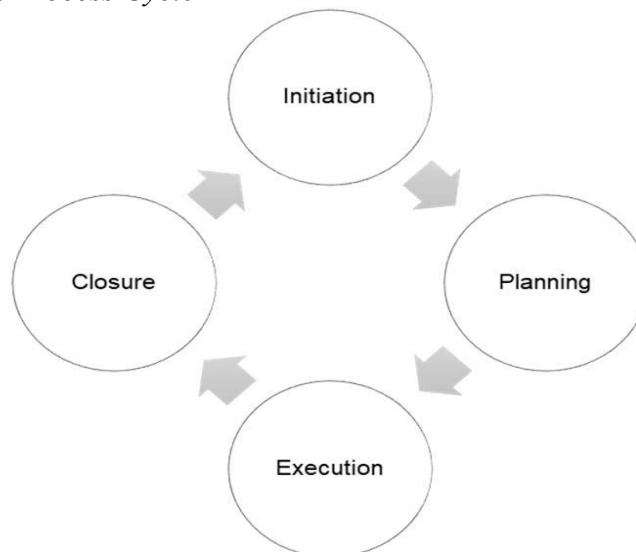
Figure 3.

The Employee's Trilemma of Digital Transformation

Source: Omer, A. “The Digital Transformation Handbook”.

The following figure 4, which is derived from figure 1 and depicts the digital transformation phase, which should begin with the planning stage and end with the implementation of digital technology, is taken into account. 2021) (Gamage). When the author saw the digital transformation process as a project unto itself, he discovered parallels between the project management lifecycle and the process. Figure 4 depicts the relationship.

Figure 4.

Transformation Process Cycle

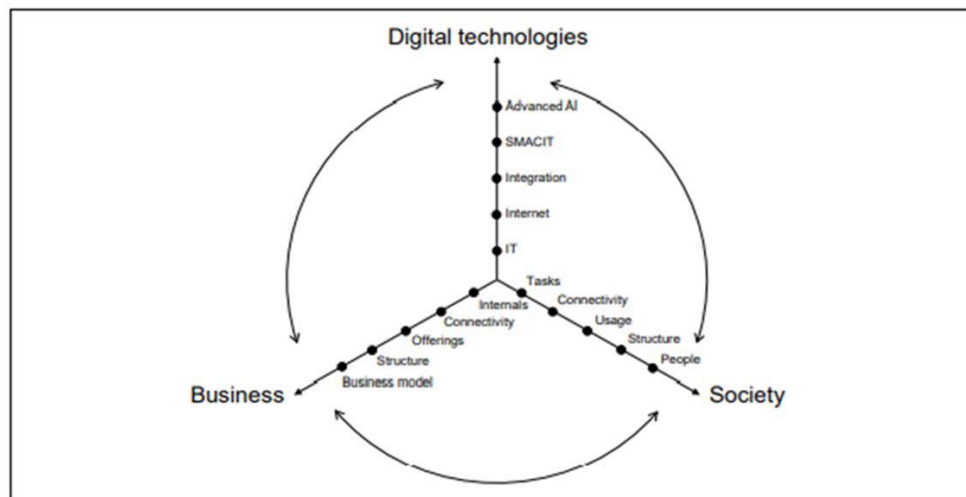
Source: Omer, A. “The Digital Transformation Handbook”.

On the opposite, processes act as guides for beginning, planning, and completing any project. By establishing goals at the planning stage, it is straightforward to execute the project within the anticipated time, cost, and quality boundaries (Newton, 2016). This concept also applies to digital transformation, where the company must first decide to transform and figure out how to do it.

Key elements of the digital transformation were determined by Veldhoven & Vanthienen (2019) through a recent study. Utilizing digital technology is one of these crucial elements, along with innovative business models, digitalization, the digital economy, internal systems, user experience, change management, organizational transformation, and the production of products and services (Veldhoven & Vanthienen, 2019). Veldhoven & Vanthienen (2019) developed a framework for the digital transformation that distills the three primary shifts into the recognized essential components in order to unite the features of the digital transformation. Changes to business, society, and digital technology are all included in the framework for digital transformation. Figure 5 shows the framework for digital transformation created by Veldhoven & Vanthienen in 2019.

Figure 5.

Digital Transformation Framework



Source: Veldhoven, Z.V., & Vanthienen, J. "Designing a Comprehensive Understanding of Digital Transformation".

Concept of Innovation

Innovation is defined as "the introduction of a new or materially improved product (good or service), process, new marketing strategy, or new organizational method in company operations, workplace organization, or external relations." This definition divides innovation into the following four groups:

Firstly, the launch of a service or good that is either entirely new or greatly improved in terms of its properties or intended uses, including pertinent advancements in technical specifications, components, integrated software, user experience, or other high-quality aspects;

Secondly, The deployment of a completely new or significantly improved production or distribution chain, entailing sizable modifications to procedures, tools, and/or software);

Thirdly, marketing creativity (the implementation of a new marketing processes cutting across important changes in product design or packaging, product placement, product promotion or pricing).

Lastly adopting a novel organizational strategy in a company's operations, workplace design, or relations with the outside world is known as organizational innovation.

Types of Innovation

According to Alexander & Van Knippenberg (2014), innovation can be a driver for a company's development and success, but this rely on the innovation's type. As a result, there are various types of innovation, including processes for improving management systems, products, processes, and technologies. Shu et al. (2016) defined product innovation as introducing new products by a company to the potential customers, which is essentially a new product from development activities. Product innovation is well recorded in a variety of industrial firms, such as the packaged products industry, according to Sorescu & Spanjol (2008). It is a significant factor in competitive advantage. This fact is addressed to in Jayaram, Oke, and Prajogo's (2014) statement that innovation has been acknowledged as a major source of competitive edge for many organizations. According to Marx et al. (2016), product innovation increases consumer value and boosts an organization's competitiveness. For the analysis of innovation strategies in Australia, for

instance, data on the manufacturing industry from the Australian Bureau of Statistics between 2010 and 2011 provides an appropriate context. It was discovered that at least 20% of the companies had adopted new, upgraded items (ABS 2012). Zhang, et al. (2015) noted in a different study that Chinese firms have turned to mass customization and product innovation as a way to achieve a competitive edge as a result of increased environmental safety regulations, prices, and labor expenses.

Ayhan, ztemel, Aydin, and Yue (2013) define process innovation as the act of carrying out an activity in a novel manner while utilizing particular change instruments to modify the production processes. It also requires the use of production techniques that are vastly more advanced technologically. In contrast, Maine, et al. (2012) view process innovation as a finished good which can be sold to clients after being produced. According to a study by McCormack (2014), several innovation scholars have discovered that knowledge is essential for innovative production processes in manufacturing companies. Companies can obtain this knowledge from a variety of external sources, including clients, competitors, consultants, suppliers, and educational institutions. However, Viederyt (2016) asserts that process innovation is feasible if a company can resolve current issues and carry out business operations radically in a way that results in extremely advantageous products.

Howell (2005) defined technological innovation as the advancement of existing production techniques or the creation of brand-new technologies. The investigation, design, and creation of new methodologies, goods, or services are all aspects of technological innovation. As per Singh, et al. (2015), technical innovation in the manufacturing industry is a significant driver of productivity growth, organizational success, and economic advancement. Production has attracted much interest from researchers and practitioners in fields like distinctive expertise (Hitt & Ireland, 1985), resource-based view (Grant, 1991), dynamic capability (Prahalad & Hamel, 1990), and knowledge-based view because technological innovation in this industry has facilitated large-scale economic, social, and environmental transformation (Grant, 1996). Technology is the main force behind technological innovation, and Avadikyan, Lhuillery, and Negassi (2016) claim that it enhances manufacturing companies' chances to offer

novel products and production methods, which opens up the potential for novel product-related services (PRSs).

Last but not least, management systems innovation methods and principles produce long-lasting benefits while also causing many significant changes in the competitiveness of manufacturing organizations. Manufacturing organizations have been able to outperform their performance criteria during the past century thanks to managerial innovation (George et al., 2010). Hamel (2016) claims that a properly managed management systems innovation process aids the organization in achieving its objective.

