

Managing Digital Transformation: Analysing Digitalization of How Firms Attract, Retain, and Develop Digital Skills

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(Received 22 July 2024; Revised 28 August 2024, Accepted 3 October 2024; Available online 15 November 2024)

Abstract - Businesses' and people' online activities are made possible by the continuous and widespread digitisation of today's society. Businesses sell their goods and services, and people deal with them and with each other. Online interactions between businesses and consumers (documented in digital trail data, or the digital footprints users leave on different digital platforms that contain information about their activities) have the potential to generate significant innovation for the businesses involved. Reaching this kind of value creation is no easy feat, since it is hard to even gather digital trail data due to its massive volume of generation. Furthermore, a company's ability to process and appropriate information rather than the quantity of information produced in their environment limits how innovative they may be. As a result, businesses require methods for managing the vast amounts of digital trace data and other types of accessible data, including collecting, screening, processing, analysing, and utilising the data. It is evident that every type of digital trail data serves a purpose. For instance, a post on social media shares some information with a larger audience, and a user who posts a request for assistance in a forum participates in a conversation with a group of professionals who have the same interests. Digital trail data, however, can also offer thorough logs of online activity, which could promote creativity and novel approaches. Businesses must proactively develop plans for making the most of these resources.

Keywords: Digital Transformation, Digital Marketing, Business Management

I. INTRODUCTION

Innovation is essential to development and economic expansion; any business that wants to stay profitable needs to innovate. The value that innovation adds to a company can be

the exclusive criterion for its evaluation, and it is occasionally referred to as a comprehensive Schumpeterian innovation process that includes invention, innovation, diffusion, and imitation (Alder & Dinnen, 2022). Although viewpoints differ throughout fields, innovation is generally understood to be a product of both novelty and utility. This implies that value generation is expected of the resulting goods or services in addition to being unique from those that already exist. Technology advancements in processing, personal computing, and connectivity have made it possible for businesses to digitise their processes. The process of directly digitising (or computerising) businesses led to a significant quantity of research on topics including the adoption of new technology in businesses (Warner & Wäger, 2019). These studies, however, discovered the so-called "productivity paradox," which holds that simple digitisation does not yield efficiency improvements sufficient to warrant lavish investment on the new technology (Vasilev et al., 2020; Podvalny et al., 2021). Digital technology must alter business organisational procedures in order to provide value. This problem affects a lot of general-purpose technologies. Consider the example of electricity: When new kinds of tiny and portable electric engines made it possible to rebuild the factory floor and organise the work, that is when electric engines truly added value (Ajayi-Nifise et al., 2024). Originally, electric engines were designed to resemble enormous steam engines. Thus, research that embraces the distinctive qualities of digital technology as well as related innovation in the organisational setting has emerged. Digital technology is flexible and easily repurposed: an automobile's control panel software may be updated to modify features and

functions, while the physical attributes of the gearbox lock the device's function. Since digital goods and services are not subject to this kind of lock-in, the main issues of digital innovation management are the salient features of digital technology (Mihalcea, 2017; Umarova et al., 2024). Additionally, structural limitations for innovation outcomes—which are significant obstacles in conventional industries—do not generally apply to digital products and services. For instance, Waymo, possibly the most recognisable digital company, is now posing the biggest threat to automakers. Waymo was once a robotaxi initiative of Google. This implies that in order to succeed, both incumbent and challenger enterprises must do a more thorough analysis of their prospective competitive environments (Naijiao & Fei, 2024). It also implies that no single company has all the skills needed to innovate. Closed R&D procedures are being replaced by open processes in this extremely diversified environment, which call for involvement as well as heterogeneous knowledge resources.

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

II. LITERATURE REVIEW

Digitalisation is regarded as a key instrument for accelerating economic growth and dispersing the advantages of development across all societal segments in the knowledge-based economy era. Digitalisation improves communication between the public and the government. India began computerising in the early 1990s in tandem with the liberalisation of economic regulations. By the end of the 20th century, computers were being used by all government departments, especially the Central Government. However, it was only used for office work. At the beginning of this millennium, residents began to use computers as an interface with the government. As was previously mentioned, various computerisation projects began to offer citizens digital services. There were ups and downs in the first ten years with the digitalisation adoption by the government (Trushkina et al., 2020). The National E-Governance Plan (NeGP), which aims to digitise government operations, was approved by the government in 2006. This project accelerates India's digital transformation. The government introduced "Digital India," or the updated NeGP, in 2014. Following the program's launch, the nation saw remarkable advancements in the factors influencing digitalisation. Digitalising government services is insufficient. Digitalisation for customers or end users is just as crucial as the former. A smartphone with a broadband internet connection facilitates citizens' digitalisation (Tolstykh et al., 2019). The emergence of affordable smartphones and the decline in data costs are key factors in the digitalisation of consumers' lives. The availability of personal computers was thought to be a key sign of the public's digitalisation in the first ten years of the new millennium. Over the past decade, smartphones have supplanted personal computers. Almost all of a personal

