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DIGITAL TRANSFORMATION OF SMALL AND MEDIUM ENTERPRISES IN INDIA

Master thesis

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I hereby declare that I have compiled the thesis independently and all works, important standpoints and data by other authors have been properly referenced and the same paper has not been previously presented for grading.

The document length is 14266 words from the introduction to the end of conclusion.

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ABSTRACT

The objective of the study is to find out the relationship between digital transformation factors and SME performance. To answer the research objective, the researcher conducts the study among SME entrepreneurs in South India. Our results showed that external attributes and internal attributes except capabilities fit had a strong relationship with business performance. Overall, both attributes had a positive association with business performance. Also, it is unsurprising to find that external attributes have more impact than internal attributes on business performance. To sum up the analysis, external capabilities and resources fit had more impact than other attributes on business performance.

Keywords: Digital transformation, internal attributes, external attributes, capabilites fit, resources fit, business performance

INTRODUCTION

Digitization is emerging as a buzzword in the business world. Companies face tremendous pressure from the external environment to transform their business model at different paces with different results. Technological transformation integrates on improving operational process and accelerates customer experience to a great extent. Successful business transformation relies on management. SME abbreviated as small and medium-size enterprise, small in size, and the owners are the managers. Digitalization is not creating a new business but redefining the traditional industry to utilize existing assets' resources in a new way. SMEs are the backbone of the Indian economy, contributing a lot to economic and household aspects (Singh 2017). But in recent years, there has been tremendous industry evolution in the business environment. Such a revolution paves the way to technological advancement and introducing automation in the competitive business environment. The main intention of the change is to make a sustainable development for the organization.

Digital transformation refers to changes in job and income creation strategies. Besides, a flexible management model helps to meet changing demands, meet competition. It is a process of redefining the business in digitizing the operation and formulating extended supply chain relationships; practical use of the internet in design, manufacturing, marketing, selling, presenting, and data-based management model (Schallmo *et al.* 2020). The main objective is to increase the firm's capabilities, and its process rises to a great extent. Some of the digital transformation pillars are big data, the Internet of things, AI, and chatbots that help SME enhance their competitiveness in the global market.

Many companies in India have faced tremendous pressure from the external environment to transform their business model at different paces with different results. Still, it is not easy for them as there is no complete overview about the changes and digitizing their work. Many studies have endorsed a significant digital transformation impact on the organization's performance (Bughin *et al.* 2019; Ślusarczyk 2018). Thus, the study focuses on identifying the relationship between digital transformation and business performance. Besides, it measures

the impact of digital transformation on SME performance in India. In the end, the study will provide insights into the SME to realize the importance of digital transformation. Besides, it helps identify the attributes that induce digital transformation and how it impacts SME performance. Companies will improve their performance by reading this article and implementing the solutions provided by this article.

Research problem: Small and medium enterprises are said to have the growth drivers of the Indian economy. Under the annual report of MSME, small and medium enterprises contributed 58 billion USD to GDP (MSME. 2019). Also, it offers employment prospects to 110.98 million people in India. The statistics are portraying that strategic importance to the economy of the nation. However, the digital India report stated that India is among the top three global economies in terms of the number of digital consumers (MeitY 2019). India creates 1 trillion USD of economic value from the digital economy. Thus, the statistics showing that the country has an excellent opportunity to increase SMEs' productivity. SMEs can utilize the prospects by transforming the existing business into a digital platform to meet the demands and explore new markets across boundaries. Thus, the present study assesses the technologies used for digital transformation, benefits derived from digital transformation, and attributes that influence small and medium enterprises to engage in digital transformation in India.

The study aim is to find out the factors that influence digital transformation among SMEs in India. The objective of the study is to find out the relationship between digital transformation factors and business performance. Also, it evaluates how digital transformation attributes influence business performance in India.

What are the factors that influence digital transformation in SMEs?
What is the relationship existing between digital transformation attributes and SME performance?
How much impact does digital transformation factors had on SME performance?

Chapter-1 Theoretical background of the study
Chapter-2 Research methodology
Chapter-3 Analysis, a summary of findings and discussion
Chapter-4 Conclusion

Operational definitions

Digital transformation: It refers to an iterative organizational process that consists of incremental and disruptive changes enabled by digital technology (Barann *et al.* 2019)

Big data: It also defines as handling a massive amount of data (Erevelles *et al.,* 2018)

The Internet of Things refers to the network of physical objects that contains the embedded potentials in interacting, communicating, and exchanging data with one another and the external environment over a network without human intervention (Smart 2017).

A cyber-physical system refers to a new generation of systems that integrates computational and physical potentials to interact with humans through new modalities (Nawanir 2016).

1. THEORETICAL BACKGROUND OF THE STUDY

1.1. Digital transformation

Significant advancements in new digital technologies like social networks, mobile, and big data induce the companies to virtually conduct the transaction (Fitzgerald *et al.* 2014; Ross *et al.* 2016). All industries are involved in conducting the activities through digital technologies primarily to explore and explore the benefits. Industries engaged in the transformation of key business operations and influence products, processes, organization structures. The action, in turn, induces the companies to establish the management practices in governing complex transformation (Matt *et al.* 2015). Overall, society is facing a rapid and radical change due to digital technology's maturation and their pervasive penetration of all markets (Ebert, Duarte 2016). This is primarily to meet the increased demand from customers. Companies face tough competition due to globalization and pressure from the external environment to go digital before others (Westerman *et al.* 2011). The primary reason behind this is seeking to survive for an extended period and gain a competitive advantage (Bharadwaj 2000). Recently, born-digital pioneers have grown into powerful giants, and the companies who are doing conventional way of doing business are under severe threat (Sebastian *et al.* 2017). To meet the constraints, companies are making an effort to overcome the challenges through digital transformation (Zinder, Yunatova 2016). To have a successful transformation, the organization must develop a wide range of capabilities that vary depending on business or organization requirements.

Digital technology plays an integral role in operating business and organization effectiveness, redefining the business to remain competitive in the market (Carcary *et al.* 2016). Digital transformation is of implementing digital technologies innovatively. It has a significant extent on its shape and operations (Matt *et al.* 2015). It is also referring as a systematic approach, highly complex, and companywide endeavor (Hess *et al.* 2020). It changes the way of doing business. It is also keen on how individuals and organizations, and groups operate, communicate, and create values through information technology (Onay 2018). Digital transformation is keen on accelerating the harmony between business functions in improving

products, services, and business models (Hess *et al.* 2020). Drivers of digital transformation are defined as the factors supporting and significantly influencing an organization (Morakanyane *et al.* 2017). Wade's report, technologies like social media, the internet of things, big data and its tools and applications, platform for communication, and collaboration applications significantly affect digital transformation (Wade 2015). Thus, the above-stated tools and technologies are the primary attributes of digital transformation. However, Kane *et al.* (2015) have pointed out in the study that applying digital technologies is not at all enough to accelerate digital transformation. In such a case, organizations must have sufficient digital capabilities, strategies, and talent development to ensure successful digital transformation. Some of the other studies have pointed out that customer behavior followed by their expectations, a digital shift in the industry and significant changes in the competitive landscape, and regulative changes act as the drivers of digital transformation (Piccinini *et al.* 2015; Berghaus, Back 2017)

Also, digital transformation drives more to upsurge business performance in terms of profitability, revenue growth, customer satisfaction convenience, high-quality standards, upsurge business agility and accelerates productivity, and gain competitive advantage (Ezeokoli *et al.* 2016). Studies have pointed out that digital transformation had a positive impact on business performance, productivity, and growth (Chen *et al.* 2021)

1.2. The technology uses in digital transformation

To induce digital transformation and modernization of firms, it is vital to have appropriate human capital. In the organization, each area and department should be transparent due to technological makeovers. Industry 4.0 refers to linking various departments within the industry to transform the business operations (Lasi *et al.* 2014). Some known digital transformation technology includes the internet of things, big data, cyber-physical system, and interoperability (Imran 2018). All the technologies have the prospects in enabling the paradigm shift to a business setting, and it elucidates a technology path (Shahbaz *et al.* 2019; Lasi *et al.* 2014)

Big data defines that the business is provided with a wide array of data that fit on a single host, too complex to fit into a row and column database. Also, the data are continuously flowing to meet the requirements of the business. The point of big data is not to be deal with the volume

of information but also to investigate it, convert the data into insights, inventions, and business value (Davenport, Dyché 2013). It is a method to utilize a vast quantity of data, knowledge, or information, either structured or unstructured (Xu *et al.* 2018). It also defines as handling a massive amount of data (Erevelles *et al.* 2018). Big data comprises handling and interpreting the vast data and derive out new insights from the data. Manyika *et al.* (2011) highlighted that the systematic visualizations made for broad data are beyond technology potential in efficiently storing, managing, and processing technology. Zikopoulos and Eaton (2011) discuss big data categories, including volume followed by variety and velocity. With the help of better technology, the firms can efficiently manage wide data (Erevelles *et al.* 2016)

Internet of things describes as an extension of the internet and other network connections to various sensors and devices. Things refer to affording objects like light bulbs, vents, and locks as a high degree of computing and analytical capabilities (Trend Micro, 2019). The internet of things refers to the network of physical objects that contains the embedded potentials in interacting, communicating, and exchanging data with one another and the external environment over a network without human intervention (Smart 2017). The internet of things is a buzzword and an emerging concept, and a groundbreaking technology with the help of objects like RFID expertise, which can alter the world (Ashton 2009). The other author has described IoT as network-connected tools. Internet of things has been applied in various industries like health sectors followed by transport, home utilization, and other industries (Thames, Schaefer 2016). Industry 4.0 relies more on IoT like RFID followed by middleware, cloud computing, and other software applications (Belli *et al.* 2019).

A cyber-physical system refers to a new generation of systems that integrates computational and physical potentials to interact with humans through new modalities (Nawanir 2016). The potentials of interaction with and enlarge the physical world abilities through computation and communication and control act as a primary enabler for future technological developments.