Depending on the particular model it has chosen, a manufacturing company may implement either gradual or radical innovation. Taking the scientific nature of the innovation and the innovation's degree as the key parameters, Fischer et al. (2014) distinguished between radical and incremental innovations. Incremental innovation, according to Subramaniam & Youndt (2005), is a type of innovation in which already-existing goods are strengthened and defined. Incremental innovations, according to Ritala & Hurmelinna-Laukkanen (2013), implement and introduce tiny modifications and adjustments to manufacturing technologies and products. On the other hand, pharmaceutical inventions are regarded by Arnold, Fang, and Palmatier (2011) as dynamic processes where each innovation builds on the previous one. They are classified as incremental since they are based on the so-called "me-too" or follow-on pharmaceuticals idea and are characterized by advancements over earlier technologies (Globberman & Lybecker, 2014).

On the opposite, radical innovation, according to Menguc et al. (2014), involves introducing significant modifications to a company's products or operations. It comprises creating novel approaches to problem-solving and incorporating cutting-edge commercial and technological abilities into a production process or product. In the opinion of Norman, & Verganti (2014), the majority of radical ideas take a long time to implement and are built on earlier innovations or were inspired by them. Apple's gesture-based cell phones are a perfect illustration of how innovations don't merely appear; rather, they are built on previously thought-of concepts. Because neither Apple nor the multi-touch interfaces it

offers are new concepts, they are all radical advancements. For many years, multi-touch technologies have been used in computer labs. As per Ritala & Hurmelinna-Laukkanen (2013), the main issue with radical innovations is that they frequently represent significant deviations from the current capabilities rather than merely introducing improvements and alterations to technology and existing items. According to Alexander & Van Knippenberg (2014), the goal of both radical and incremental innovations is to improve the existing products and so support an organization's success.

Innovation Management

Innovation management arranges and controls these creative processes. Processes for innovation and invention are both included in the administration of research and development (R&D). Several things occur at each stage of the innovation development process. Innovation processes describe the manner in which innovation actually occurs. Innovation, according to West and Farr (1990), may be broken down into four stages: recognition, initiation, implementation, and stabilization.

Recognition: Organizations identify the possibility for an innovation at this initial phase. Programmable and non-programmable sources of invention are categorized by Zaltman, Duncan, and Holbek (1973).

Initiation: Planning and development for innovation occur in this second phase. It may be accepted for development after evaluation or abandoned.

Implementation: This is a lengthy phase where operations are disrupted by physical change.

Stabilization: The process now loops back to the phase of acknowledgment since innovation has been integrated into the organization's systems.

Innovation is a multifaceted, context-specific, and complex phenomena. Innovation can be examined from numerous angles. One of the widely accepted dimensions is the significance of knowledge cycle generation and management for the development and maintenance of innovation.

Many academics have made an effort to comprehend the evolution of innovation management in terms of different eras, taking into consideration the industry standards in innovation management at various iterations needing various sorts of innovation processes in diverse contexts.

According to Cooper (1994), there are three generations of innovation processes, new goods, or new product development, while Ortt & Van der Duin (2008), Niosi (1999), Miller (2001), Liyanage, Greenfield, and Don (1999) divide them into four generations. Rogers (1996) categorized them as five generations, while Kotesmir & Meissner (2013) added Chesbrough's (2003) Open Innovation Model as the sixth and last phase.

Based on these researchers' findings, the below table lists the traits, advantages, and disadvantages of the six generations of innovation management.

Table 2.

Traits, Advantages, and Disadvantages of the Six Generations of Innovation Management.

| Generations | Model | Characteristic | Strengths | Weaknesses |
|------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First Generation (1950s to mid-60s) | Technology/ Science Push | simple, linear procedure with a focus on research and development and scientific discovery | Radically Simple Innovation | inadequate feedback, no marketing focus networked interactions are absent, No project manager and no technology tools |
| Second Generation (Mid 60s to early 70s) | Market Pull (Need Pull) | simple, sequential, linear process; marketing emphasis; market is source of fresh ideas for R&D | Simple and Incremental Innovation | absence of communication, No technical equipment, networked connections, or technology research |
| Third Generation (Early 70s to mid 80s) | Market Pull and Technology Push Combined | Interaction and feedback loops between many components, with a focus on fusing marketing and R&D | Simple, Radical and incremental innovation, Feedbacks between phases | Instead than concentrating on market and organizational innovations, pay attention to product or process innovation. There are currently no networked interactions or technological tools. |

Table 2 (Continued).

| | | | | |
|------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Fourth Generation (Mid 80s to early 90s) | Parallel line or Interactive | both push and pull models are present, integrating within the company, importance on alliances and external connections | Parallel phases Actor networking, | Increased reliability due to complexity, no technological aids |
| Fifth Generation (90s) | Network | importance placed on knowledge gathering, external connections, system integration, and broad networking | widespread innovation, using highly developed technological tools, Using networks to promote innovation | dependability increases with complexity |
| Sixth Generation (2000s) | Open | To accelerate the technological innovation, internal and external initiatives as well as internal and external approaches to market might be merged. | blending of internal and external perspectives and internal and external marketing strategies | assumes competence and a commitment to cooperate and work together. External Collaboration Risks |

Source: (Cooper, 1994; Van der Duin, 2008; Niosi, 1999; Miller, 2001; Liyanage, 1999; Rogers, 1996; Meissner, 2013; Chesbrough, 2003).

In the beginning, technology push served as the foundation for innovation management. There was no consideration given to client or market feedback in this situation. Market Pull replaces technology push in the second phase, but again, there was no input. The impact of feedback is shown in the third step, which results in the integration of R&D with marketing etc. Before the push and pull mechanisms are combined in the

fifth phase, the fourth phase solely contains interactive features. Internal and external ideas are combined at the last step of open innovation. A paradigm shift is reflected in open innovation. These distinct generations of innovation management that call for different kinds of procedures first appeared at various points and in very different environments.

Contrary to what is implied by the concept of innovation generations, businesses do not formally control their innovation processes. Many businesses effectively continued to develop as late as the 1990s, according to Griffin (1997) and Nessim et. al (1995). Three fundamental open innovation processes are differentiated by Enkel Gassmann & Chesbrough (2009):

The outside-in process: Enhancing an organization's internal knowledge base with external knowledge of suppliers, customers, etc.

The inside-out process: Utilizing technological multipliers, joint ventures, spin-offs, and commercial/revenue incentives to bring innovations to market faster than internal development.

The coupled process: Connecting partners both inside and externally through joint ventures, collaborations, and alliances while taking into account the full value chain.

Organizations can bring innovation in two ways: by stealing other people's ideas or by coming up with their own. Where businesses benefit from comparative advantages for immediate gains, the first strategy may be effective. The second strategy is preferable to achieve a durable competitive edge. Successful innovation, a crucial component of the management process, happens every day as:

There is an exchange of ideas both inside and beyond the organization.

There is a well-defined social system for choosing ideas that take the customer into account.

By providing the necessary funds, the concept is supported and nurtured.

The concept is introduced to the market all at once or gradually for actual testing.

Ideas that don't work are abandoned or given lower priority.

According to De Liso and Metcalfe, Innovation can be seen as a collection of connected but separate sub-systems. Together, they contribute to the creation of an invention that uses interactive learning. Even though there must be some degree of interoperability within each system, each subsystem will be following its own design

configurations. Because of "interrelatedness restrictions," structural tensions restrict the capabilities of the system. The importance of interactive learning in influencing innovations through diffusion is emphasized by this strategy.

Driving forces for change and innovation strategies

Langdon Morris (2011) described the overall strategy for innovation in which he distinguished the forces causing change in order to develop meaningful themes of the key strategic problems faced by organizations and the environment that gave rise to those problems as well as to establish appropriate and effective rules for the innovation strategy. Commoditization, the digital revolution, social media's pervasiveness in society, globalization, unrest worldwide, and acceleration—moving faster in order to stay stationary—are some of these driving forces.

Government initiatives to promote innovation must take into account how the global economy is changing and how innovation processes are evolving. A number of complementary actions are required to transform an invention into an innovation, including organizational adjustments, firm-level training, testing, marketing, and design. Research and development (R&D) is no longer the exclusive form of innovation, while it is still a crucial component.

As part of an innovation strategy, the following are the main areas where innovation policy should focus: incentivizing people to innovate, introducing innovations, producing and applying knowledge, utilizing innovation to address global and socioeconomic problems, and enhancing the leadership and measurement of innovation processes.