computer's operations can be carried out by a smartphone. Numerous apps that are accessible for smartphones are not private. It increases the usefulness of smartphones over desktop computers. Compared to a desktop computer, a smartphone is easier to handle, carry, and use. Over the past 10 years, there has been a significant increase in the use of cellphones and the internet in India. Another area that the administration is focussing on is financial inclusion (Klein, 2020). A key component of society's justifiable progress is financial inclusion. To increase financial inclusion, the government has launched programs including the Jan-Dhan Yojana, Sukanya Samriddhi Yojana, mudra Yojana, and direct benefit transfer schemes based on Aadhaar-linked bank accounts (Schneider & Kokshagina, 2021). The successful implementation of these initiatives is contingent upon the adoption of digitalisation. Therefore, it is quite pertinent to do this study here. It may produce results that contribute to a deeper comprehension of digitalisation and financial inclusion. Making suitable planning and policies for economic development may be made easier by it (Tavoletti et al., 2022).

2.1. Digitalization

In the 21st century, economic development across all economic sectors has been driven mostly by digitalisation. Certain economic sectors have completely changed as a result of digitalisation (Zhang & Chen, 2024). The most affected industry by digitalisation is the service sector. The government apparatus is facing issues as a result of the digital transformation in the areas of financial management, public administration, policy execution, and regulatory framework (Oleksandr et al., 2024; Udayakumar et al., 2023). Citizens now have access to and control over digitalisation thanks to smartphones (Díaz-García et al., 2023). No other technology is having the same influence on people's lives as digitalisation. The way that modern technology is being applied is undermining the social paradigm that currently exists. For instance, internet portals are replacing their physical counterparts, and small, decentralised financial technology firms are taking on established banks. Internet of Everything shown in Fig. 1.



Fig. 1 Digitalization in the Era of DT

The degree of digitalisation is thought to indicate whether an economy is developed, developing, or underdeveloped (Zhang & Chen, 2024). Researchers have employed a range of metrics, including the number of smartphones, internet users, broadband users, average broadband speed, and number of computers per home in the economy, to evaluate the extent to which the economy has become more digitally connected. The Digitalisation index was created by a few international organisations using a number of metrics. The Digital Economic Task Force (DETF) created the G-20 toolkit during the 2018 G-20 meeting in Argentina. The World Bank, IMF, and other international organisations receive the data on these variables from individual countries. The following five factors are chosen for investigation in this study based on a thorough evaluation of the literature (Brunetti et al., 2020). For these determinants, secondary data is gathered from different government and associated entities between 2010 and 2024.

III. RESEARCH FRAMEWORK

The recent ten years' trend analysis of digitalisation in India has revealed encouraging possibilities for future expansion. Since all three of the null hypotheses are disproved, the three indicators of digitalization—the number of people using smartphones, mobile phones, and the internet—show a positive growth over time. In developing nations, digitalisation is modernising the business sector of the economy and the financial systems. It contributes to attracting investment and creating jobs. The conventional economic sectors benefit from lower operational costs as a result of digitalisation. It does this by fostering innovation in the trade, business, and service sectors (Aziz & Hamilton, 2014). The findings align with the research conducted by Harvard University's Centre for International Development. "India will be the world's fastest-growing economy over the next ten years," the conclusion states. This increase will be significantly influenced by digitalisation. In light of this, the government had to develop comprehensive, investor-friendly policies to raise the nation's degree of digitalisation. India's government has already started a number of

digitalization-related initiatives. The Government of India's flagship initiative, Digital India, is made up of twelve smaller initiatives. The goal of the Digital India initiative is to make India a knowledge economy and society that is enabled by technology. In the upcoming years, all of these indicators point to a stronger and more positive trend of digitalisation in India.