Interoperability is connecting cyber-physical systems followed by human and smart factories that communicate through the internet of things. Manufacturing partners efficiently transfer wide information. It is error-free. It is the primary basic requirements of the modern technological system (Homburg *et al.* 2019)

1.3. Factors that influence digital transformation

Tarutė *et al.* (2018) Discuses that internal and external attribute which influence digital transformation. Internal attributes include capabilities fit, resources fit, and changes in the business model. Consequently, external attributes contain external capabilities and resource fit, government regulations, and industry-related attributes. All the attributes were assessed using qualitative research methods. The researcher extends the study to assess the internal and external factors using quantitative research methods and provides an insight in a statistical form.
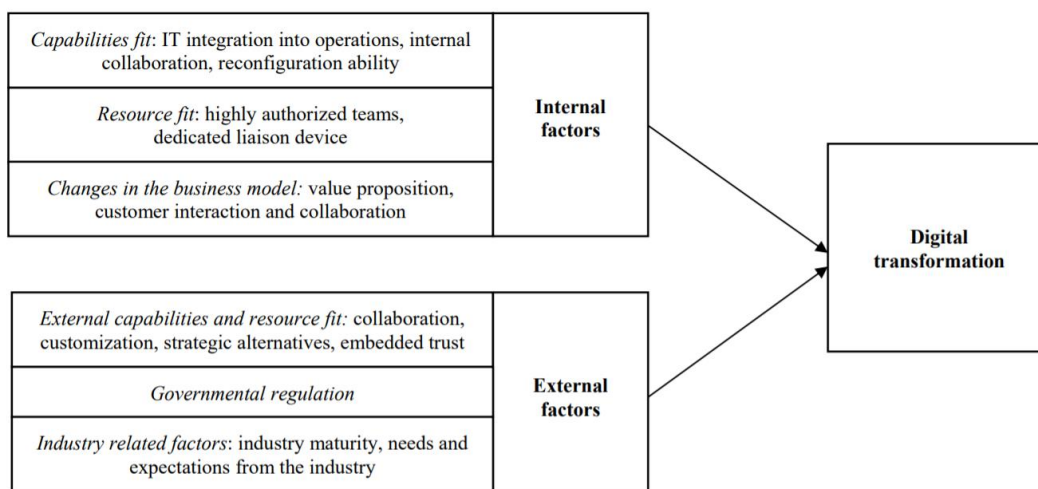
Source: Tarutė *et al.* (2018)

1.4. Internal factors

Internal attributes influence digital transformation comprises capabilities fit, resources fit, and changes in the business model.

Capabilities fit: It refers to a strong, flexible potential in embracing structure, information system, and mindsets, which portrays the importance of organizational change during the digital transformation process. During such a process, the organization has to reap success in digital transformation through enriching a wide range of capabilities. Company capabilities may vary based on business or specific customer needs (Reis *et al.* 2018). In another study, it argues that the formation of successful capability fit is integrating information technology into

operations, enriching collaboration among enterprise departments, and reconfiguration agility (Liu *et al.* 2011). Besides, some of the studies results revealed that information technology integration is vital among technological development and strategic development (Bondar *et al.* 2017; Gölzer, Fritzsche 2017; Kettunen, Laanti 2017; Liu *et al.* 2011; Remane *et al.* 2017)

Resources fit: It represents internal resources fit, which indicates the dedicated liaison device. Also, it represents the highly committed, authorized team. The significant importance given to the dedicated liaison device signifies coordination and promotion regarding the new enterprise structure (Liu *et al.* 2011). It considers being the complex ecosystem of multiple actors (Remane *et al.* 2017). It represents guaranteeing the communication and sustainable relations between enterprise interface, existing platform, and organizing model. However, it is crucial to have a highly authorized team (Bierwolf 2016; Krüger, Teuteberg 2016). Also, Weber *et al.* (2017) have discussed in their study that a highly authorized team's primary role is to find out the necessary HR competencies that seek to achieve successful digital transformation. HR competencies inclusion of cognitive followed by social and processual competencies.

Changes in the business model: The primary important attribute which influences the business to face through digital transformation is making changes in the current business model (Berman 2012; Kaltum *et al.* 2016; Remane *et al.* 2017). The essence of any business model relates more to value proposition and relations with the customers. Also, it helps to reshape value proposition, improve customer interaction and collaboration through adjustments and redefine the existing and potential customer contact (*ibid*). One of the recent studies have pinpointed that changes in the business model have a significant influence on the overall business model and digital transformation process (*ibid*)

1.5. External attributes

External factors like capabilities fit followed by resource fit, government regulations, and industry-related attributes.

External capabilities fit, and resources fit. Studies have pointed out that external capabilities were vital in influencing digital transformation. Collaboration and customization play a critical role which has a significant effect on digital transformation (Liu *et al.* 2011)

Collaboration is an interactive process in which two or more organizations work together to accomplish their goals (*ibid*). It directs the organization to accomplish the synergy between the respective organization. Also, it acts as a facilitator of the digital transformation of SMEs. Customization is another attribute which uses for different products or services based on the market needs. Attributes like companies' historical path and embedded trust significantly impact the digital transformation's succession.

Government regulations: Government regulation is one of the external attributes that influence its digital transformation (Krüger, Teuteberg 2016). Industry-related attributes like the industry's maturity, the particular needs, and expectations of the industry have digital influence confirmation (Biahmou *et al.* 2016). Out of four attributes, industry analysis has portrayed the importance in a lesser article. Hence, the researcher excludes the attributes and addresses the others to know the impact of digital transformation.

1.6. Business performance

Business performance indicates the respective company's potential in adapting to the business environment and changes made in the market environment. Some of the external environment changes like customers, competitors; in the present study, the researcher evaluates the business performance acquired from digital transformation includes how it direct the organization to rethink customer values to gain competitive advantage (Berman 2012). It also enhances business performance (Wade 2015; Hess *et al.* 2020). It is also keen on assessing the business function, which generates improvement in products, services, and business model (*ibid*). In another study, SME performances assess using three aspects, namely profitability, productivity, and market. Profitability refers to business performance from a financial perspective. Consequently, productivity refers to the company's achievement in its business activities to meet the requirements and wants. Market aspects include achievement of product sales, market position, and market share from a business perspective (Aragón-Sánchez, Sánchez-Marín 2005).

1.7. Small and medium enterprise business performance

Small and medium enterprises' performance represents the extent to which the target task of business was accomplished compared to final output at the end of the business period (Yıldız *et al.* 2014). It is described based on firm success in fulfilling business objectives. It considers being a vital activity that determines the success of a small business. It evaluates based on achievement of organization goals throughout its evolution in HR, supplier performance, products and service quality, financial and non-financial factors. Out of the above-stated factors, financial and non-financial attributes are supported by the literature. Financial factors measure in terms of return on profits, investment, and many customers. However, non-financial factors measure appraising and recognition for encouraging managerial performance (Mahmudova, Kovács 2018).

1.8. Theoretical perspective

The present study integrates more with the resource-based view. The primary intention to use the theory is to predict the basis of a firm competitive advantage and performance (Barney *et al.* 2011*;* Slotegraaf *et al.* 2003; Vorhies, Morgan, 2005). Consequently, the theory recommends how information technology resources direct the organization to gain its competitive capability (Nwankpa, Roumani 2016; Shahbaz *et al.* 2018). Firm unique resources are skills of personnel, infrastructure, and reconfigurability (*ibid*). Every technique used in digital transformation is complex and unique to acquire. Combining the organization's technological resources induces the firm to have a strong organizational capability, leading to superior performance (Mubarik *et al.* 2016). The current study focuses on assessing the internal and external attributes which influence the business performance of SMEs.

1.9. Studies relating to the digital transformation of SME

Doyle and Cosgrove (2019) Have shown that how EU funded paves the way to change traditional into digitization business which offers benefits to the organization. The study considers technologies like MT connect, the internet of things, and open-source software. Findings of the study state that the EU funded created awareness among SMEs to benefit from

using the technologies in the respective organization. Thus, it engages more transformation made within the organization.

Sargut (2019) Has claimed that digital transformation is a significant constraint for SMEs. Hence, the study focuses on creating awareness and readiness to meet the challenges and improve operational processes. The study uses AI, big data analytics, machine learning, and artificial intelligence to assess the objective. The authors observe through the pilot study that German SMEs show more interest in adopting technologies in their organization. Besides, they are keen on adopting such technologies in their business model. But they were facing constraints like insufficient funds, lack of workforce, and culture that ruins them to adopt such implementation in their organization.

1.10. Factors that influence digital transformation

Ulas (2019) Has focused on how the other attributes influence Turkey's manufacturing sector's digital transformation. The study identifies that the cost-benefit analysis of digital technologies is significant. Besides, SMEs aware of digital technologies available in the market. SMEs also face constraints like impossibility investment due to operational cost, inability. All the attributes induce SMEs to face difficulties in redesigning the business, affecting business productivity. The researcher recognizes that the traditional business has been disappearing and substituted for the digital transformation business model from the study. Attributes like flexibility, real-time responses to consumer needs support a lot in upsurging digital transformation among traditional SMEs. Also, the researcher observes that there is no information regarding how the analysis was made to get an appropriate outcome for the study. There is no precise information about how attributes support traditional SMEs to get it into digitization.

1.11. Studies relating to the importance of technology of digital transformation in SME performance

Mubarak *et al.* (2019) Have keen on assessing the role of industry 4.0 technologies on SME performance in Pakistan. The study uses 4.0 technologies as big data, cyber-physical system, internet of things, and interoperability as the independent variable and SME performance as

the dependent variable. It finds that big data, cyber-physical system and interoperability has a positive impact on SME performance. However, the internet of things has an insignificant effect on SME performance. From the study, the researcher recognizes that technological factors play a crucial role in influencing SME performance. Thus, statistically significant attributes have been taken into account. The study is well organized, clearly stated the attributes and their impact on SME performance in quantitative research. The researcher admires that the study portrays the association between technological attributes and SME performance.

Mangla *et al.* (2020) Has shown that how big data analytics to influence SME project performance. Findings of the study highlight that big data analytics's adoption positively impacts SME project performance. Thus, the researcher observes that one of the technologies is big data analytics that impacts SME project performance. From the study, the researcher observes that SME of Indian organization has taken into account. The methods and methodologies used in the study help to attain the objective effectively.

Maroufkhani *et al.* (2020) Has focused on how significant data analytics influence SMEs in Iran. Findings of the study highlight that big data analytics impact SME performance, especially in marketing, financial, and performance enhancement. Thus, the aspects influence SMEs to adopt technologies in their organization.

Radanliev *et al.* (2019) indicated how AI and the Internet of things are gaining importance to SME organizations. The study observes that both technologies support SMEs to increase business performance.

Shin (2017) Focuses on how the internet of things has impacted SMEs in South Korea. The study observes that disruptive and open innovation attribute enhance SME performance. Besides, it paves the way to integrate products and services with external parties to enter the market. Thus, it concludes that the internet of things has a substantial impact on SME performance.

Vrchota *et al.* (2019) have shown how the attributes influence SME digitization in the Czech. Factors like employees, machines, finance planning, process management, know-how, and external factors. All the attributes are playing a pivotal role in influencing the digitization of

SMEs. Finally, the study concludes that a medium-size enterprise focuses more on digitization than micro-enterprises.