To unlock innovations, the essential actions must be taken: Encourage entrepreneurship in business by promoting entrepreneurship, expanding financial access, creating a supportive strategic framework for business innovation, fostering market opportunities for novel products, services, and processes, promoting robust and effective research grants, investing in a learning infrastructure, and fostering efficient knowledge streams, systems, and markets.

Pillars for innovation in the globalised digital world

It is not only challenging, but complex, to come up with new answers to pressing issues. After all, there are always a wide range of pressing issues that require attention, along with an infinite number of potential solutions. Competence and commitment are the two cornerstones of innovation according to Tim Kastle (Tim et al, 2009).

Competency: Every organization has a unique background and set of skills that determine its level of innovation capability. An established industrial company cannot and should not attempt to overnight transform into a thriving Silicon Valley tech start-up.

However, every business can get better. A framework for innovation based on ability and dedication has been created by Tim Kastle (Figure 6).

Figure 6.

The Definition of Innovation Framework



Source: Tim Kastle, Jason Potts, Mark Dodgson. “The evolution of innovation systems, DRUID Conference, Denmark”.

In addition, Kastle offers a three-horizon approach, which advocates a 70/20/10 balance between developing new goods and processes, looking for synergies, and investigating entirely untapped markets. The three horizons paradigm encourages considering innovation over three temporal periods. Implementing innovations that enhance present operations falls under the first horizon (H1), extending current competencies into new, related markets falls under the second horizon (H2), and innovations changing the nature of your industry fall under the third horizon (H3). H1

innovations are typically gradual, but H3 innovations are more frequently radical. A balanced portfolio does not, however, require that we devote 1/3 of our resources to each area. The majority of Google's innovation resources are used to improve what they are already doing, or H1 initiatives, according to their 70/20/10 split. The longer-term concepts are significantly less important to them. These appear to be suitable investment proportions in the majority of circumstances. Depending on the circumstances, you may decide to raise your investments in H2 and H3 innovation if your environment is very unstable. The management aspect of this is the tough part. Different skills are needed for innovation in H1, where the bulk of ideas are progressive, than for innovation in H3, when the most of ideas are more extreme. But over time, effective companies figure out how to achieve this. It is helpful to think about innovation as a repertoire when trying to improve process management.

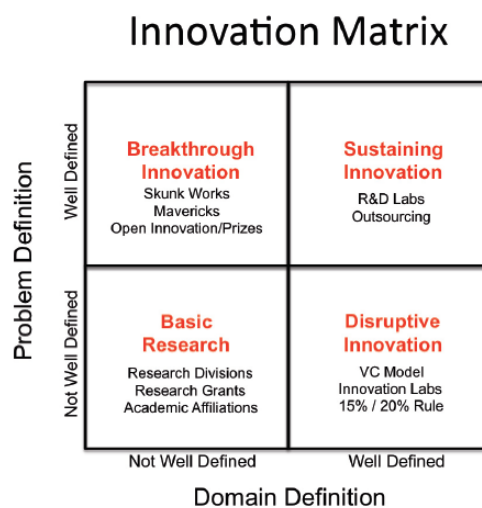
Innovation Management Systems

Innovation Matrix

Greg Satell (2013) suggested a domain- and problem-based innovation management matrix that recognizes four fundamental categories of innovation as seen below:

Figure 7.

Innovation matrix



Source: Greg Satell. "Driving Digital Innovation, www.forbes.com/sites/gregsatell"

Basic Research: Since neither the issue nor the domain are clearly defined, the goal is to find something truly novel. Others attempt to stay abreast of leading edge findings through research grants and academic ties, since some firms are prepared to make sizeable investments in expansive research centers. The three strategies are frequently combined to create an all-encompassing program.

Breakthrough Innovation: Organizations (or even entire areas of effort) may get stuck, even when the problem is well articulated. Even the most brilliant chemist of his time, Linus Pauling, was unable to solve the very well-defined challenge of determining the structure of DNA. Synthesis across disciplines is generally used to address these kinds of problems. As an illustration, Watson and Crick used their knowledge in biology, X-ray crystallography and chemistry to find a solution to the DNA conundrum. Similar to this, many businesses are discovering how to adopt innovation process in a manner similar to this in order to gain access to a range of resources.

Sustaining Innovation: Our computers become more powerful, our cameras output more pixels, and our home goods are always being updated. Large companies usually succeed at this type of innovation since traditional R&D laboratories and outsourcing are ideally suited for it.

Disruptive Innovation: Disruptive innovation is the most challenging because its value isn't usually obvious right away. Notably, Yahoo and Blockbuster missed out on early investment opportunities in Google and Netflix, this was as a result of their failure to recognize the prospects. Disruptive innovations typically target non- or light users of a category; as a result, they need a new business model and frequently fail. The majority of disruptive investments will fail, according to venture capital firms that specializes in them. Businesses setting up innovation labs where staff may explore and learn without incurring unwarranted risks is one new trend.

According to Satell, the Innovation Management Matrix shows that effective inventors frequently concentrate on just one aspect of the matrix (Greg Satell, 2013).

Influence of Digital Transformation on organizational Strategic Management

Many industries are already feeling the effects of digital transformation, which is having an impact on global corporate operations. Hirt and Willmott (2014) successfully establish seven primary forces that have an impact on conventional business models, despite the fact that the level of disruption may vary among industries and nations. In light of this, they are essential when thinking about the processes of strategic planning and implementation.

Price setting and profits remain under substantial pressure: The volume and organization of information made available to customers online helps eliminate the information gap that existed previously between businesses and their customers. Customers are better off as a result of this increase in market openness since they have more negotiating power and can negotiate cheaper pricing. The latter, however, might be affected by geographical variations given the wide variations in digital sophistication worldwide. 2018 (Grab et al.)

The scope of competition extends beyond your sector: Entrance barriers have been used for many years to help market players defend themselves from outside competitors. The rise of digital enterprises has seriously corrupted this outmoded notion of isolating sectors. To compete with the present industry giants, these businesses rely on strong management abilities, flat organizations, technically proficient workers, and entrepreneurial zeal. They question both outdated concepts and current corporate practices along the way. Because ramp up costs are no longer the determining variables for success, the old guard is forced to come up with new tactics outside of simple rent-seeking.

A winner-takes-all dynamic is reinforced by happy customers: Large technology businesses like Apple or Google have taken the idea of ideal customer lock-in to new heights by fusing internal strengths in the form of excellent business organization, talented people, and technical advancements for the advantage of a desirable company culture. This begins a loop of goodwill that, together with offering customers top-notch products and services, makes businesses the go-to places for their need. This return impact, which also improves the customer connection, exemplifies the winner takes it all dynamic of the digital age.

One important success criteria for modular business models is: Smaller companies may have a particularly tough time competing on an equitable playing field in the context of the winner-take-all dynamic pushed by massive digital giants. Innovative market players therefore anticipate that by integrating their businesses into the current platform architecture provided by bigger organizations, they will benefit from the latter's success. As a result, there is mutual benefit, which allows clients to find a wider range of goods and services.

Fighting for smart brains is crucial: As per Frey and Osborne in 2013, in the ensuing decades, machines may replace more than half of all professions globally. They also talk about how robots and artificial intelligence will be used in the workplace in the future, as well as the effects of business automation that continues. While organizations like the OECD are sharply divided on the scale and scope of the influence on the global labor market, scholars contend that the digital transformation is forcing a change in the skills and competencies needed for the future. In this situation, businesses must come up with novel solutions to both address the problem of talent gaps within their own organizations and to retrain those who are locked in jobs that will soon become obsolete. (Quintini, 2018; Manyika, 2017).