Digitalisation is a key phenomenon in the current era of automation and artificial intelligence. By creating digital infrastructure and enhancing digital literacy, the Indian government is making a concerted effort to increase the country's level of digitalisation. It is a well-known fact that the government's efforts have resulted in significant adjustments to the pace, trajectory, and indicators of digitalisation in India. India is still far behind several developing nations, including China and Indonesia, in terms of digitalisation, despite admirable efforts and advancements (Gilch & Sieweke, 2021). Moreover, government plans and policies influence the acceleration of digitalisation. Numerous research studies have examined the causal relationship between global financial inclusion and digitalisation. In African nations, the majority of them speak about mobile banking services. Many African nations, like Kenya and Uganda, have made great strides towards enabling a sizable section of the populace to access financial services through mobile and telecommunications networks. The way developing nations have approached digitalisation and financial inclusion has changed significantly in recent years (Martínez-Morán et al., 2021). They view digitalisation as an essential instrument for providing financial services to the unbanked people. The state of digitisation and financial inclusion has significantly improved thanks in large part to the telecommunications infrastructure. At the beginning of this decade, the telecommunications industry itself saw rapid and noticeable changes in technology as well as cost reductions. The market was invaded by the private sector. Over the last fifteen years, it has transitioned from the first generation (2G) to the fifth generation (5G). Research Design shown in Fig. 2.

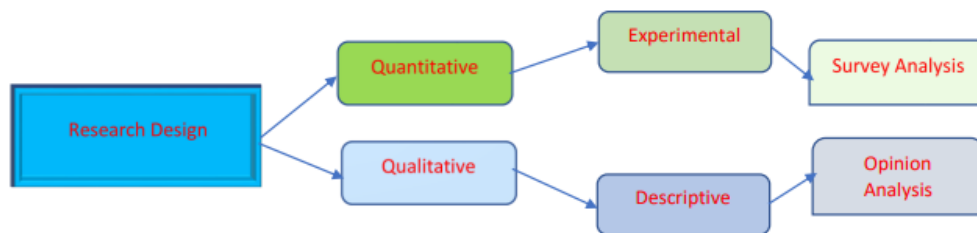


Fig. 2 Research Design

A research problem is investigated systematically through the application of various research methods, tools, and strategies that make up a study design. The study problem, data types employed, data collection methods, data analysis tools, funding source (if any), time period, scope, and limitations are all described in the research design. This study is empirical in nature, and its analysis makes use of secondary

data. Various secondary sources of information, including commercial and public organisations as well as government institutions, are listed. Various statistical tests are employed in data analysis (Montero Guerra & Danvila-Del Valle, 2024). There was no outside funding available for the study. The study was carried out by the researcher using their own resources. Analysing the factors that influence digitalisation

in India is the main goal of this study. It looks at the nation's long-term digitalisation trends and how they affect financial inclusion. It attempts to project India's digitalisation tendencies for the ensuing ten years. The following sections cover scope and restrictions. Since the purpose of this research is to meet the requirements for a Ph.D., a minimum of three years, from January 2020 to December 2022, are needed.

The population size or a list of components from which samples are taken in order to carry out the research is known as the sampling frame. While digitalisation in India began in the early years of this century, it gained impetus with the National E-Governance Plan (NeGP) introduction in 2006. In order to analyse the trends, patterns, and projections of digitalisation and financial inclusion, annual data on the factors of digitalisation and financial inclusion is collected for the study for the years 2010 to 2020. The information is tallied as an annual time series.

This research is quantitative and empirical. It makes use of yearly time series data for India's digitalisation over the previous ten years, from 2010 to 20. The analysis makes use of secondary data that has been released by the Indian government's TRAI Reports and Statistics, Ministry of Statistics and Policy Implementation (MOSPI), Statista, International Telecommunication Union (ITU), and other organisations. EViews software is used to perform quantitative tests, including unit root testing, growth analysis, trend analysis, descriptive statistics, and ARIMA forecasting (Fernandez-Vidal et al., 2022).

IV. EXPERIMENTAL ANALYSIS

Information and statistics gathered for study or reference are called data. Information cannot be conveyed by data alone. It is necessary to assemble, edit, code, analyse, and interpret the obtained data in order to support any inference or implication. To verify the hypothesis that indicates the nature of the relationship between the variables and generates the conclusion, a variety of statistical tools, procedures, and tests are employed. The type and purpose of the study determine which methods and tests are used. After the data was gathered, it was categorised, tabulated, and subjected to statistical tests, including regression, trend, correlation, t-test, f-test, and ARIMA forecasting. At a five percent significance level, the inference has been made.

Fig. 3 displays the distribution of mobile phone users in India between 2010 and 2024.