1.12. Theoretical framework

Internal factors
capabilties fit
Resources fit
Changes in business model

External factors
External capabilities and fit
Government regulations

Business performance
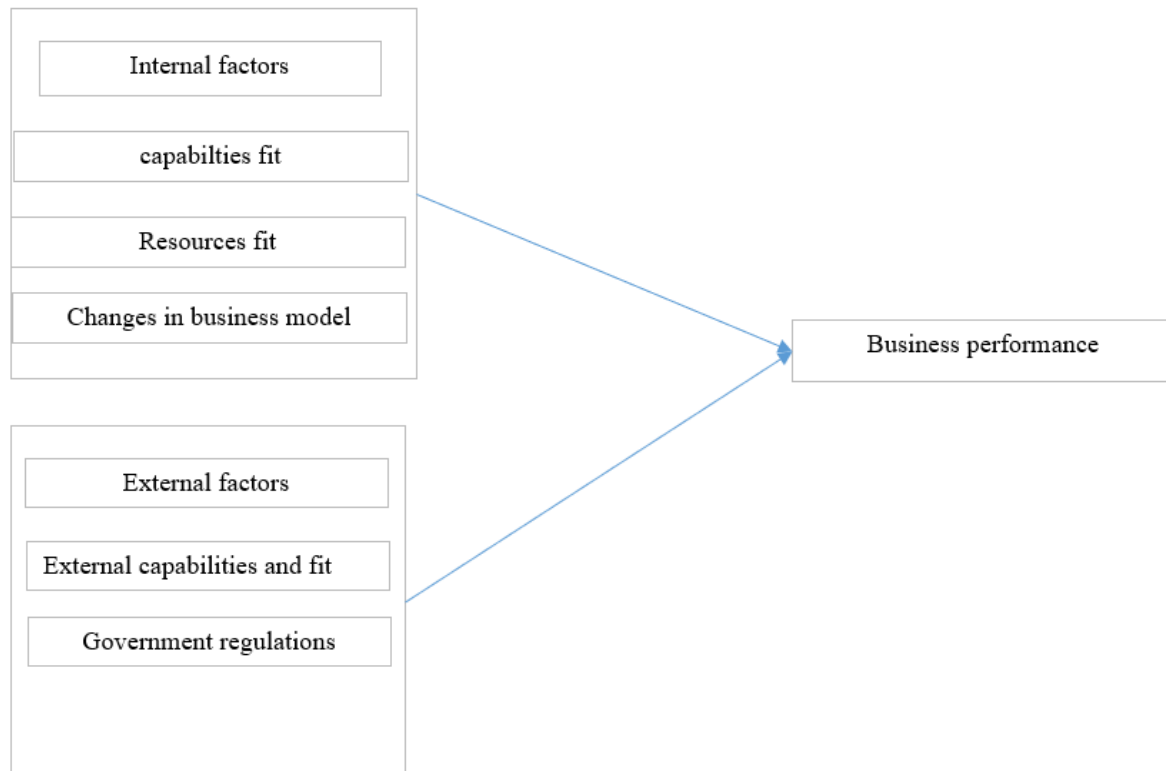
Source: Own Illustration

From the observation, the study finds that internal factors (capabilities fit, resources fit and changes in business model) and external factors (external capabilities and resources fit and government regulation) is an independent variable, and business performance is dependent variables.

1.13. Research gap

The researcher observes that internal and external attributes influence digital transformation. Krüger, Teuteberg 2016 have discussed the aspects in a qualitative aspect. The study extends the previous study, adding business performance as a dependent attribute. With the help of the study, the researcher measures how the internal and external attributes influence the business performance.

2. RESEARCH METHODOLOGY

The outline of the entire research methods is presented in this chapter. It also information regarding population, samples, and samples have been derived statistically, sample size, and data collection methods. Also, it describes the reliability and validity of constructs utilized for the study. The instrument used for data collection is also described, and how the constructs were developed to carry out the study is described in detail. IT also discusses the tools used to analyze the data and how the researcher considers ethical issues.

2.1. Research design

It is a short plan of the proposed research work (Akhtar 2016). There are three types of research designs; exploratory, explanatory, and descriptive. Two research designs applicable for the study. Descriptive used to determine the exact situation of whether digital transformation influence business performance. Also, exploratory research focuses on the concern which is not clearly defined. Tarutė *et al.* (2018) discuss digital transformation attributes in detail, whereas no other studies made so far in assessing how the attributes influence business performance. Hence the researcher makes an effort to explore the aspects using quantitative research methods. The details of the methods have been previously discussed in studies Shin (2017); Ulas (2019)

2.2. Population and samples

The population represents all the members of any well-defined class of people or objects or events. It also indicates the study's target, which defines the aim and objectives of the study. The target population is quite large for the researcher to study. Therefore, The study has a population of small and medium enterprises in South India. 8400 small and medium enterprises are there in South India (Standard 2015)

Samples are the group of a small number of people selects from the population. The researcher must pick out the optimal sample to reduce the errors. In this study, samples are small and medium enterprises in South India. Small enterprises have a turnover of 6.62 million USD, and medium enterprises had a turnover of one billion USD have taken into account (Rastogi 2020). As per the revised MSME classification, the researcher had considered the small and medium enterprises from the South India states of Tamilnadu, Kerala, Karnataka, and Andhra Pradesh.

Sampling is taking a portion of the population which represents the entire population. The main objective of sampling is to take a small portion of the sample to generalize the findings reliably. The researcher has acquired a portion of small and medium enterprises from Tamilnadu, Kerala, Karnataka, and Andhra Pradesh.

2.3.   Sampling techniques

The researcher has to pick out sampling through sampling techniques which are of two types. Probability and non-probability sampling. In probability sampling, each unit in the population is known. However, it is not necessary to include the representativeness of the population in non-probability sampling. Out of many non-probability sampling, convenience sampling has been taken into account, and it has been widely used in literature (Safar *et al.* 2020; Neena n.d). The registered small and medium enterprises are 696,525 units in South India. It is the population; the confidence level is 95%, and the sample size is 70. Out of 70 respondents, 55 respondents participated in the survey. Therefore, the response rate for the study is 78.57%.

2.4.   Data collection methods

Data collection is an essential step in the research process because it can gather the respondent's opinion, measure the information on the variable, assess the opinion by fixing the hypothesis, apply statistical tools, and evaluate outcomes. Data collection methods are of two types; quantitative data collection methods and qualitative data collection methods. Former nature is to assess the aspects mathematically, whereas later is descriptive. Thus, quantitative data

collection methods have been taken into account. The reason behind choosing quantitative data collection methods is that it is accessible to summaries, compare and generalize the findings. Sources used to be questionnaires, including open-ended questions, multiple-choice questions, and Likert scale questions. A detailed evaluation of the questionnaire is presented in the subsequent sections. All the questions are prepared in google form, and I have planned to survey the web form. The researcher had gathered the respondent's information from respective MSME sites, contact the respondents through phone, get prior approval from individual respondents, and then the respective google form link sent to the respondents' respective phone number. Once the link was sent to the respondents, prior information was given to the respondents, and then the researcher gathered the opinion in the google form. The researcher had spent three weeks collecting the opinion from the respective respondents. Also, Secondary sources like google scholar, MDPI, collect information on how the other authors have done the study.

2.5. Questionnaire

A questionnaire considers being an efficient tool for gathering quantifiable information rapidly and systematically. Hence, the researcher has utilized the instrument as a questionnaire in this study (Krosnick 2018). The researcher has framed the questionnaire based on five sections. Subsequently, the first section contains questions about the profile of respondents. Section 2 gives general information about digital transformation. Consequently, sections 3 and 4 exhibit the questions related to internal and external attributes of digital transformation. Lastly, business performance section variables are presented. Constructs of digital transformation technologies have been used previously (Imran 2018; Shahbaz *et al.* 2019; Lasi *et al.* 2014). It is worth pointing out that Tarutė *et al.* (2018) have pinpointed digital transformation's internal and external attributes. Internal attributes include capabilities fit, resources fit, and changes in the business model. The constructs have been previously used in the literature for assessing the internal attributes of digital transformation. Capabilities fit from the previous studies Bondar *et al.* 2017; Gölzer, Fritzsche 2017; Kettunen, Laanti 2017; Liu *et al.* 2011; Remane *et al.* 2017. Resources fit Remane *et al.* 2017; Bierwolf 2016; Krüger, Teuteberg 2016, Chages in business model Berman 2012; Kaltum *et al.* 2016; Remane *et al.* 2017. However, external attributes contain external capabilities and resource fit, and government regulations. External capabiltiies and resoruces fit Liu *et al.* 2011 and government regulations Krüger, Teuteberg 2016

2.6.   Reliability and validity

Reliability refers to "reproducibility or consistency of scores from one assessment to another." One of the most common methods to measure consistency is Cronbach alpha. It is widely used when the items evaluate different substantiative areas of a particular construct. Similarly, the researcher has constructs like internal and external attributes of digital transformation. All the attributes of twenty-five constructs measured using Cronbach alpha, and the value is 0.92. The value lies above 0.90 has internal consistency; similar consistency was observed for our study. Validity concerns more on assessing the scale items that should represent the concept or not. There are three types of validity; logical validity, criterion-related validity, and congruent validity. Out of three validity, the researcher is relating the constructs to logical validity. Logical validity measures the adequacy and representative of items whether it integrates with the concept. To know the logical validity of constructs, the researcher has got support from experts. They provided an opinion on constructs, measure the opinion through Cohen's kappa coefficient. It offers a value of 0.93, which represents the perfect agreement on the constructs.

2.7.   Statistical Tools

The study incorporates four essential tools to reveal an outcome for the research questions. It includes percentage analysis, descriptive statistics, correlation, and regression. These methods were performed using the SPSS software package. One of the simplest ways to present the profile of respondents is percentage analysis. Secondly, descriptive statistics consist of mean and standard deviation, suitable for expressing the respondents' opinion collected in a five-point Likert scale. The standard tools are used to express the association of variables through correlation analysis. It includes internal and external digital transformation attributes as an independent variable, and business performance is a dependent variable. However, regression analysis presents the effect of digital transformation attributes on business performance.

2.8.   Ethical considerations

The researcher gives more importance to ethical issues and believes that no one is injured or faced adverse consequences on research activities. Also, the researcher focuses on Small and medium enterprises, and it is having a respective position in society. Hence the researcher keeps the identity of respondents is kept confidential and takes effort to protect their names. Moreover, the researcher avoids asking names in the questionnaire to safeguard respondents' anonymity and confidentiality and keep aside potential harm. Also, questions are framed so that they did not offend them either directly or indirectly. Finally, the answers to the questions did not create any risk to the respondents.