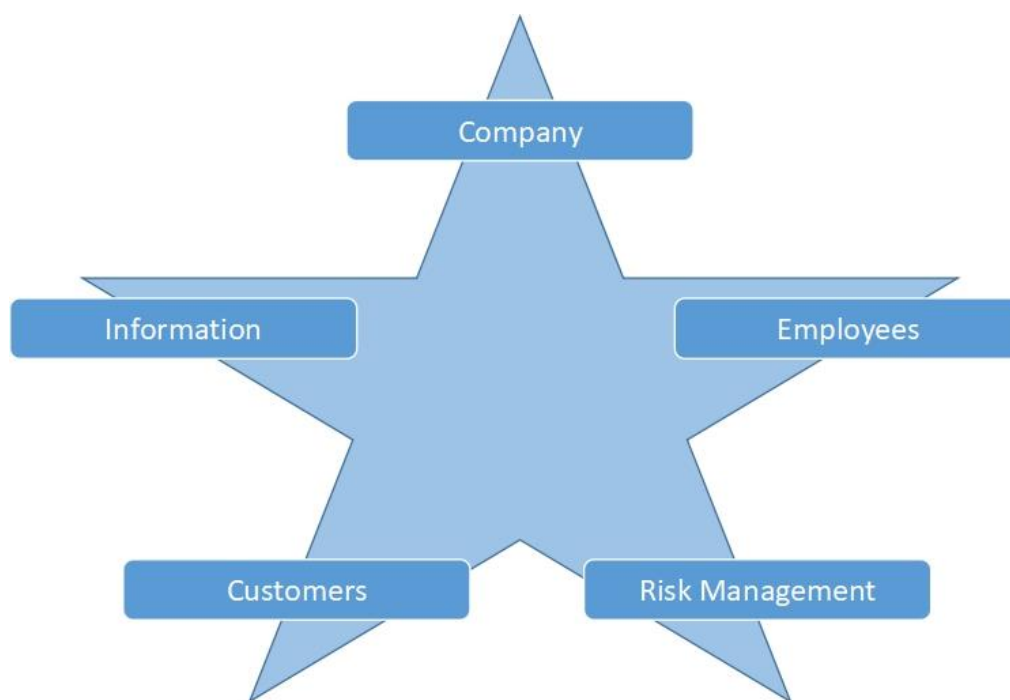
Convergence of global supply and demand: Online service providers' regional focus is not constrained. In light of this, businesses can almost reach an infinite number of customers when it comes to enhancing their growth tactics. Customers see standardized items as being made available across national borders. Clients anticipate a streamlined procedure along the whole value chain, from the point of delivery to the post-sale support. (Grab, 2018).

Constantly evolving business models: As a result of the digital transformation, the majority of organizations are going through a significant transition because they once thought that making small, gradual changes was enough to ensure their survival. This conservative approach won't work in a market where your next competitor is creating and implementing radical solutions for your industry. Accordingly, the travel and tourism industry is a fantastic example of how online businesses like Tripadvisor frequently modify their business strategies to gain access to more clients. Taking and others (2018).

Based on these assertions, it is clear that the waves of digital transformation are not a single occurrence but rather the new norm that forces businesses to adapt, develop, and innovate constantly. This significantly increases the pressure on internal and external strategic considerations. In order to organize the discussion on the topic with the aid of an integrated framework, Figure 8 seeks to separate and combine the most important components of developing a digital strategy:

Figure 8.

Digital transformation strategy star



Source: Grab, B., Bumbac, R., Gavril, R., Ilie, C. "The winner takes it all - business model innovation in the tourism industry".

Company: Employing the potential for innovative thinking among the workforce would help organizations compete successfully in the rapidly changing market environment by helping them remain ahead of the competition with better product and service delivery. Companies must adopt innovative management techniques that go beyond the conventional forms of leadership in order to foster an environment that values cooperation and entrepreneurial thought. Given this, it will be critical for the next generation of leaders

to assess the usefulness of hierarchical structures and the potential for new forms of organizational development to take the lead. (Manyika et al., 2017; Weill & Woerner, 2015; Hamel, 2012; Hamel & Breen, 2007)

Employees: For workers on many levels, the digital transition offers a tremendous challenge. The workforce is most significantly exposed to new organizational structures and leadership styles. In order to effectively contribute to the needs of the corporate environment driven by innovation, they must also learn new competencies and skills. In order to integrate internal processes, new concepts will be required in the future to address the problem of human-robot interactions in the workplace and artificial intelligence. (Weill & Woerner; Nedelkoska & Quintini; Hamel (2012); Weill & Woerner; Ford; 2015)

Customers: Digital businesses, whether they are local or global, have significantly influenced customers' experiences and expectations. This could be connected to increased openness, which enables people to compare products and services rapidly. In this situation, businesses are compelled by the increase in consumer spending power to provide a better value proposition in the form of a seamless customer value chain from product selection to post-sale assistance. (Hamel from 2012; Hirt & Willmott from 2014)

Information: The management of information is one of the cornerstones of the digital transformation era. As a result, businesses can obtain a competitive advantage based on their particular capacity to gather, pick, process, and use vast volumes of available data. In the framework of big data analytics, businesses may filter data from a variety of sources with the intention of using information to their advantage in order to provide specialized goods and services to diverse client groups. Through the targeted application of data analytics, planning procedures can be further improved in light of the difficulties presented by a quick-paced, unstable corporate environment. If businesses want to benefit from this growth, they must place a strong internal emphasis on sharing knowledge and encouraging internal communication across organizational boundaries. (Hamel, 2012; Bennett, 2014)

Risk management: The significant changes brought about by digital transformation may not be adequately captured by traditional approaches to risk management. In this setting, new systems and experts are necessary to adopt a more comprehensive perspective while

concentrating on the major forces influencing future changes. Thus, in order to generate value, internal risk management system improvements must be more adaptable and located closer to the core of corporate operations (Hamel, 2012; Tupa, 2017).

Empirical Framework

Studies have been undertaken to show how information modification and the utilization of digital technology lead to a number of transformations in the business world. Countless studies have also been done to assess how information adaptation and the adoption of digital technology lead to a number of changes (Hanna. 2016; Siemens, 2014; Resnick 2002). The adoption of emerging technologies like mobile, cloud, social media, internet of things, big data analytics, etc. has caused a significant upheaval in the way that the market does business. All stakeholders have benefited from and enjoyed new experiences thanks to these technologies. Fitzgerald; Oestreicher-Singer & Zalmanson (2016). A HBR Analytics study from 2014 found that the majority of organization and technology leaders think that the lack of a technologically driven business transformation is preventing their firms from taking advantage of new business prospects. This is the view of just over half (50%) of these leaders.

In today's context of digital transformation, employee engagement with the company is a critical issue. According to numerous research findings, digital transformation has made it easier for employees to interact with firms in transactional ways, and as a result, these interactions have changed to become more satisfying and goal-oriented. 2018 by David Raj.

Given the complexity of the present business environment, most companies are still trying to boost employee engagement. New tools are being developed to help and support workers. Any researcher will advocate for the advancement of technology and its wider application in business modeling. The way that organizations attend to and relate to their people has changed, and is now yielding better results than before, even if technology can never totally replace human interaction (Michelle Kiss 2018).

While working on digital transformation, Sharlyn Lauby (2018) researched employee engagement through that change. She claims that the rise of the digital age, the emergence of artificial intelligence, organizational automation, and the utilization of the

Internet of Things are redefining the workplace. The employees who are appointed to them gain from it. The author warns that subsequent generations of workers will need to adapt to meet the expectations of technology-enabled organizations since job opportunities are disappearing, employees' typical attitudes are changing, changes are happening swiftly, and pressure is increasing. Having a dedicated workforce is crucial as the company through its digital shift because of its many advantages (Buhler, 2006).

A study by McKinsey Global Institute, digital transformation can increase productivity in the development sector by 14–15% while reducing costs by 4%–6%. (Koeleman et al., 2019). Instead of only deploying IT solutions, they encourage building enterprises to concentrate on resolving the current issues. Another suggestion in the same research emphasizes the need to reskill and reorganize the engineering teams for deeper digital transformation. Coordination within the organization is required to manage change all through the adoption of technological solutions for a construction project due to the fragmentation throughout the project lifecycle. It can be difficult, though, given the little amount of time provided for a project's completion (Koeleman et al., 2019).

Laursen and Salter (2006) found that developing strategies that were considerate of the outside world increased creativity when they examined 2,707 factories in the United Kingdom. According to this study, internal and external research combined is a powerful tool for the expansion of innovation. The promotion of innovation among businesses enhances organizational effectiveness (Löfsten, 2014). Additional important sources of new ideas for firms are clients, vendors, and universities (Laursen & Salter, 2006). In their 2003 study of 1,900 Danish businesses, Laursen and Foss found that human resource management had an impact on financial success, which in turn had an impact on innovation.

Rocha (2015) looked examined how 243 Brazilian firms responded to government incentives for innovation and discovered that these incentives had little impact on the creativity of private organizations. According to the study, the Brazilian government's objectives for R&D fell short of their goal of promoting innovation. Between 2003 and 2008, Stek and van Geenhuizen (2016) assessed the effects of several international research partnership models on innovative performance across 32 countries and varied industries. The consequences of collaboration vary between nations and economic sectors,

they observed, depending on the quantity of patents. When industries were utilized as the study's unit, the findings revealed that patents sped up knowledge generation, but that international research collaboration had no effect on innovation performance. Specific sectors were the primary influences—whether favorable, negative, or none at all (Stek & van Geenhuizen, 2016).