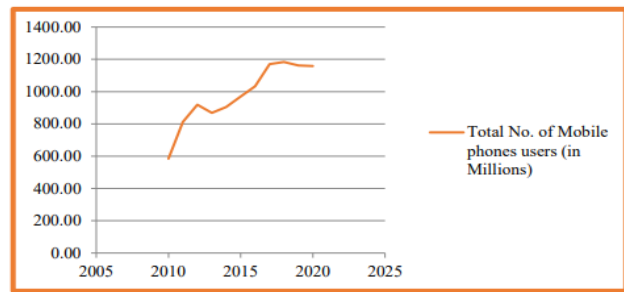


Fig. 3 (Total No. of Mobile Phones Users) in Millions

Fig. 4 displays the distribution of internet users in India between 2010 and 2024.

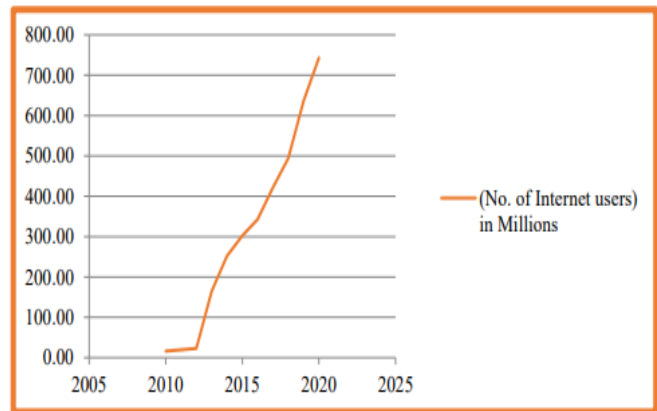


Fig. 4 (No. of Internet Users) in Millions

Decision-making about purchases, daily life, careers, and other matters has completely changed as a result of smartphones and high-speed internet. Numerous functions are available on smartphones, including online learning, bill paying, recharging, and money transfer. Fig. 5 shows the distribution of smartphone users in India between 2010 and 2024.

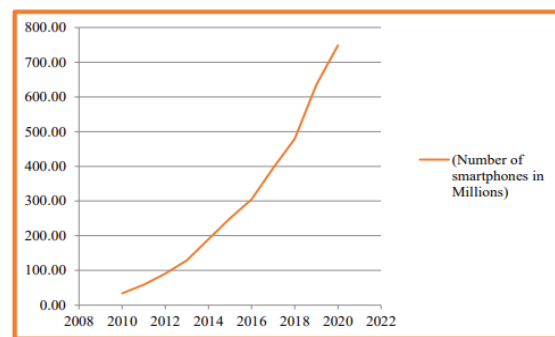


Fig. 5 (Number of smartphones in Millions)

Compared to a dial-up internet connection, a broadband connection offers numerous benefits. Compared to a conventional dial-up internet connection, it is comparatively quicker and less expensive. For the purpose of transmitting a lot of data, audio, video, music, etc., broadband is the perfect medium. Unfavourable weather has an impact on broadband performance. Voice and data transmission can both be done over the same lines. Fig. 6 illustrates the exponential increase in broadband subscribers between 2010 and 2024.

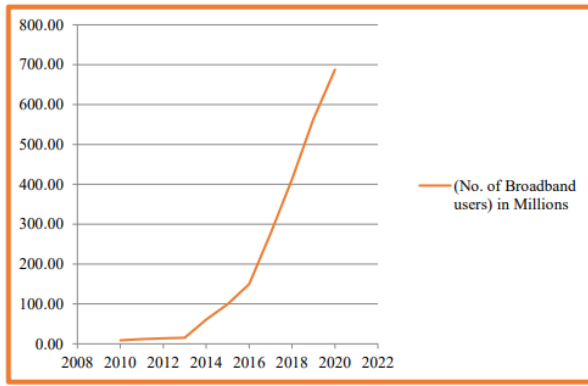


Fig. 6 The Number of broadband users

Another method that individuals use to communicate with the outside world is the telephone. You may access the internet via the phone. Access to health treatments via telemedicine, virtual learning environments, and various online public services is beneficial. Tele-density is hence a useful measure of society's digitalisation. In India, the total teledensity increased from 57.23 per 100 people in 2010 to 85.87 in 2024 (Fig. 7).

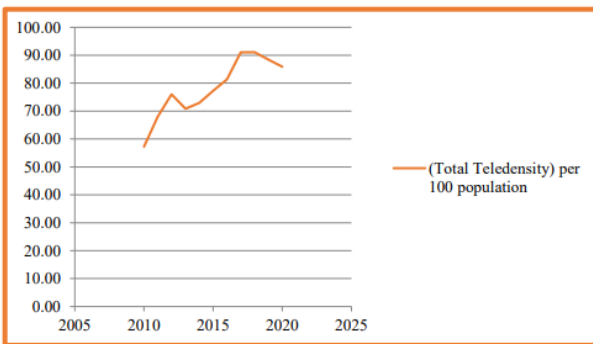


Fig. 7: Total Tele-density

The cumulative graph of mobile phone users between 2010 and 2024, as well as a projection for 2021 to 2030, is shown in (Fig. 8). According to the prediction, there would be 1238.05 million mobile phone users worldwide in 2021, 1488.48 million in 2025, and 1766.08 million in 2030.