3. DATA ANALYSIS

3.1. Demographic profile of respondents

Demographic profile of respondents: From the table, it is clear that 45.5% of respondents between 20-24 years, 36.4% of respondents are between the age category of 28-32 years, and 18.2% of between 24-28 years of age. Thus, it concludes that the highest number of respondents participated in the survey between the age categories of 20-24 years. Concerning gender, 63.6% of respondents are male, whereas 36.4% are female. Thus, it is clear that most of the respondents who are engaged in the survey are male respondents. Concerning education qualification, 54.5% of respondents have postgraduates as their education qualification, 27.3% of having Undergraduates, and 18.2% possess HSC as their education qualification. Concerning work experience, 36.4% of respondents have experienced between 4-6 years, 27.3% of between 2-4 years and an identical 18.2% of respondents are between 6-8 years and above 8years. Thus, it is clear that most of the respondents are having work experience between 4-6 years.

Nature of industry: Among 100% of respondents, 45.5% of respondents belong to IT, and an identical 27.3% belong to the E-commerce and retail sector. Therefore, it makes clear that the highest number of respondents belong to the IT sector.
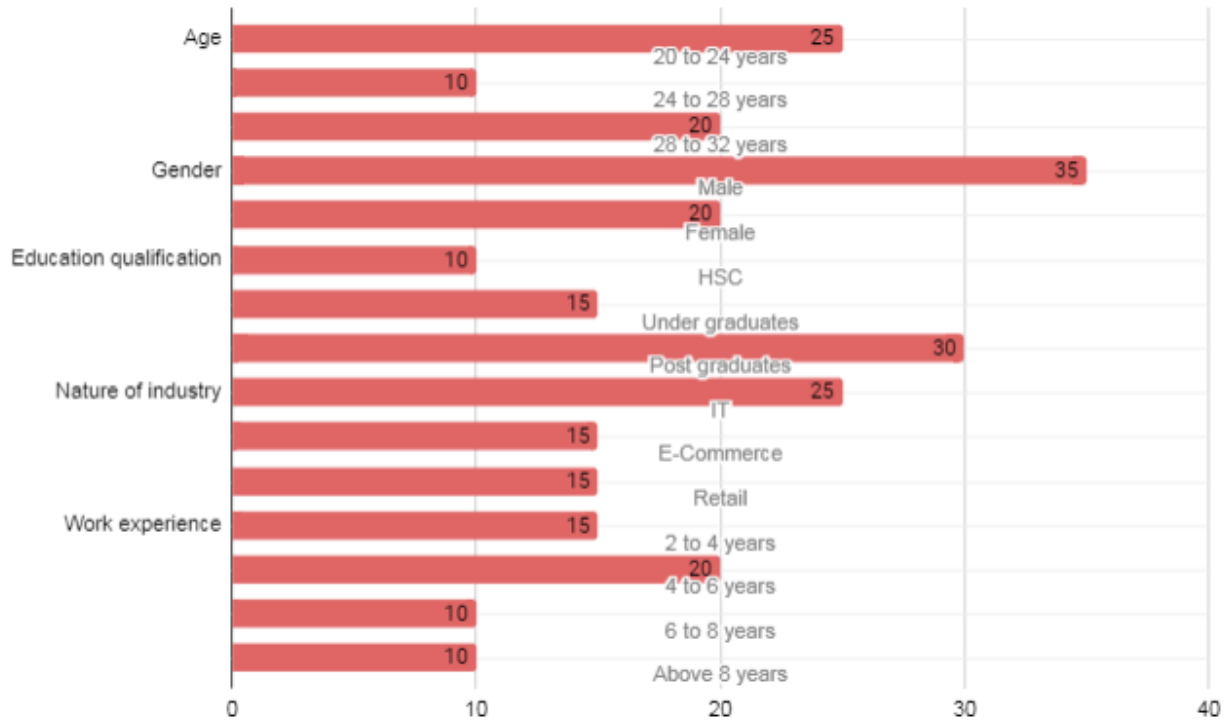
Figure 1. Demographic profile of respondents
Source: Author's calculation

Drivers induce the adoption of digital transformation: The study evaluates the drivers to adopt digital transformation through customer behavior, customer expectations, digital shifts in the industry, and changes in the competitive landscape. Among 100 respondents, 25 respondents (45.5%) have digital shifts in the industry, 15 respondents (27.3%) had adopted due to customer behavior, ten respondents (18.2%) adopt through customer expectations, and five respondents (9.1%) had changes in the competitive landscape.
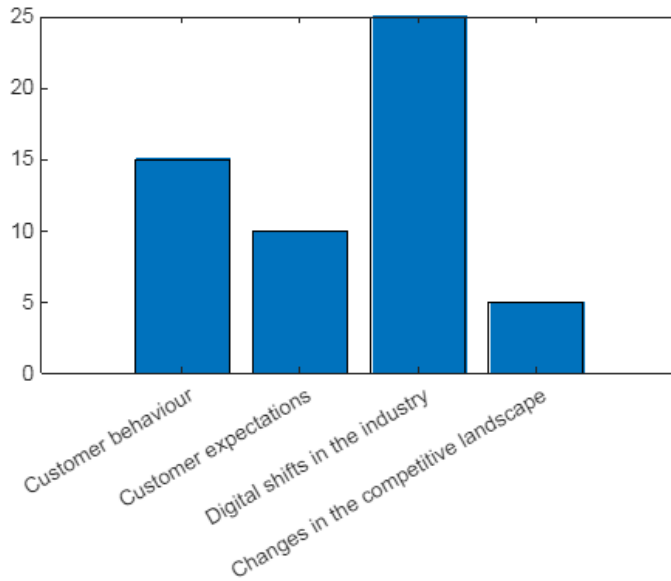
Figure 2. Drivers induce the adoption of digital transformation
Source: Author's calculation

The technology uses digital transformation: The study considers technology like big data, the internet of things, cyber-physical system, and interoperability used for digital transformation. Out of 100% of respondents, 54.5% of respondents use the internet of things, 27.3% use big data, and 9.1% use cyber-physical system and interoperability. Therefore, it depicts that most respondents use the internet of things as a technology used for digital transformation.
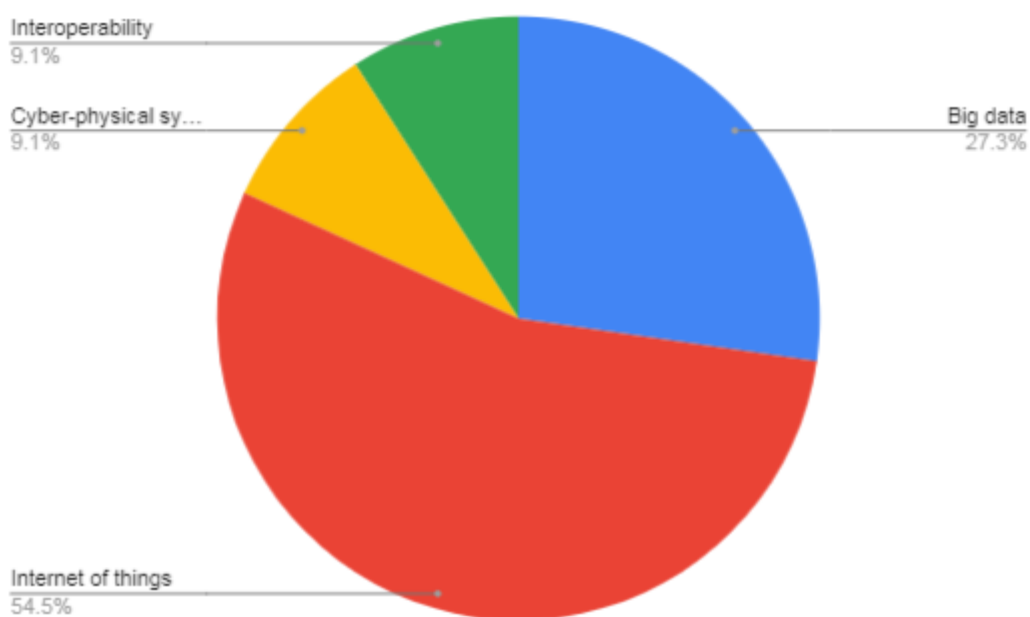
Figure 3. Technology do you use for digital transformation
Source: Author's calculation

Benefits derive from digital transformation: Digital transformation benefits the organization includes business performance, cost-saving, and productivity. Among 100 respondents, 25 respondents (45.5%) adopted digital transformation to reap productivity, 20 respondents (36.4%) of reaping cost-saving benefits, and ten respondents (18.2%) using to reap business performance from digital transformation. Therefore, it found that the highest number of respondents utilizing digital transformation to reap productivity.
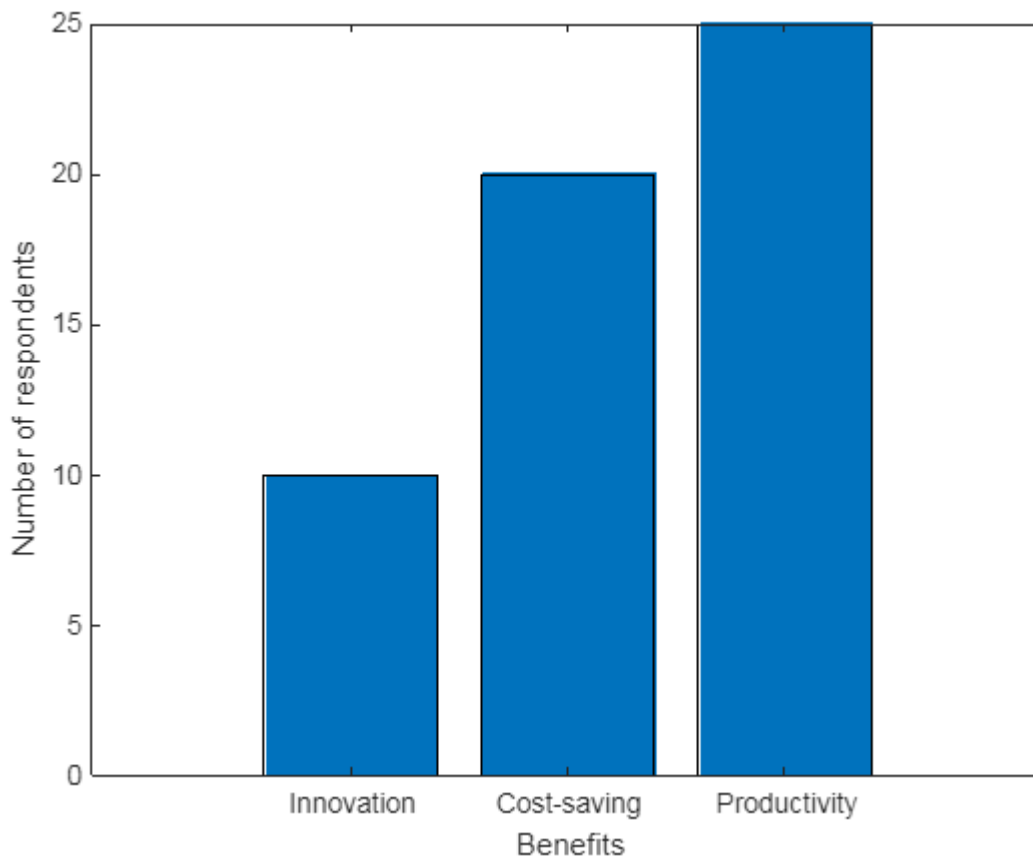
Figure 4. Benefits derive from digital transformation
Source: Author's calculation

