Digitalisation in Select Organised Retail Sector in Kerala

Thesis submitted to the University of Calicut in partial fulfilment of the requirements for the award of the Degree of

DOCTOR OF PHILOSOPHY IN COMMERCE

By

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Under the guidance of

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I, Ninikala K., hereby declare that the thesis entitled "**Digitalisation in Select Organised Retail Sector in Kerala**" submitted to the University of Calicut in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy in Commerce is a record of the bonafide research work done by me, under the supervision and guidance of **Dr. B. Johnson,** Professor & Dean. Director, School of Business Studies, University of Calicut, and it has not formed the basis for the award of any degree, diploma, associateship, fellowship or other similar title to any candidate in any University before.

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Ninikala K.

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AEPS	-	Aadhaar Enabled Payment System
AGFI	-	Adjusted goodness of fit Index1
ANOVA	-	Analysis of Variance
ATM	-	Automated Teller Machine
B2C	-	Business-to-Consumer
BHIM	-	Bharat Interface for Money
CFA	-	Confirmatory Factor Analysis
CFI	-	Comparative Fit Index
CPI	-	Consumer Price Index
CR	-	Critical Ratio
CSCs	-	Common Service Centres
CV	-	Coefficient of Variation
DeiTY	-	Department of Electronics and Information Technology
Df	-	Degrees of Freedom
DPI	-	Digital Payment Index
DT	-	Digital Transformation
EFA	-	Exploratory Factor Analysis
FDI	-	Foreign Direct Investment
FFV	-	Fresh Fruit and Vegetable
FY	-	Financial Year
GFI	-	Goodness of Fit Index
GMV	-	Gross Merchandise Value
GPs	-	Gram Panchayats
GRI	-	Global Reporting Initiative

GST	-	Goods & Service Tax
HR	-	Human Resource
HRM	-	Human Resource Management
IBEF	-	Indian Brand Equity Foundation
IMPS	-	Immediate Payment Service
IoT	-	Internet of Things
IPPB	-	India Post Payments Bank
JAM's	-	Jan Dhan-Aadhaar-Mobile
KMO	-	Kaiser- Meyer-Oilkin Measure of Sampling Adequacy
KS test	-	Kolmogorov-Smirnov test
KYC	-	Know Your Customer
Mbps	-	Megabits per Second
MoSPI	-	Ministry of Statistics and Programme Implementation
MPS	-	Mean Percentage Score
NCR	-	National Capital Region
NEFT	-	National Electronic Fund Transfer
NFI	-	Normed Fit Index
NPCI	-	National Payment Corporation of India
OTP	-	One Time Password
PIN	-	Personal Identification Number
PMGDISHA	-	Pradhan Mantri Gramin Digital Saksharta Abhiyaan
PoS	-	Point of Sale
RBI	-	Reserve Bank of India
RMR	-	Root Mean Residual

RMSEA	-	Root Mean Square Error of Approximation
ROI	-	Return on Investment
RTGS	-	Real Time Gross Settlement
SBI	-	State Bank of India
SEM	-	Structural Equation Modelling
SEO	-	Search Engine Optimization
SME	-	Small and Medium sized Enterprise
Sq. ft.	-	Square Feet
TDS	-	Tax Deducted at Source
TLI	-	Tucker - Lewis Index
UIDAI	-	Unique Identification Authority of India
UID	-	Unique Identification Number
USSD	-	Unstructured Supplementary Service Data
UPI	-	Unified Payment Interface

CHAPTER 1

INTRODUCTION

1.1 Introduction

The digital economy is a portmanteau of digital computing and economy, and it is an umbrella term that describes how Internet, World Wide Web, and blockchain technologies are transforming traditional brick-and-mortar economic activities (production, distribution, trade) (Bukht & Heeks, 2017). According to (Dahlman, Mealy, & Wermelinger, 2016) "The digital economy is the amalgamation of several general-purpose technologies (GPTs) and the range of economic and social activities carried out by people over the Internet and related technologies. It encompasses the physical infrastructure that digital technologies are based on (broadband lines, routers), the devices that are used for access (computers, smartphones), the applications they power (Google, Salesforce) and the functionality they provide (IoT, data analytics, cloud computing)". (OUP, 2017) defines digital economy as "an economy which functions primarily by means of digital technology, especially electronic transactions made using the Internet". The digital economy is regarded as the third industrial era. The digital revolution, also known as Internet of Everything (IoE) or The Internet Economy, is expected to generate new market growth, jobs, and opportunities. The digital economy entails more than the simply shifting of business transactions from offline to online; it is about facilitating economic innovations and transforming various aspects of business transactions and interactions. The three essential components of digital economy are e-business infrastructure, e-business and e-commerce (Rathi, 2020).