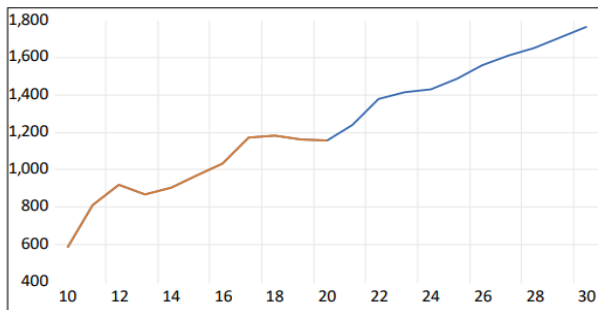


Fig. 8 Forecast for (No. of Mobile Phones Users) in Millions

The cumulative graph of internet users from 2010 to 2020 and its forecast from 2021 to 2030 is shown in (Fig. 9). According to the prediction, there will be 814.73 million internet users worldwide in 2021, 1103.74 million in 2025, and 1464.84 million users in 2030.

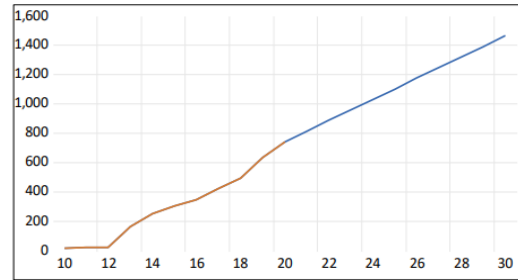


Fig. 9 Forecast for (Number of Internet Users)

Fig. 10 presents a combined graph of smartphone users between 2010 and 2020, along with an estimate for 2021 to 2030. According to the forecasts, there would be 814.67 million smartphone users worldwide in 2021, 1066.90 million in 2025, and 1419.11 million in 2030.

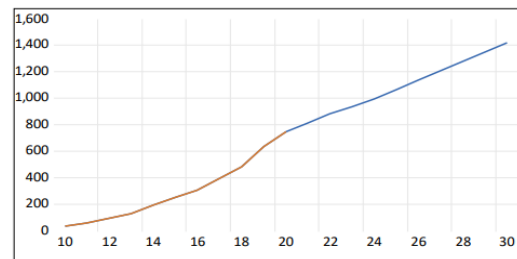


Fig. 10: Forecast for (Number of Smartphones) Smartphones are Being Used for Mobile Recharge, Bill Payments, Transferring Small Amounts of Money, e-Commerce, etc.

The quantity of mobile money transactions indicates how frequently consumers utilised their smartphones to conduct financial transactions. As a result, it serves as a reliable indicator of how individuals are using financial services. The number of mobile money transactions in India grew from 0.27 million in 2010 to 1383.03 million in 2020, according to RBI sources. The reduced cost of cellphones and the nation's rapidly expanding digital banking ecosystem are to blame for this remarkable surge. Number of Mobile Money Transactions shown in Fig. 11.

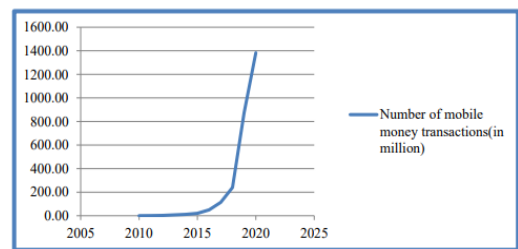


Fig. 11 Number of Mobile Money Transactions (in million)

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V. CONCLUSION

Nowadays, digitalisation is popular. Traditional banking has changed as a result of digitalisation: credit cards have given way to UPI credit lines, from complex Internet banking to straightforward UPI-based banking, and from physical branches to mobile banking. One of the most important factors contributing to the expansion of the banking industry is digitisation. In order to achieve financial inclusion in the nation, the banking industry in India is crucial. Digitalisation has made it feasible for clients to access financial services around-the-clock. Clients can transact at any time and from any location. It is not necessary to physically visit the branch. Transactional human error has been eliminated. It's not always necessary to carry cash. Digitalisation has greatly simplified and eased the process of managing finances. A greater degree of client loyalty has resulted from digitalisation. The RBI has made significant efforts to improve the financial settlement system by implementing RTGS, NEFT, IMPS, and UPI.

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