3.2. Descriptive statistics

Capabilities fit: The study measures capabilities fit with the help of statements. Statements are "Digital transformation requires developing a wide range of capabilities that will vary based on business," "It integrates information technology into operations and collaboration among enterprise department and reconfiguration agility," and "It integrates technological and strategic development." The mean value of capabilities fit lies between 2.4 and 2.9 that have a minimum value. The highest mean value represents "It integrates information technology into operations and collaboration among enterprise department and reconfiguration agility." In contrast, the least mean value indicates, "Digital transformation requires developing a wide range of capabilities that will vary based on business." Also, the precision of capabilities fit measured using standard deviation, which lies between 1.2 and 1.42. Capabilities fit "Digital transformation requires developing a wide range of capabilities that will vary based on business," had a high precision and the statement indicates an "It integrates information technology into operations and collaboration among enterprise department and reconfiguration agility" Very low precision.
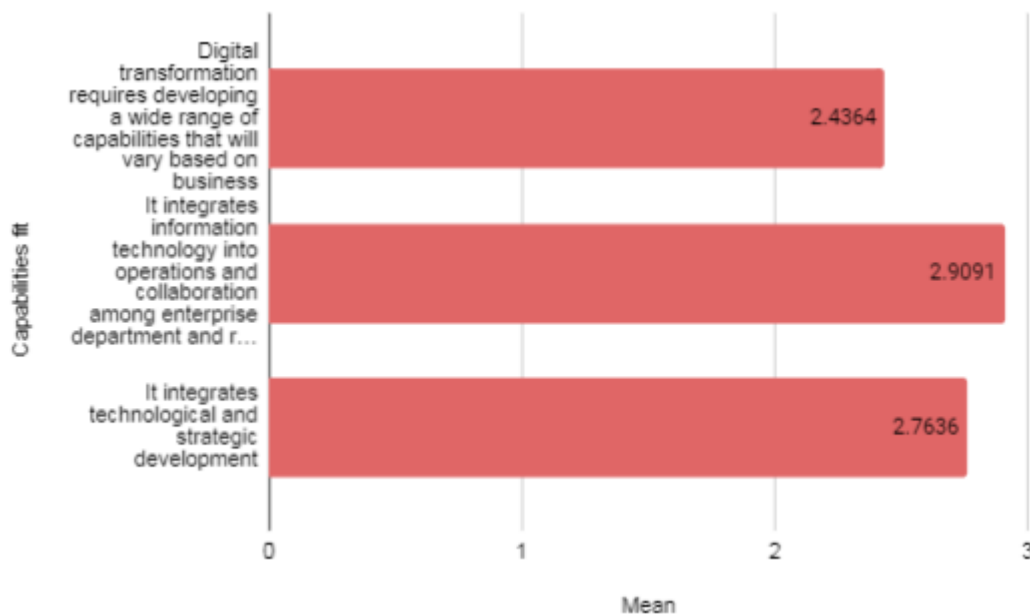
Figure 5. Capabilities fit
Source: Author's calculation

Resources fit: The study measures the resources fit using a five-point Likert scale. Resources fit statements contains "A dedicated liaison device which signifies coordination and promotion of new structure of the enterprise," "Guaranteeing communication and sustainable relations

among enterprise interface existing service platforms and organizing model," "It requires highly authorized teams" and "The role of the team is to identify the competencies requires for human resources which seek successful digital transformation." The average mean value for resources fit between 2.5 and 2.9, and the values are minimal. The statement indicates, "The team's role is to identify the competencies required for human resources that seek successful digital transformation," a high mean value. The statement "Guaranteeing communication and sustainable relations among enterprise interface existing service platforms and organizing model" had a low mean value.

Consequently, the precision of resources fit lies between 1.0 and 1.4. The highest precision for resources fit "A dedicated liaison device which signifies coordination and promotion of new structure of the enterprise." In contrast, most miniature precision for resources fit is "The role of the team is to identify the competencies requires for human resources which seek successful digital transformation."
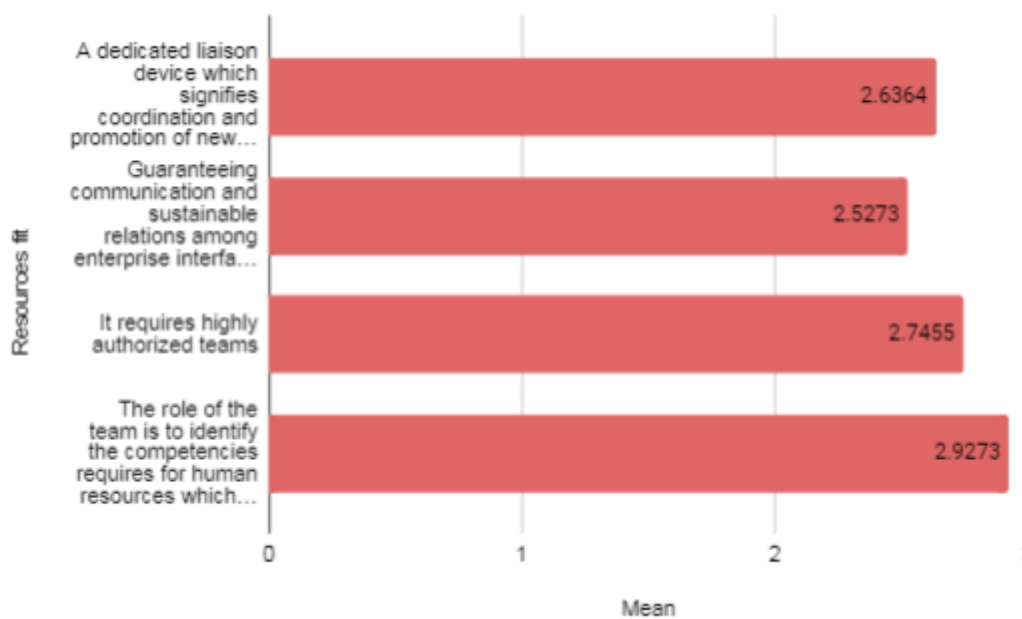
Figure 6. Resource fit
Source: Author's calculation

Changes in the business model: It measures using the statements comprised of "Another internal factor that requires changes in the current business model," "It relates to value proposition and relations with customers," "It helps to reshape the value proposition of the existing business model" and "It improves customer interaction and collaboration through adjustments and changes made in the existing model." All the mean value for changes in the

business model lies from 2.5 to 2.9. The highest mean value for the business model changes is "It improves customer interaction and collaboration through adjustments and changes made in the existing model." The least mean value for the variable is "It relates to value proposition and relations with customers." Precision for changes in the business model is between 1.0 and 1.4. The highest precision indicates changes in the business model are "Another internal factor that requires changes in the current business model," and the most miniature precision is "It improves customer interaction and collaboration through adjustments and changes made in the existing model."
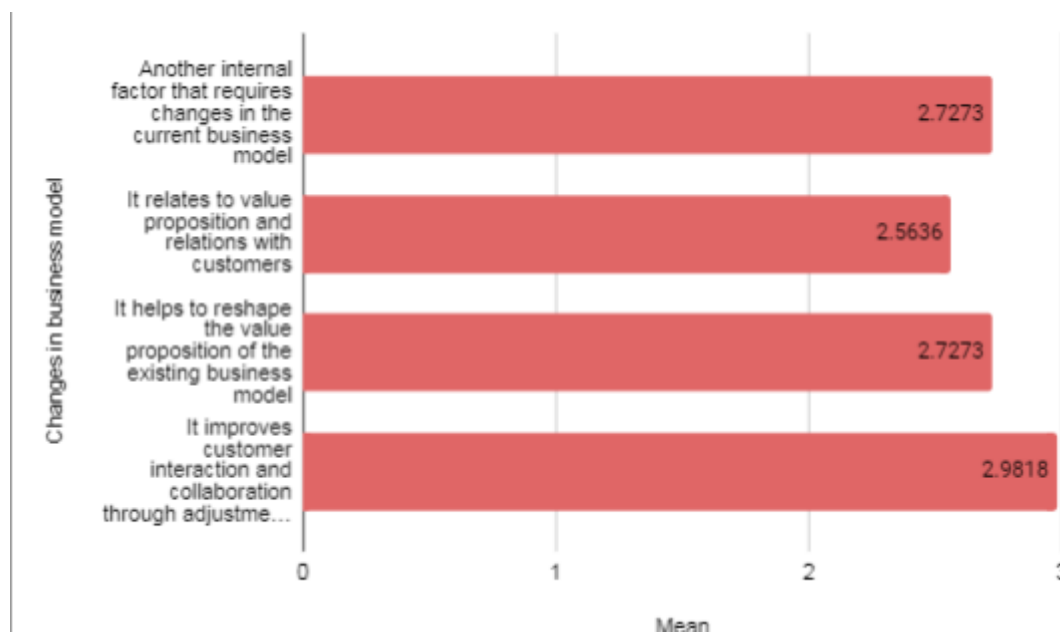
Figure 7. Changes in business model
Source: Author's calculation