The incorporation of computer-based technologies into an organisation's products, processes, and strategies is known as digital transformation. Organisations embark on digital transformation to engage better and serve their workforce and customers, thereby improving their competitiveness. Innovation, Collaboration, Experience, Infrastructure Modernization, Operational Excellence, and Information and Insights are the key components of Digital Transformation. Digital transformation is the use of technology to improve enterprise performance significantly. It entails integration of digital technologies into all aspects of a business, resulting in fundamental changes in how businesses operate and provide value to customers. The retail industry has seen a significant change in the way businesses operate. Those who were previously restricted

to their physical store have also embraced this change and moved online (Bhagat, 2022).

The Digital India initiative is the Government of India's flagship programme. Its emphasis is on transformation - on realising IT and also on utilizing technology to enable change. It is an umbrella programme that spans across multiple departments. The Digital India Mission's goal is to provide high-speed internet in all Gram panchayats and easy access to Common Service Centres throughout the country. Digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, and digital health and wellness are the important components of Digital India. Analysts estimate that the Digital India plan could increase GDP by $1 trillion by 2025. It has the potential to play a significant role in macroeconomic factors such as GDP growth, job creation, labour productivity, growth in a variety of businesses, and revenue leakages for the government. However, there are numerous impediments to its successful implementation, including digital illiteracy, poor infrastructure, slow internet speed, a lack of coordination among various departments, taxation issues, and so on (Cypher Learning). Technology is at the heart of business strategy thanks to digital transformation. This approach has the potential to reduce operating costs and inefficiency. It may even alter the course of your company. It is easier to achieve future goals with a unified business and technology model.

Digitalisation is the use of digital technologies to alter a business model and generate new revenue and value. It is the process of transitioning to a digital business. The generic term for the Digital Transformation of society and the economy is digitalisation. It describes the transition from an industrial age dominated by analogue technologies to an age of knowledge and creativity dominated by digital technologies and digital business discoveries. Digitalisation has also changed the way information is distributed across the globe giving businesses a reason to expand beyond national markets into other markets, thereby leading international markets and enhancing global interconnection. The main benefits of digitalisation are that it increases your company's competitiveness, makes employees more productive, and provides a better

customer experience. However, effective implementation of new technologies takes time and can cause an upheaval and uncertainty for employees.

Digital transformation is a driving omnichannel experience in the retail industry, catering to customer needs and expectations through shorter attention spans with instant gratification, personalized push notification, customized recommendation by forecasting market trends, strategic analysis, location-based marketing, and anticipatory shipping for fulfilment conveniences with an integrated view of consumer behaviours (Shastri, 2021). The Global Digital Transformation Industry in Retail was valued at USD 143.55 billion in 2020 and is expected to grow at an 18.2% CAGR to USD 388.51 billion by 2026 (2021 - 2026). The introduction of digital technologies for information collection, storage, analysis, and distribution has created new dynamics in the retail market's digital transformation. Because of the increase in global liberal trade policies and end-users, these digital technologies have created numerous new opportunities for vendors serving the market. The rapidly rising internet usage is a key factor driving market growth over the forecast period. Increased use of smart devices and sequential technological advancements will open up opportunities for market growth by making this technology more accessible to small and medium-sized retail organizations. The developing economies of Asia-Pacific, the Middle East, and Latin America have been critical in driving market growth, particularly with consumers' increasing purchasing power in China, India, and Saudi Arabia, among others (Report).

1.2 Significance of the Study

Digital India is an initiative of the government with an aim to transform the country into a digitally empowered and knowledgeable economy. It aims to improve online infrastructure and increase internet accessibility among citizens thereby, empowering the country to become more digitally advanced. India is one of the largest and fastest-growing digital consumer markets, with over 500 million internet users. Technology is poised to rapidly and dramatically alter nearly every sector of India's economy as digital capabilities improve and connectivity becomes more widespread. This will

almost certainly have a significant economic impact as well as alter the nature of work for millions of Indians.

Digitalisation has become one of the most important trends in the past few years in India. Almost all the business sectors are under digital transformation stage. In order to identify the extent to which the digitalisation is effective in the organised retail sector and also to identify the level of digitalisation in the organised retail sector researcher conducted this study. The present study aims to determine the factors that influence the retail outlets towards digitalisation. It tries to identify the challenges faced by the retailers during the digitalisation period and the boons of digitalisation.

1.3 Scope of the Study

Digital technologies have the potential to promote more inclusive and sustainable growth by spurring innovation, generating efficiencies and improving services. They are also an important tool in assisting countries in confronting and recovering from the COVID-19 pandemic, which has disrupted economies and societies worldwide (OECD). The incorporation of digital technologies into business social processes with the goal of improving them is known as digitalisation. Upgrading a business model, using digital technology to improve industrial processes, and advancements in communication and information technology are all examples of digitalisation. Most businesses are now embracing new technologies in order to remain competitive and relevant. Better manufacturing processes, faster product delivery to market, shorter response times to customer feedback, improved insights, end-to-end integration of entire supply chains, and lower production costs are all advantages of digitalisation. Businesses that are properly digitalised can benefit from new customer acquisition channels, improved working conditions and employee retention, better decision-making, a greater willingness to innovate, and better teamwork. (Scrive).