They also found that, in contrast to other industries, the global collaboration of multinational corporations benefited innovation in the chemical and pharmaceutical sectors. Depending on a country's economic situation, institutional partnerships had varying effects on the computing and software industry (Stek & van Geenhuizen, 2016). Innovation's effects differed across sectors and countries. The most dynamic sectors of the information technology sector are responsible for fostering innovation and growing the economy of the regions they are related to (Powell & Snellman, 2004). Intellectual capability has a greater impact on a country's ability to improve its technology than available resources. A nation's production increases, as per Powell and Snellman (2004), as new technologies and the organizational procedures that support their integration become more integrated.

Just a few innovation-related criteria were found by Löfsten (2014) to have an impact on performance across Swedish businesses, indicating that innovative companies do not always generate larger profits. Fassio (2015) discovered differences in the financial effects of R&D activities for companies in Spain, Italy and Germany. These three countries did better because they shared the same information sources when innovating.

The need of digital transformation for allowing digitalized stakeholder management in construction is highlighted by Prebani and Vukomanovi (2021). To bring about this transition, they advocate employing a number of ICT tenets to support digital stakeholder management and communication. In addition, this study highlights the usage of BIM collaboration to increase internal project participants' involvement and incorporation as well as the improvement of design phase cooperation through the use of virtual and augmented reality (VR/AR). Utilizing VR/AR, the end users will take part in the early project phases.

According to a study from Cambodia, one of the primary barriers to digital transformation is the digital gap. The very same research reveals how specific gaps

brought on by a lack of digital skills affect a successful digital transition (Banga et al, 2020). Olanipekun & Sutrisna (2021) list the top three challenges to digital transformation in their study. These include an absence of standards, a lack of systems development, and control and access to data.

Due to the enormous amounts of information that are accumulated over a relatively short period of time, data security risks also arise throughout the digital transition (Hao & Zhang, 2021). Problems with data security can result in a wide range of other issues, including threats to corporate internal confidentiality, issues with legitimacy, and concerns from the public revelation of private information. A barrier to the digital shift is the shortage of skilled people and digital competence in addition to these hazards involved with handling data.

Botha (2019) looks at how innovation may transition from being a human-only activity to one that incorporates both humans and machines in the future. In the future, will machine intelligence be able to create? In order to make it simpler to understand the complexity at the cutting edge of creation, where robotic systems will arise as the primary innovators of the cyber world, Botha develops a fictional mental model. It was found that discovery as a human-only activity will eventually be replaced by co-innovation between people and machines. Examples of independent machine invention are given in light of the advancement of machine learning and the adoption of managerial functions for future human-machine relationships.

In Nairobi, Kenya, Oirere (2015) performed research on the impact of innovation on the productivity of small and medium-sized manufacturing firms. The primary data that was collected and examined revealed that innovation had a favorable effect on the market share and profitability of the firms. It also lowers operational expenses and increases their ability to export their goods. Innovation, in accordance with Roos (2016), boosts manufacturing efficacy, which lowers productivity costs, some of which are transferred to customers through goods and services. Manufacturing businesses can boost efficiency by using lean manufacturing practices to cut waste. These wastes include excess supply, waiting times, rework, non-value-adding tasks, inefficient transportation, and intellectual waste.

CHAPTER III

Research Methodology

The approach used in the study is described in this chapter. The study's focus areas and the factors that went into choosing them are addressed in light of this. This chapter explains the research strategy and approach, the methods used to determine the population, sample, and sampling, as well as how data were collected. Also described are the procedures for gathering data and validating tools.

Procedures, techniques, algorithms, and other research methodologies are all referred to as research methods. "Research methods" refers to all the procedures a researcher employs while conducting a research project. They are often methodical, empirical, and value-free. They consist of elements such as theoretical methods, experimental study, numerical systems, statistical methods, and so forth. Research methodologies include, but are not limited to, using samples, data, and coming up with a solution to a problem.

Research Design

The research design is the conceptual framework used to conduct the study, and it include collecting and analyzing pertinent data (Kothari, 2004). It is a plan that outlines the strategy and method to use in order to gather reliable data that satisfies the research objectives and offers the required insights.

In order to ensure that the research problem is appropriately addressed, the study design provides a broad framework for integrating the different study components in a consistent and coherent manner. It also provides the foundation for data collecting, analysis, and evaluation (Kuckartz, 2016).

In order to identify, evaluate, and explain the relationship between intentional and changing approaches, which are frequently utilized by the organization, this study used a quantitative technique. In order to extract information, descriptive features, and their connections, quantitative data can be organized, objectively, and methodically transformed into numbers (Bryman & Cramer, 2011).

Research Approach

This study uses a mixed-methods strategy that combines quantitative and qualitative data. This approach enables the simultaneous study of quantitative and qualitative data. The qualitative research focuses on a researcher's conceptions and intuitions, in which he provides his subjective assessment of behaviours, points of view, and actions, whereas the quantitative approach encompasses the data to be gathered in quantitative form that can be confined to stringent quantitative analysis in a formal and rigid manner.

An substantial amount of quantitative research was done during the investigation. An ordinarily closed-ended questionnaire included comment sections where respondents may submit additional information to complement the quantitative results.

In order to enable quantitative interpretation, a Likert-type scale was incorporated in the questionnaire that participants in this study used to provide their perceptions of lived experience. The issue of lack of depth that can arise when just quantitative processes are utilized without explanations for the quantitative data was then addressed by comparing the quantitative data to the extra qualitative data. According to Dawson (2002), the quantitative method has a much faster response time and reaches more respondents than the qualitative method, which has a little slower response time. She continues by stating that both approaches have benefits and drawbacks and that neither is preferable to the other.

Variables Used

Independent Variable

Innovation Management: Innovation management is the process of assisting concepts or inventions in moving through the various phases of the innovation cycle in a business. Innovation management is a technique used to encourage a business to create a repeatable, long-lasting innovation culture. Managing a task and coordinating actions to accomplish a stated purpose and set of goals is a simpler way to describe innovation management.

Dependent Variables

Digital Transformation: Digital transformation is the technique of modifying existing conventional and non-digital company operations and services or creating new ones employing digital technologies in order to satisfy shifting market and customer expectations. This process fundamentally changes how businesses are run and how value is provided to customers. The term "digital transformation" refers to both the digitalization of a company's goods (products and services), which replace or improve physical offers, as well as the digitization of sales and communication channels, both of which offer new methods to interact and communicate with clients. According to Haffke et al., data-driven insights can also lead to tactical or strategic company adjustments as well as the development of digital business models that permit new ways to capture value (2016).

Measurement of Variables and Survey Design

This study used a quantitative technique since it employs the deductive method, which tries to test a hypothesis and explain the correlations between variables (digital transformation and innovation management). A well-structured methodology, such as questionnaires, is used in this strategy to assure reliability and allow replication. The questionnaire is used with due permission received from the participating organization

There were two sections to the questionnaire. The respondents' demographic details were acquired in the first section. Section B was split into four sections. The first section, using five questions, looked at how digital transformation affects an organization. The second section, using five questions, looked at how digital transformation and innovation management relate. The third section, using five questions, talked about the difficulties organizations face when implementing digital transformation. The fourth section, using five questions, looks at how digital transformation affects organizational decision-making in innovation management adapted from Lucija Ivan I., Vesna Bosilj Vuk I, and Mario Spremic (2019) and F. Demir (2017). The replies were scored using a 4-Likert scale procedure, ranging from strongly disagree to strongly agree (SA- Strongly Agree, A-Agree, SD-Strongly Disagree, D-Disagree).

The study's participants were selected conveniently to participate in the study. This method was chosen because it gives every unit in the population an equal chance of being

chosen. The sample size for this study was 252 employees of Rites Food Limited, who were all chosen to participate. A food-producing organization was selected so as to examine how the digital evolution is adequately utilized in such organization and how it influences their degree of innovation. Rites food limited was selected specifically to focus on the impacts of digital transformation on innovation technology being an indigenous organization, in addition to this, its was also selected to study the company diversity. Participants in this respondent-driven sampling elect to participate in the study voluntarily rather than being selected for it (Saunders, et al., 2019). With the aid of this sampling method, researchers can estimate their target population objectively (Baker et al., 2013). The participants were not be paid for their responses/participation in this research as it has to be consensual. Copies of the questionnaire were sent to the administrative office of the organization and be retrieved back after filling the questionnaires. The responses from the participants were secured and used majorly for research purposes.