External capabilities and resources fit: It evaluates external capabilities, and resources fit "External capabilities include collaboration and customization, which considers as crucial attributes," "It is a recursive process where two or more can work together to achieve the goals," "Collaboration considered as the facilitator of digital transformation in SME," "Customization directs the ability to differentiate products or services based on needs dictated by the market" and "Existing strategic alternatives, confidence in the reliability of another organization is vital to reap the success of the digital transformation." The average values of external capabilities and resource fit lie between 2.6 and 3.23. The highest mean value for the statement is "Customization directs the ability to differentiate products or services based on needs dictated by the market," and the least mean value for the statement is "Collaboration

considered as the facilitator of digital transformation in SME." Precision for external capabilities and external fit ranges from 1.27 to 1.37. The highest precision indicates the statement "Existing strategic alternatives, confidence in the reliability of another organization is vital to reap the success of the digital transformation," and the most miniature precision for the statement is "Collaboration considered the facilitator of digital transformation in SME."
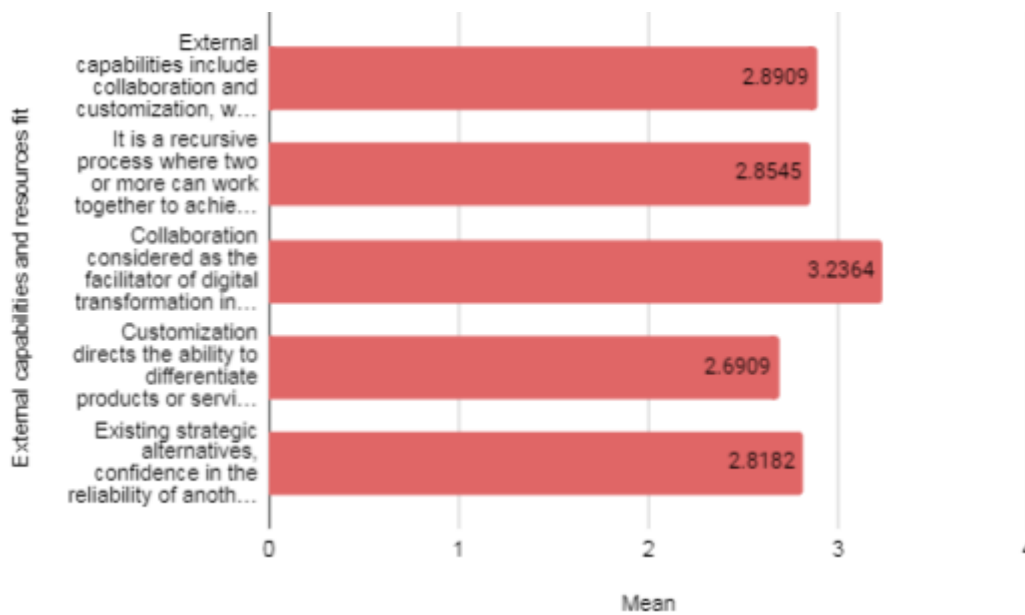
Figure 8. External capabilities and resource fit
Source: Author's calculation

Government regulations: It can be measured through "Small business needs proper policies, programs and support from the government to implement digital transformation successfully," "The government needs to enhance training and digital course for SME," "Government offers digital service, digital technologies, and tools" and "Government should offer funding or subsidies for digital transformation for SME" using the aspects. All the respondent's opinion on government regulations lies between 2.5 and 3.0. The highest mean value indicates the statement "Government should offer funding or subsidies for digital transformation for SME," The least mean value represents "Small business needs proper policies, programs and support from the government to implement digital transformation successfully." The precision of government regulations ranging from 1.33 to 1.44. The highest precision for the government regulations aspects is "Small business needs proper policies, programs and support from the

government to implement digital transformation successfully" and the most miniature precision for "Government offers digital service, digital technologies, and tools."
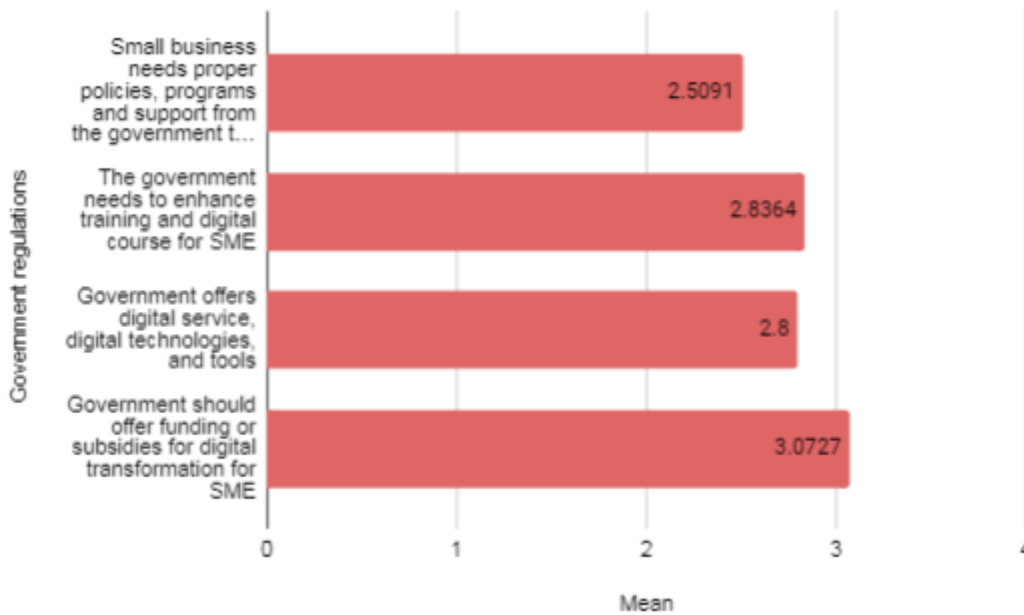
Figure 9. Government regulations
Source: Author's calculation

Business performance" The researcher evaluate SME business performance through aspects "Digital transformation increases business performance in terms of crisis," "Digital transformation provides an organization with a chance to rethink customer value to gain a competitive advantage," "Digital transformation increases harmony among business in generating improvement in products, services, and business model," "Digital transformation increases SME financial performance," "Productivity increases which in turn it helps to meet customer need and requirements" and "It increases product sales, market position, and market share." All the mean value of business performance lies between 2.6 and 3.2, which indicates minimal. The highest mean value indicates the statement "It increases product sales, market position and market share," and the least mean represents "Digital transformation increases SME financial performance." Consequently, the precision of business performance is assessed through standard deviation; the value lies from 1.2 to 1.4. The highest precision for business performance is "It increases product sales, market position and market share," and the most miniature precision for business performance is "Productivity increases which in turn it helps to meet customer need and requirements."
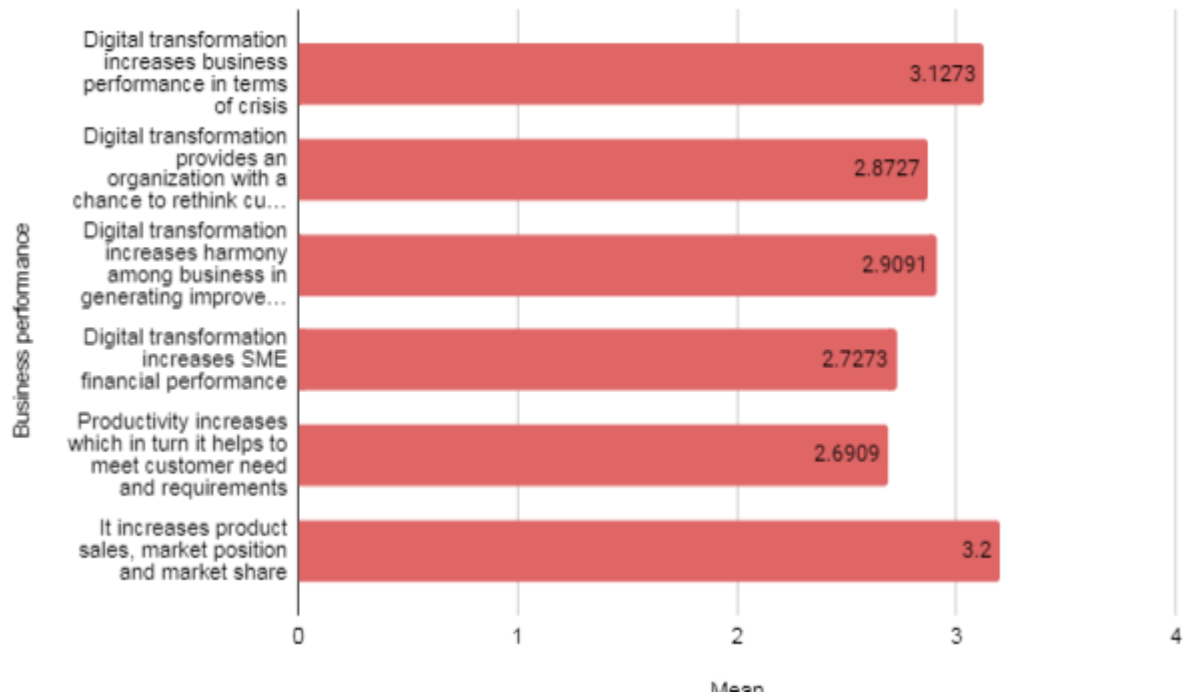
Figure 10. Business performance
Source: Author's calculation

3.3. Correlation

Correlation uses to determine the association between the dependent variable (capabilities fit, resource fit, changes in business model, external capabilities and resources fit, and government regulation) and dependent variable (business performance).

Table 1. Association between internal and external attributes and business performance

Particulars	r	sig
Capabilities fit	.147	.284
Resource fit	.340	.011**
Changes in business model	.328	.014**
External capabilities and resource fit	.497	.000**
Government regulations	.397	.003**

Author: own calculation

The study has internal attributes of digital transformation that include capabilities fit, resources fit, and business model changes. Also, external attributes contain external capabilities and

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resources fit and government regulations. All the internal and external attributes are assessed with business performance through correlation analysis.

H1: Capabilities fit had a robust positive relationship with business performance

The first attribute is capabilities fit, which associate with business performance. It secures r value is 0.147, and the significance value is 0.284, which is lesser than the level of significance. Thus, it found that there is no association between capabilities fit and business performance.

H2: Resources fit had a robust positive relationship with business performance

The second attribute is resource fit which integrates with business performance. The variable had a secured correlation value of 0.340; the p-value is 0.011, which is lower than 0.005. Hence, it is clear that resources fit had a robust positive relationship with business performance

H3: Changes in the business model had a strong positive relationship with business performance

The third internal attribute is changed in a business model, which coordinates with business performance. The correlation value for the variable is 0.328; the p-value is 0.014, which is lesser than 0.05. Hence, it shows that changes in the business model had a strong positive relationship with business performance

H4: External capabilities and resources fit had a robust positive relationship with business performance

Fourth is external attributes which indicate external capabilities and resources fit, which secures correlation value is 0.497. It secures p-value is 0.000, which is lesser than 0.005, and thus, it shows that external capabilities and resources fit had a strong positive association with business performance.

H5: Government regulations had a strong positive relationship with business performance

Fifth is an external attribute of government regulation that correlates with business performance that secures a correlation value. It also secures a p-value is 0.000, which is lesser than the 5% level of significance. Thus, it is clear that government regulations had a strong positive relationship with business performance.

Overall, the researcher observes that external attributes and internal attributes except capabilities fit had a statistical relationship with business performance.

Table 2. Association between internal attributes, external attributes, and business performance

Particulars	r	sig
Internal attributes	0.387	.003**
External attributes	0.533	.000**

Author: own calculation

The table depicts the correlation analysis among internal attributes, external attributes, and business performance.

H6: Internal attributes had a robust positive relationship with business performance

Internal attributes and business performance have secured an r-value of 0.387; sig is 0.003, which is lesser than 5% of significance. Hence, it concludes that internal attributes had a strong positive association with business performance.

H7: External attributes had a robust positive relationship with business performance

External attributes and business performance have an R-value of 0.533; sig is 0.000, which is lesser than the 5% level of significance. Hence, it is clear that external attributes had a robust positive relationship with business performance.

To sum up the section, external and internal attributes have a relationship with business performance.

3.4. Regression

Table 3. Effect of internal attributes on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C	.387[a]	.150	9.349	0.003	1.506	3.200	.002
Internal attributes					.520	3.058	.003

Author: own calculation

The table depicts that the internal attributes and business performance had an r-value of 0.387, indicating the variable relationship is linear. Consequently, r^2 is 0.150, which indicates that internal attributes affected 15% of business performance. Anova value for the variable is

9.349; sig is 0.003, which is lesser than the 5% level of significance. Moreover, the variable's beta value is 0.520; the t value is 3.058, and sig is 0.003, which is lesser than the 5% level of significance. Thus, it concludes that internal attributes had a statistical effect on business performance. The regression equation for the variable is Business performance= 1.506+0.520 (Internal attributes)

Table 4. Effect of external attributes on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C	.533[a]	.284	21.019	0.000	1.335	3.761	.000
External attributes					.556	4.585	.000

Author: own calculation

The table shows that external attributes and business performance have secured an r-value of 0.533, representing a linear relationship between the variables. Consequently, r^2 is 0.284, which is that external attributes affect 28.4% of business performance. Anova value is 21.019; sig is 0.000, which is lesser than the 5% level of significance. External attributes have a beta value of 0.556, t value is 4.585, and sig is 0.000, which is less than a 5% level of significance. Therefore, it concludes that external attributes had a statistical effect on business performance. The regression equation for the variable is Business performance = 1.335+0.556(External attributes)

Table 5. Effect of capabilities fit on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C					2.633	9.326	.000
Capabilities fit	.147[a]	.022	1.173	.284[b]	.107	1.083	.284

Author: own calculation

From the table, the researcher observes that the capabilities fit and the business performance had a linear relationship which reveals through r-value, i.e., 0.147. Also, r^2 for the variable is 0.022, which indicates capabilities fit had an effect of 2.2% on business performance. Consequently, ANOVA reveals that the f value is 1.1, sig is 0.284, which is higher than the 5% level of significance. The table has beta as 0.107, t value is 1.083, and sig is 0.284, which is

higher than 0.05. Therefore, it concludes that capabilities fit had a statistical effect on business performance. One unit of changes in business performance makes 0.107 unit changes in capabilities fit. The regression equation for the variable is

Business performance = 2.633 + 0.107 (capabilities fit)

Table 6. Effect of resources fit on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C					1.899	4.764	.000
Resource fit	.340[a]	.815	6.913	.011[b]	.377	2.629	.011

Author: own calculation

The table shows that resources fit and the business performance had a correlation value of 0.340, representing a linear relationship. Also, r^2 is 0.815, which represents that resource fit had 81.5% on business performance. Anova value is 6.913; sig is 0.011, a lesser than 5% level of significance. Thus, it depicts that resources fit sufficient to forecast business performance through the present data. Moreover, the beta value is 0.377, and the t value is 2.629, and sig is 0.011, which is lesser than the 5% level of significance. Therefore, it concludes that resources had a statistical effect on business performance. One unit of changes in business performance makes 0.377 unit changes in resources fit. The regression equation for the variables is presented below

Business performance = 1.899+0.377 (Resources fit)

Table 7. Effect of changes in the business model on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C					2.091	6.149	.000
Changes in business model	.328[a]	.708	6.389	.014[b]	.302	2.528	.014

Author: own calculation

The table depicts that business model changes and business performance have an R-value of 0.328, indicating that the relationship is linear between the variables. Also, r^2 is 0.708, representing that the business model changes influenced 70.8% on business performance. Anova value is 6.389, sig is 0.014, which is lesser than 0.05; it shows that business model

changes are sufficient to predict business performance. Also, the beta value is 0.302, the t value is 2.528, and the p-value is 0.014, which is lesser than the 5% level of significance. Therefore, it concludes that changes in the business model had a statistical effect on business performance. One unit of changes in business performance makes 0.302 make changes in the business model. Regression analysis for the variable presents below

Business performance = 2.091+0.302(Changes in business model)

Table 8. Effect of external capabilities and resources fit on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C					1.580	4.764	.000
External capabilities and resource fit	.497[a]	.847	17.378	.000[b]	.463	4.169	.000

Author: own calculation

The table shows that external capabilities and resources fit to have a correlation value of 0.497, indicating a linear relationship between variables. Also, the r^2 value is 0.847, representing that external capabilities and resources fit affected business performance to 84.7%. The ANOVA value for the variable is 17.378; sig is 0.000, which is lesser than the 5% level of significance. Thus, it is clear that external capabilities and resources fit are sufficient in forecasting business performance. The variable's beta value is 0.463; the t value is 4.169, and sig is 0.000, which is lesser than the significance level. Therefore, it concludes that external capabilities and resources fit had a statistical effect on business performance. One unit of changes in business performance makes 0.463 unit changes in external capabilities and resources fit. Regression analysis is presented below

Business performance = 1.580+0.463 (External capabilities and resources fit)

Table 9. Effect of Government regulations on business performance

Particulars	r	r^2	ANOVA		b	t	sig
			f	sig			
C					2.014	6.695	.000
Government regulations	.397[a]	.858	9.921	.003[b]	.324	3.150	.003

Author: own calculation

Table infers that government regulations and business performance have a correlation value of 0.397, representing the linear relationship between the variables.   Also, r^2 is 0.858, which represents government regulations influencing 85.8% on business performance.   Anova value is 9.921; sig is 0.003, which is lesser than the 5% level of significance. Hence, it infers that government regulation information is sufficient in forecasting business performance. Besides, the beta value is 0.324, the t value is 3.150, and the sig is 0.003, which is lesser than the 5% level of significance.   Therefore, it concludes that government regulations had a statistical effect on business performance. One unit of changes made in business performance makes changes to 0.324 units in business performance. The regression equation is stated below

Business performance = 2.014+0.324 (Government regulations)

3.5. Results

In this section, the study presents a detailed evaluation of the results. The researcher assesses the respondent's opinion through statistical tools like percentage analysis, descriptive statistics, correlation, and regression. All the tools were performed using SPSS software and Microsoft excel.

A method for percentage analysis was conducted, and it was shown that the highest number of respondents were between the age category of 28-32 years. Consequently, the majority of respondents were male. Concerning the education qualification of the respondent, the highest number of respondents were postgraduates. The maximum number of respondents were having work experience of 4-6 years. The highest number of respondents belonged to the IT sector.

Digital transformation: From the analysis, the study found that the drivers of digital transformation were due to digital shifts in the industry. However, The study found that many respondents used the internet of things as technology for digital transformation. The benefits of digital transformation were high, especially in the case of accelerating productivity.
However, five-point Likert scale questions were assessed with the help of descriptive statistics. The first independent variable was capabilities fit. The statement "Digital transformation requires developing a wide range of capabilities that will vary based on business" had a high precision that indicated the values were closer to the mean. However, the statement indicates an "It integrates information technology into operations and collaboration among enterprise

department and reconfiguration agility" had a very low precision which represented that it was apart from mean scores.

The second independent variable was resource fit. The statement "A dedicated liaison device that signifies coordination and promotion of new structure of the enterprise" had a high precision that represented that the values were nearer to mean. However, the statement "The role of the team is to identify the competencies requires for human resources which seek successful digital transformation" had a low precision which indicated the values were apart from mean.

The third independent variable was changed in the business model. The statement "Another internal factor that requires changes in the current business model" had high precision, meaning that the values were nearer to the mean. However, the statement "It improves customer interaction and collaboration through adjustments and changes made in the existing model" had a low precision, meaning that the values were far from mean.

The fourth independent variable was external capabilities and resource fit. The statement "Existing strategic alternatives, confidence in the reliability of another organization is vital to reap the success of the digital transformation" had the highest precision, indicating that the values were closer to the mean. However, the statement "Collaboration considered the facilitator of digital transformation in SME" had a low precision, representing that the values were far from mean.

The fifth independent variable was government regulations. The statement "Small business needs proper policies, programs and support from the government to implement digital transformation successfully" had a high precision that indicated that the values were closer to mean. However, the statement "Government offers digital service, digital technologies, and tools" had a low precision, representing that the values were far from mean.

The last dependent variable was business performance. The statement "It increases product sales, market position and market share" had a high precision that represented that the values were closer to mean. However, the statement "Productivity increases which in turn helps to meet customer need and requirements" had a low precision, indicating that the values were far from the mean.

Apart from the general findings, one of the study's key findings was that internal and external attributes affected business performance. External attributes had a strong correlation, whereas internal attributes had a moderate association with business performance.

Moreover, it is quite a surprise to find that external attributes and internal attributes except capabilities fit had a statistical relationship with business performance. All the variables (capabilities fit, resources fit, changes in business model, external capabilities and resources fit, and government regulations) had a moderate association with business performance.

After investigating the relationship between the variables, the study has conducted further analysis to see whether the independent variable has impacted the dependent variable. Independent variables (capabilities fit, resources fit, changes in business model, external capabilities and resources fit, and government regulations) and dependent variables (business performance). Internal attributes (15%) and external attributes (28.4%) affect business performance. With regard to individual internal attributes, capabilities fit (2.2%), resources fit(81.5%), changes in business model(70.8%), external capabilities and resources fit(84.7%), government regulations(85.8%) effect on business performance. To sum up the results, the strongest influence was found on government regulations, whereas the least effect was found on capabilities fit on business performance.