Sample selection and data Collection

Before moving to the sampling location, authorization was sought from the management of the selected company for the purpose of the study, after which respondents were given questionnaires that served as primary data. The researcher made sure that responders were well-informed about the questionnaire's content and method. The respondents were given enough time to respond to each issue on the questionnaire.

All 728 employees of the chosen company in Ijebu Ode, Nigeria, are the study's specified target group (Rite Foods Limited, 2021). To collect data for this thesis project, a convenience sampling method was used. As the sample size for this study, 252 employees were selected conveniently to participate at confidence level of 95% and margin of error (5).

Data was gathered using a standardized questionnaire developed from prior study and aimed at gathering information from respondents. Section A of the survey accessed the demographic characteristics of the respondents. Section B was divided into 3 parts. The first part using 8 questions examined the influences of digital transformation on innovation management, the second part using 7 questions discussed the challenges faced by organizations in utilizing digital transformation and the third part using 5 questions

covers the impact of digital transformation on organizational decision making in innovation management.

The data were collected from workers in Rite Foods Company in Ijebu Ode, Nigeria. Permission was obtained from the management of the organization and data collection processes took place between April 19th, 2022 and May, 13th 2022. Questionnaires were distributed through emails, Google forms, and physical means. Collection of data took a number of days to be done as consistent check-ups and reminders were sent to the workers to provide answers to the questionnaires sent to them. Their responses were collected and coded into the excel worksheet which was later uploaded into the SPSS software for further analysis.

Sampling

Rite Foods Limited employees were given questionnaires as part of the study, which was conducted in Nigeria. The conclusions of this thesis will be useful to organizations, businesses, and students in academic fields. Convenience sampling was used. With this sampling strategy, every person in the population has an exact equal probability of getting picked. The probability of selection is the same for everyone in the population.

Rite Foods Limited in Nigeria is therefore included in the sample of this study. Using the basic sample method, 252 employees of the company were chosen conveniently.

Data Analysis

In this study, the pertinent data were assessed using qualitative and quantitative data analysis techniques. Before being entered into a data analysis software application for analysis, data was cleaned and coded. The regression analysis method was used to test the study hypothesis.

Validity of Data

Validity is the precision with which a method measures the variables that it is intended to measure. Valid research yields findings that are consistent with the traits, variations, and qualities found in the real world. The researcher gave a copy of the research

instrument (questionnaire) to the supervisor, who reviewed the content to verify if the instrument measured what it claimed to measure, thus ensuring the validity of the questionnaire. As a result, doable recommendations were offered to raise the information's efficiency.

Reliability of Data

The degree to which a scale regularly generates correct results after multiple measurements is known as its reliability. How frequently a method measures something determines how reliable it is. The measurement is regarded as reliable if the same outcome can be consistently achieved by applying the same techniques under the same conditions. As a result, the Cronbach Alpha reliability technique was employed in this thesis work to evaluate the consistency of the study's variables.

Table 3.

Reliability Statistics for Influence of DT in Organizations

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | No of Items |
|------------------|-------------------------------------------------|-------------|
| .965 | .971 | 5 |

Influence of Digital Transformation in organizations ($\alpha = 0.965$)

Table 4.

Reliability Statistics for Relationship between DT and IM

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|-------------------------------------------------|------------|
| .977 | .979 | 5 |

Relationship between Digital Transformation and Innovation Management ($\alpha = 0.977$)

Table 5.

Reliability Statistics for Challenges in utilizing DT

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|-------------------------------------------------|------------|
| .965 | .974 | 5 |

Challenges in utilizing Digital Transformation ($\alpha = 0.965$)

Table 6.

Reliability Statistics for DT and Organizational Decision Making

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|-------------------------------------------------|------------|
| .970 | .974 | 5 |

Digital Transformation and organizational decision making ($\alpha = 0.970$).

CHAPTER IV

Result and Discussion of Findings

This aspect analyses and interprets data collected from the survey on a systematic analysis on the relationship between digital transformation and innovation management in Rites Food Limited, Nigeria. Two hundred (200) questionnaires were retrieved from the employees of Rites Food Limited, Ijebu-Ososa, Ogun State after they were adequately filled and returned. The questionnaire forms were assembled and coded after receiving them from the respondents. These actions were taken in accordance with the specified study questions and hypotheses. The result of the quantitative research were discussed below.

Socio-Demographic Characteristics of the Respondents

In this sub-section of this study, efforts were made to analyze the respondents' demographic data in terms of class, age, marital status, educational background, occupation, religion and children. These are analyzed by using frequency count and percentage ratio.

Table 7.

Section A: Demographic Data analysis of the Respondents

| Option | Frequency | Percentage |
|----------------------------------|-----------|------------|
| Gender | | |
| Male | 134 | 67% |
| Female | 66 | 33% |
| Age | | |
| 20 – 35 years | 88 | 44% |
| 36 – 45 years | 72 | 36% |
| 46 – 50 years | 28 | 14% |
| 51 years and above | 12 | 6% |
| Educational Qualification | | |
| O'Level | 32 | 16% |
| OND/ NCE | 84 | 42% |
| HND/ B.Sc/ B.Ed/ B.A | 76 | 38% |
| M.Sc/ M.Ed/ MA & above | 8 | 4% |
| Working Experience | | |
| 0–5 years | 154 | 77% |
| 6–10 years | 40 | 20% |
| 11 years and above | 6 | 3% |

Table 7 (Continued).

| Religion Difference | | |
|----------------------------|------------|-------------|
| Christian | 76 | 38 |
| Islam | 122 | 61% |
| Traditional | 2 | 1% |
| Total | 200 | 100% |

Source: (Researcher's Field-Survey, 2022).

The above table demographic data of the respondents, 67% of the respondents were male while 33% of the respondents were female. Also, 44% of the respondents were between 20 – 35 years of age, also, 36% of the respondents were between 36 – 45 years, while 14% of the respondents were between 46– 50 years of age and 6% of the respondents were 51 years and above. Furthermore, on the educational qualification of the respondents, 16% of the respondents were O'Level holder, meanwhile 42% of the respondents were OND/NCE holder, beside, 38% of the respondents were degree holder (i.e. HND/B.Sc/B.Ed/B.A) while 4% of the respondents are held certificate in M.Sc/M.Ed/MA & above respectively. However, based on working experience of the respondents, 77% of the respondents had below 0 – 5 years of experience in the organization, also, 20% of the respondents had between 6 – 10 years of experience while 3% of the respondents had 11 years and above experience in the surveyed organization. Nevertheless, grounded on the religion of the respondents, majority of the respondents representing 61% were Islam, followed was Christian which account for 38% and 1% of the respondents were traditional worshiper.

Testing of Hypotheses

Hypothesis 1

H₀₁: There is a significant relationship between digital transformation and innovation management in Rites Food Limited.

Regression Result of Hypothesis 1

Table 8.

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|-------------------|-------------------|----------------------------|-------------------|----------|------|------|---------------|
| | | | | | R Square Change | F Change | df 1 | df 2 | Sig. F Change |
| 1 | .892 ^a | .810 ^a | .712 | .50692 | .712 | 5.416 | 1 | 198 | .001 |

ANOVA^a

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1 | Regression | .621 | 1 | .621 | 5.416 | .001 ^b |
| | Residual | 50.879 | 198 | .257 | | |
| | Total | 51.500 | 199 | | | |

a. Dependent Variable: Digital Transformation

b. Predictors: (Constant), Innovation management.

The above table shows R-value (0.810) with an adjusted R-value (0.712) which indicates that it was 81% variant occur between digital transformation and innovation management in Rites Food Limited. The F-value (5.41), which is significant at a threshold of significance less than 0.05, is significant at .001. As a result, the null hypothesis was rejected. This demonstrates the important connection between innovation management and digital transformation at Rites Food Limited.

Hypothesis 2

Ho2: The challenges faced by organizations has a significant effect on utilizing digital transformation in Rites Food Limited.

Table 9.