3.6. Discussions

The main aim of the study is to find out the factors which influence digital transformation. With the help of literature support, the study found two attributes: internal and external attributes that influence digital transformation. Tarutė *et al.* (2018) reported similar observations in their experiments. Internal attributes influence digital transformation comprises capabilities fit, resources fit, and changes in the business model. External factors like capabilities fit followed by resource fit, government regulations, and industry-related attributes. Both internal and external attributes are assessed with the help of resource-based view theory, whose intention was to assess whether technology had given competitive benefits to the business performance (Nwankpa, Roumani 2016; Shahbaz *et al.* 2018). However, the study finds that the most important technology used for digital transformation was the internet of things. The observations also agree with the results reported by Shin (2017). Also, the

results contrast with Mubarak et al. (2019) findings that big data, cyber-physical systems, and interoperability had a statistically significant technology for digital transformation. Results of the study should be interpreted with caution as external attributes have influenced more than internal attributes on business performance in India. Similar observations were observed in Tarutė *et al.* (2018)

3.7. Implications

The results obtained from the study may have implications for enriching the digital transformation of small-medium enterprises in India.

From the analysis, the study found that minor importance is given to capabilities fit. To enrich capabilities, fit, and integrate information technology into operations, collaborating the technology within departments can direct the organization to achieve business needs effectively.

The analysis portrays that there was an effective utilization of resources fit by SMEs in India. To enrich the organization to gain a competitive advantage, it should be advisable to have a highly authorized team who should have a guaranteed communication and sustainable relationship among suppliers, customers, and stakeholders. Also, the highly authorized team should find out the necessary competencies of employees in the form of social or cognitive and procession form

Small and medium enterprises had made necessary changes in the business model, but statistically, it was 70%. To upsurge the growth in changes in the business model, it should be advisable to set up a model that should integrate with a value proposition, which can improve customer interaction and collaboration through adjustments with suppliers and customers. External capabilities and resources fit can be improved through having an excellent cordial collaboration with different organizations. Creating trust between suppliers, customers and stakeholders can increase the success of the organization.

CONCLUSION

The study aims to find out the factors that influence digital transformation among SMEs in India. With the help of literature support, the researcher found two factors: internal attributes and external attributes. Internal attributes include capabilities fit, resources fit, and changes in the business model. External attributes include external capabilities, and resources fit, and government regulations. The study has framed the objectives of that relationship between digital transformation factors and business performance. With the help of correlation, the study finds that external attributes strongly correlated, whereas internal attributes had a moderate association with business performance. The second objective is that how digital transformation attributes influence business performance in India. The study has applied simple linear regression analysis to address the objective, which indicated that external attributes had more impact than internal attributes on business performance.

Concerning individual internal and external attributes, the most decisive influence was found on government regulations, whereas the minor effect was found on capabilities fit on business performance. Finally, the study concludes that external attributes played a crucial role in influencing business performance in India. Giving more importance to external capabilities and resources fit and the SME have to follow the regulations properly can accelerate business performance in India.

Scope for further research: From the findings of the study, the researcher observed that the importance was given more to internal attributes, whereas less importance was given to external attributes. But external attributes are playing a pivotal role in influencing business performance. Hence, further improvements are expected to result in an improved understanding of external attributes and their impact on business performance. Presently, quantitative research methods are applied to determine the outcome in a statistical form. Future developments are intended to adopt qualitative research methods to know the external attributes in a detailed form. Also, some aspects of external capabilities and resource fit and government

regulations can be left as an area for future work. The present study was limited to SMEs but could be extended to the startups in India.

Limitations of the study: Digital transformation was assessed in Southern parts of Tamilnadu, including four states, namely Tamilnadu, Kerala, Karnataka, and Andhra Pradesh. Out of four states, only a small sample size has been taken into account. The outcome derived out from the study did not represent the whole population.

Secondly, the study evaluated digital transformation in a general way. There is no specific transformation like social mobile or analytics, or cloud-induced change did not consider. Hence, generalization of outcome may arise if the study has included the above-stated technology.

Lastly, the study outcome is a representation of the IT, E-commerce, and retail sectors. The outcome could apply to the group and is potentially not an accurate representation of the single nature of the industry.

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APPENDICES

Appendix. 1 Questionnaire

I am researching "Digital transformation of Small and Medium Enterprises in India." I would like to hear from you about how digital transformation induces SMEs' business performance in India. The survey will take only 5 minutes, and your responses are completely anonymous. We appreciate your input!

1. Age

2. Gender
a. Male
b. Female

3. Education qualification
a. Below SSLC
b. HSC
c. Undergraduates
d. Post graduates
e. Others

4. Nature of industry

5. Work experience

Digital transformation

6. Are you adopt digital transformation in your business?
a. Yes
b. No

7. If yes, what are the drivers which induce the adoption of digital transformation?
a. Customer behavior

b. Customer expectations

c. Digital shifts in the industry

d. Changes in the competitive landscape

8. Which of the following technology do you use for digital transformation?

a. Big data

b. Internet of things

c. Cyber-physical system

d. Interoperability

9. What are the benefits do you derive from digital transformation?

a. Innovation

b. Cost-saving

c. Productivity

Capabilities fit

10. Digital transformation requires developing a wide range of capabilities that will vary based on business

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

11. It integrates information technology into operations and collaboration among enterprise department and reconfiguration agility

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

12. It integrates technological and strategic development

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

Resource fit

13. A dedicated liaison device which signifies coordination and promotion of new structure of the enterprise

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

14. Guaranteeing communication and sustainable relations among enterprise interface existing service platforms and organizing model

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

15. It requires highly authorized teams

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

16. The role of the team is to identify the competencies requires for human resources which seek successful digital transformation

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

Changes in business model

17. Another internal factor that requires changes in the current business model

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

18. It relates to value proposition and relations with customers

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

19. It helps to reshape the value proposition of the existing business model

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

20. It improves customer interaction and collaboration through adjustments and changes made in the existing model

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

External capabilities and resource fit

21. External capabilities include collaboration and customization, which considers as crucial attributes

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

22. It is a recursive process where two or more can work together to achieve the goals

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

23. Collaboration considered as the facilitator of digital transformation in SME

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

24. Customization directs the ability to differentiate products or services based on needs dictated by the market.

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

25. Existing strategic alternatives, confidence in the reliability of another organization is vital to reap the success of the digital transformation

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

Government regulations

26. Small business needs proper policies, programs and support from the government to implement digital transformation successfully

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

27. The government needs to enhance training and digital course for SME

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

28. Government offers digital service, digital technologies, and tools

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

29. Government should offer funding or subsidies for digital transformation for SME

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

Business performance

30. Digital transformation increases business performance in terms of crisis

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

31. Digital transformation provides an organization with a chance to rethink customer value to gain a competitive advantage

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

32. Digital transformation increases harmony among business in generating improvement in products, services, and business model

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

33. Digital transformation increases SME financial performance

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

34. Productivity increases which in turn it helps to meet customer need and requirements

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

35. It increases product sales, market position and market share

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

Appendix. 2 Tables

Table 10. Demographic profile of respondents

Particulars		Frequency	Percent
Age	20 to 24 years	25	45.5
	24 to 28 years	10	18.2
	28 to 32 years	20	36.4
Gender	Male	35	63.6
	Female	20	36.4
Education qualification	HSC	10	18.2
	Undergraduates	15	27.3
	Postgraduates	30	54.5
Nature of industry	IT	25	45.5
	E-Commerce	15	27.3
	Retail	15	27.3
Work experience	2 to 4 years	15	27.3
	4 to 6 years	20	36.4
	6 to 8 years	10	18.2
	Above 8 years	10	18.2
Total		55	100.0

Author: own calculation

Table 11. Drivers induce the adoption of digital transformation

Particulars		Frequency	Percent
Drivers induce the adoption of digital transformation	Customer behavior	15	27.3
	Customer expectations	10	18.2
	Digital shifts in the industry	25	45.5
	Changes in the competitive landscape	5	9.1

Author: own calculation

Table 12. Technology do you use for digital transformation

Particulars		Frequency	Percent
Technology do you use for digital transformation	Big data	15	27.3
	Internet of things	30	54.5

	Cyber-physical system	5	9.1
	Interoperability	5	9.1

Author: own calculation

Table 13. Benefits derive from digital transformation

Particulars		Frequency	Percent
Benefits derive from digital transformation	Business performance	10	18.2
	Cost-saving	20	36.4
	Productivity	25	45.5

Author: own calculation

Table 14. Capabilities fit

Particulars	Mean	Standard deviation
Digital transformation requires developing a wide range of capabilities that will vary based on business	2.4364	1.25851
It integrates information technology into operations and collaboration among enterprise department and reconfiguration agility	2.9091	1.41778
It integrates technological and strategic development	2.7636	1.41374

Author: own calculation

Table 15. Resource fit

Resources fit	Mean	Standard deviation
A dedicated liaison device which signifies coordination and promotion of new structure of the enterprise	2.6364	1.07778
Guaranteeing communication and sustainable relations among enterprise interface existing service platforms and organizing model	2.5273	1.24506
It requires highly authorized teams	2.7455	1.27973
The role of the team is to identify the competencies requires for human resources which seek successful digital transformation	2.9273	1.46382

Author: own calculation

Table 16. Changes in business model

Changes in business model	Mean	Standard deviation
Another internal factor that requires changes in the current business model	2.7273	1.07934
It relates to value proposition and relations with customers	2.5636	1.33005
It helps to reshape the value proposition of the existing business model	2.7273	1.35338
It improves customer interaction and collaboration through adjustments and changes made in the existing model	2.9818	1.43360

Author: own calculation

Table 17. External capabilities and resource fit

External capabilities and resources fit	Mean	Standard deviation
External capabilities include collaboration and customization, which considers as crucial attributes	2.8909	1.28629
It is a recursive process where two or more can work together to achieve the goals	2.8545	1.32523
Collaboration considered as the facilitator of digital transformation in SME	3.2364	1.37388
Customization directs the ability to differentiate products or services based on needs dictated by the market	2.6909	1.30345
Existing strategic alternatives, confidence in the reliability of another organization is vital to reap the success of the digital transformation	2.8182	1.27789

Author: own calculation

Table 18. Government regulations

Government regulations	Mean	Standard deviation
Small business needs proper policies, programs and support from the government to implement digital transformation successfully	2.5091	1.33156
The government needs to enhance training and digital course for SME	2.8364	1.38462
Government offers digital service, digital technologies, and tools	2.8000	1.44530
Government should offer funding or subsidies for digital transformation for SME	3.0727	1.38584

Author: own calculation

Table 19. Business performance

Business performance	Mean	Standard deviation
Digital transformation increases business performance in terms of crisis	3.1273	1.27736
Digital transformation provides an organization with a chance to rethink customer value to gain a competitive advantage	2.8727	1.24803
Digital transformation increases harmony among business in generating improvement in products, services, and business model	2.9091	1.39141
Digital transformation increases SME financial performance	2.7273	1.35338
Productivity increases which in turn it helps to meet customer need and requirements	2.6909	1.43853
It increases product sales, market position and market share	3.2000	1.22323

Author: own calculation

Appendix. 3 Non-exclusive license

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