*Regression Result of Hypothesis 2***Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|-------------------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 2 | .625 ^a | .590 ^a | .486 | .50911 | .486 | 6.91 | 1 | 198 | .004 |

Table 9 (continued).

a. Predictors: (Constant), Digital challenges

ANOVA^a

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|------------|----------------|-----|-------------|------|-------------------|
| 2 | Regression | .179 | 1 | .179 | 6.91 | .004 ^b |
| | Residual | 51.321 | 198 | .259 | | |
| | Total | 51.500 | 199 | | | |

a. Dependent Variable: Digital Transformation

b. Predictors: (Constant), Digital challenges

From the above table, the R-value (0.590) with an adjusted R-value (0.486) which shows that about 59% of the challenges facing the organizations has a significant effect on utilizing digital transformation in Rites Food Limited. The F-value (6.91) is significant at .004 which is lesser than 0.05 level of significance. Thus, the stated null hypothesis was therefore rejected to accept the alternative hypothesis which means that organizational challenges has a significant effect on utilizing digital transformation in Rites Food Limited

Hypothesis 3

Ho3: There is a significant relationship between digital transformation and organizational decision making in Rites Food Limited.

Table 10.

Regression Result of Hypothesis 3

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|------|-----|---------------|
| | | | | | R Square Change | F Change | df 1 | df2 | Sig. F Change |
| 3 | .942 _a | .870 | .820 | .48739 | .870 | 18.801 | 1 | 198 | .000 |

a. Predictors: (Constant), Decision making

ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1 | Regression | 4.466 | 1 | 4.466 | 18.801 | .000 ^b |
| | Residual | 47.034 | 198 | .238 | | |
| | Total | 51.500 | 199 | | | |

a. Dependent Variable: Digital Transformation

b. Predictors: (Constant), Decision making

From the above table, the R-value (0.870) with an adjusted R-value (0.820) which indicates that it was 87% variant that occur between digital transformation and organizational decision making in Rites Food Limited. The F-value (18.8) is significant at .000 which is lesser than 0.05 level of significance. Thus, the stated null hypothesis is therefore rejected which implies that there is a significant relationship between digital transformation and organizational decision making in Rites Food Limited.

Discussion of Findings

The relationship between digital transformation and innovation management at Rites Food Limited in Nigeria has been thoroughly examined in this chapter. According to the first hypothesis's findings, results show that R-value (0.810) with an adjusted R-value (0.712) which indicates that it was 81% variant occur between digital transformation and innovation management in Rites Food Limited. The F-value (5.41), which is significant at a threshold of significance less than 0.05, is significant at.001. As a result, this indicates that Rites Food Limited's digital transformation and innovation management have a big association. In order to validate this finding, Langdon Morris (2011) developed an innovation master plan in which he identified the forces that are causing change. These driving forces include commoditization, the digital revolution, social media's pervasiveness in society, globalization, the unrest in the world, and acceleration, which refers to moving more quickly in order to remain stationary. Also, Korolev & Koroleva (2014) maintained that sustainability of any small-scale enterprises depends on their innovation potential, which is determined by the company's ability to develop and use innovations in practice. Such practices includes; research and scientific, technological, organisational, financial, etc.

Additionally, the results of research hypothesis two show the R-value (0.590) with an adjusted R-value (0.486) which indicates that about 59% of the challenges facing the organizations has a significant effect on utilizing digital transformation in Rites Food Limited. The F-value (6.91) is significant at .004 which is lesser than 0.05 level of significance. This indicates that Rites Food Limited's use of digital transformation is significantly impacted by organizational problems. To support this finding, Mithas et al.

(2013) noted that the very complex innovation problems brought on by digital technology will result in organizational transformations and changing business structures. Thus, (Matt, 2015) identified four components of digital transformation strategies: the use of technologies, modifications to the company's value generation, structural modifications to the internal organizational structure, and financial considerations. By utilizing new technologies, the business switches its attention to their implementation and to the widespread acceptance of information systems. The company's ability to create value will be impacted by changes in its supply chain. An existing company's basis and business logic can be changed through digital transformation, and new products and services can be created and launched. New technology and value chains have an impact on how businesses are organized, necessitating structural modifications. The funding of currently operating business activities is combined with the integration of digital activities into a company's organizational structure, such as its production systems, internal cooperation, and communication systems. Hao & Zhang, 2021 opined that data security problems can lead to a wide range of additional problems, including dangers to corporate internal confidentiality, problems with legitimacy, and risks from the disclosure of private information to the public. In addition to these risks associated with handling data, the lack of skilled workers and digital expertise are obstacles to the digital transition.

The third research hypothesis concluded that organizational decision-making at Rites Food Limited is significantly influenced by digital transformation as the R-value (0.870) with an adjusted R-value (0.820) which indicates that it was 87% variant that occur between digital transformation and organizational decision making in Rites Food Limited. The F-value (18.8) is significant at .000 which is lesser than 0.05 level of significance.. In accordance with these findings, Fitzgerald et al. (2013) emphasized that rather than just being a passing fad, digital transformation may be viewed as an inevitable opportunity for a firm's business development because it is characterized by the application of cutting-edge digital technologies to enable substantial business gains. Businesses can achieve their objectives by implementing digital technologies because these innovations allow for the expansion of existing businesses into new markets (Nylen & Holmstrom, 2015). In addition, in the opinion of Schwertner, (2017), automating, standardizing, and sourcing activities abroad can help organizations become more

adaptable, responsive to shifts in demand, and better prepared to boost and sustain profitability. Decision-making for the availability of products in various manufacturing units is accelerated by extending remote work at workers' homes and basing decisions on accurate customer relationship data.

CHAPTER V

Summary, Conclusion and Recommendations

Summary

The study studied a methodical analysis of the connection between innovation management and digital transformation at Rites Food Limited in Nigeria. The study was split into five parts, with chapter one serving as an overview of the investigation's background, issue statement, objectives, aims, research questions, and hypotheses as well as its scope, significance, and definitions of some key terms.

The important review of relevant literature on the ideas of digital transformation, digital transformation, and innovation was covered in Chapter 2. Additionally, a review of the digital revolution, its shape and impact, its characteristics and features, innovation management systems, and its influence on organizational strategic management were documented along with a theoretical and empirical framework.

The third chapter also concentrated on study design, population, sample, and sampling techniques, data collection methods, research instruments, instrument validity and reliability, data gathering procedures, and data analysis techniques. Chapter four also concentrated on the presentation and interpretation of information gathered from a field survey. Chapter five concludes, recaps, and offers some recommendations as well as ideas for additional research. Based on the study's findings, it was determined that:

There is a significant relationship between digital transformation and innovation management in Rites Food Limited

Organizations challenges has a significant effect on utilizing digital transformation in Rites Food Limited

There is a significant relationship between digital transformation and organizational decision making in Rites Food Limited

Conclusion

No matter the size or industry, digital transformation is essential for all management and organizations in the modern world. As a result, digital technology plays a big part in enhancing management and personnel skill sets. This approach allows companies to enhance their operations and boost performance, productivity, and competitiveness via the adoption of a specific management mode, new tools, new working styles, as well as new reflections and organizations. The dematerialization of labor processes is just one aspect of this. To effectively adapt to the disruptions brought on by technological advancements, it will be important to be able to forget outdated technologies and behaviors and relearn more modern ones. Modern educational delivery techniques that have been made available by new technology can also deal with the initial impact of rapidly changing skill requirements. In other words, new technology itself can offer a solution to the issues it causes. Utilizing technology to its maximum extent and adapting to changing demands both need creativity in the workplace. The center of any undertaking, meantime, is innovation. Unexpected occurrences, inconsistencies, process demands, and shifts in the market and sector can all lead to innovation inside a company. Innovation aided in the recovery process and redirected nations toward sustainable growth and development. It has been shown that managements must create a strategic strategy that is tailored to various contexts and situations in order to sustain innovation. It calls for a collaborative effort to bridge professions, technologies, and organizational policies through nation-specified assessments, instruments, and regulations. In conclusion, one of the key conclusions from managing innovation is that maintaining a portfolio of various innovation activities is necessary, with a balance of incremental and radical innovation concepts needed.

Recommendations

On the basis of the study's findings, the following suggestions are made:

To meet the goals and expectations of the organization, the management of Rites Food Limited must adopt and implement modern technologies..

Utilizing digital equipment and modern technology to satisfy needs and requirements are crucial for management

Employee and leaders of the organization need to keep pace with the development of digital technologies and its tools through knowledge and training at all times.

Employees should be flexible and adapt to changes as they come and keep abreast of innovations in the modern machines, organization, attitude and responsibilities.

Organizational leaders must become knowledgeable about the realities of new technology and comprehend their limitations.

A workforce with the aforementioned fundamental competencies is more likely to pick up new knowledge and abilities to meet the changing performance-related needs.

Additionally, government authorities should promote innovation among businesses to contribute to the development of new products that would boost the nation's economy.

Suggestions for further studies

This thesis work aimed to create a methodical investigation of the relationship between innovation management and digital transformation at Rites Food Limited. Following the research findings, the researcher makes the following suggestions for further research:

The replication of the study using a different or more expansive rating system for contraceptive uses among sexually active women of childbearing age.

Future studies should take an in-depth qualitative approach to find additional socioeconomic elements that could affect how organizations use digital technologies.

Additionally, considering the significance attributed to digital transformation on innovation management in the organizational setting, the results of this study point to the necessity for additional research on these and other relevant variables.

Finally, this research will aid further research that could promote new research and academic discoveries on the rewards and drawbacks of digital transformation in current society as well as offer useful information to practitioners.

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Appendices

Appendix A

RESEARCH QUESTIONNAIRE ON RELATIONSHIP BETWEEN DIGITAL TRANSFORMATION AND INNOVATION MANAGEMENT (RDTIM)

Dear Respondent,

This study assesses the analysis between digital transformation and information management. Your sincere opinion on the items generated for the study is highly solicited. Any information given will be used strictly for research purpose.

Thank you

James Ogeh Yakubu

SECTION A:

BIO DATA

1. Gender: () Male () Female
2. Age Range: 20-35 years () 36 – 45 years () 46 – 50 years () 51 years and above ()
3. Education Background: () O'Level () OND/NCE () HND/B.Sc/B.Ed/B.A ()
M.Sc/M.Ed/MA & above ()
4. Working Experience: 0 – 5 years () 6 – 10 years () 11 years and above ()
5. Religion Differences: () Christian () Islam () Traditional () Others ()

SECTION B

INSTRUCTION: PLEASE TICK AS APPROPRIATE (/)

The key: Strongly Agree (SA), Agree (A), Strongly Disagree (SD), Disagree (D)

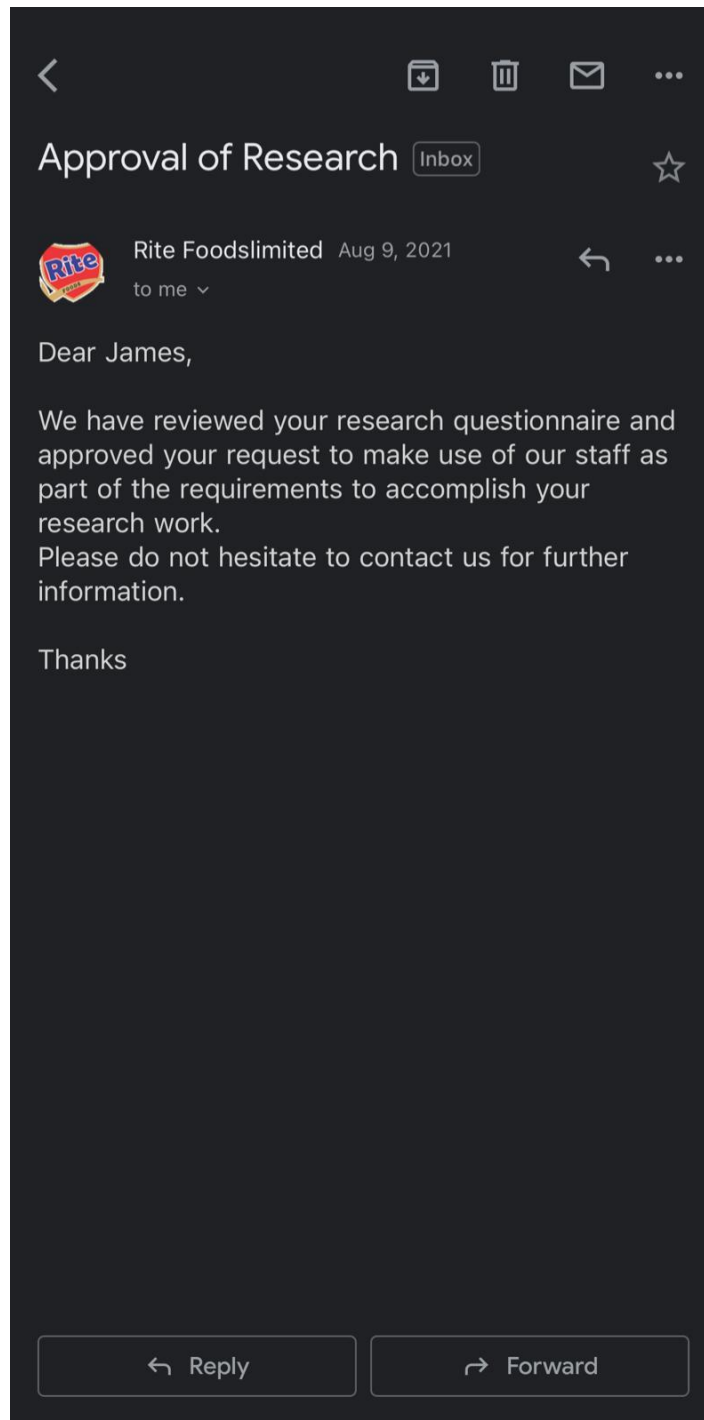
| S/N | What are the influences of Digital Transformation in an Organization | SA | A | SD | D |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------|----|---|----|---|
| 1. | Digital transformation helps organizations to engage in deeper change | | | | |
| 2. | Digital transformation enables organizations to expand the functionality of organizational services | | | | |
| 3. | Acceleration of product development and enable the distribution of products and services to a global customer base | | | | |
| 4. | Digital transformation enhance operational structure and support new forms of value creation in an organization | | | | |
| 5. | Digital transformation influence customer orientation towards products | | | | |
| | Relationship between digital transformation and innovation management | | | | |
| 6. | Improves the quality of data collection and analysis | | | | |
| 7. | Innovations promote new forms of cooperation between companies, customers and employees | | | | |
| 8. | Digital transformation helps organizations to frequently use digital tools and technologies to transform internal and external functions. | | | | |
| 9. | Reduction in the operating costs of production can be minimize through digital innovations | | | | |
| 10. | Digital transformation increased flexibility and scalability of work in the organization | | | | |
| | What are the challenges faced by organizations in utilizing digital transformation | | | | |
| 11. | Consumer behaviors, preferences and expectations poses challenges to organizations in utilizing digital transformation | | | | |
| 12. | Lack of dedicated digital and technological skills in organizations reduce the level of organization production | | | | |
| 13. | Organizational budgetary concerns and constraints imperil smooth running of the organization | | | | |
| 14. | Insufficient digital infrastructure and expertise to utilize transformations affect the organization production | | | | |

| | | | | | |
|-----|----------------------------------------------------------------------------------------------------------|--|--|--|--|
| 15. | Epileptic power supply affect the utilization of digital innovations in the organization | | | | |
| | What are the impacts of digital transformation on organizational decision making? | | | | |
| 16. | Digital transformation improves and accelerates decisions in innovation and organizational opportunities | | | | |
| 17. | High risk management in decision making in innovative creations | | | | |
| 18. | Digital transformation provides mechanism for measures in making decisions regarding value creation | | | | |
| 19. | Accurate data for decision making have been gotten through the use of digital innovations | | | | |
| 20. | Digital transformation helps to provide data that are reliable for decision making | | | | |

Source: Lucija Ivan i , Vesna Bosilj Vuk i , and Mario Spremic (2019), F. Demir (2017)

Appendix B

Scale of Permission



Appendix C

Ethical Committee Approval



YAKIN DOĞU ÜNİVERSİTESİ

**BİLİMSEL ARAŞTIRMALAR ETİK
KURULU**

19.10.2021

Dear James Ogeh Yakubu

Your application titled **“A Systematic Analysis on the Relationship Between Digital Transformation and Innovation Management”** with the application number NEU/SS/2021/1059 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Note:If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.

Appendix D

Turnitin Report