With the advancement of technology in the twenty-first century, the retail sector is undergoing a global revolution, and the entire credit goes to digitalisation. In recent years, the retail industry has undergone dramatic changes in order to improve business operations and become more customer-oriented. Both online and offline retail markets are attempting to eliminate limitations in their services by utilising various advanced

technologies and creating personalised customer experiences (Bansal). According to (Statista, 2022), the retail market in India is expected to be worth $1.7 trillion. Several factors, including changing customer dynamics, trends, and demands, have made it necessary for the retail industry to adopt innovative approaches and adapt to technologically advanced requirements as quickly as possible. The retail industry is transitioning to a more advanced digital scenario and environment in order to carry out operations in a more personalised manner.

Currently, the retail industry is expanding beyond mobile and connecting more devices. As faster technology and smartphones have made internet shopping available at people's fingertips, technological advancement has completely changed the mode of shopping. With digital transformation, the in-store shopping experience has also changed, with several stores providing screens or iPads to view product specifications and provide information for marketing lists and customer relationship management. The changing nature of the retail industry necessitates the incorporation of advanced technologies into operations in order to maintain a competitive edge in the market. The digital transformation of services is constantly evolving as new technologies are introduced. These technologies have made significant contributions to change the retail industry dynamics and greatly simplifying operations (Bansal).

The Indian retail market is one of the top five retail market in the world in terms of economic value. The Indian retail market is largely unorganised. However, over the next 3-5 years, the share of modern retail (including e-commerce) will rise to 30-35%, while traditional retail will fall to 65-70% (InvestIndia). In India, the retail industry was largely unorganised, consisting of drug stores, medium and small grocery stores. The majority of organised retailing in India has only recently begun and is concentrated primarily in major cities. The expansion of the Indian organised retail market is primarily due to changes in consumer behaviour. This shift has occurred in the consumer as a result of increased income, changing lifestyles, and favourable demographic patterns. The consumer now prefers to shop at a location that offers food, entertainment, and shopping all under one roof. This has significantly boosted the Indian organised retail market (mapsofindia). The study is focused on digitalisation in the organised retail outlets and is limited to state Kerala, as it is the first digital state in

the country. As per the retail industry update (RAI, 2020), within the organised retail sector, food and grocery holds 65% of retail sector, Apparel (10%), Consumer electronics (9%), jewellery and accessories (7%), Health & Entertainment (4%), Home décor and furnishing (3%) and Beauty & personal care (2%). It is limited to food & grocery, apparel and consumer electronics- the three major contributors to the organised retail sector. It includes only the retail outlets registered before 2018.

1.4 Statement of the Research Problem

Indian retail industry has emerged as one of the most dynamic and fast- paced industries due to the entry of several new players. India is world's fifth largest global destination in the retail space. The government of India has taken various initiatives to improve the retail industry in India. One of the important initiatives of the Indian government to improve online infrastructure, digital services, internet accessibility of the economy was 'Digital India'. Many industries including retail sector started to use digital methods in various operational levels like purchase, sales, marketing, payments etc. The government has also introduced UPI (Unified Payment Interface) as a real-time payment system.

The concept of digital transformation in retail is based on customer needs and expectations. Retailers consider how they can use technological innovations to discover new ways to drive revenue and develop innovative business models when deciding to go digital. In the earlier period retail sectors used to provide advertisement in newspaper and television to market their products but now they have also started mobile marketing, social media marketing etc. The customers used to make cash payments there were no PoS, UPI, e-wallets etc. The customers used to visit the shops and purchase the products directly. Retailers did not have any website or mobile apps for sale. But now the situation changes, retail sector started opting technology in all the field. What are the factors that influenced the retailers to go digital? In which areas are retail outlets are digitalised? Are they digitalised in purchase, sales, marketing, payment, inventory management, customer service, maintaining business records and recruitment of employees? Does digitalisation lead to any economic, technological or

social boons? In order to find solutions for these problems there is a need to conduct research on digitalisation in the organised retail sector.

1.5 Research Questions

The present research work attempts to investigate the following research questions.

1. What are the factors that influence the retail outlets to shift towards digitalisation?
2. What are the boons of digitalisation?
3. What are the challenges faced by the retailers during the digitalisation period?
4. Are there any changes in the digitalisation of different type of retail outlets i.e., Food & Grocery, Apparel and Consumer Electronics?
5. Do the Covid-19 pandemic and lockdown influence the digitalisation initiatives?

1.6 Objectives of the Study

1. To evaluate the factors that leads to digitalisation in the select organised retail sectors in Kerala.
2. To determine the boons of digitalisation in the retail sector.
3. To identify the challenges faced by the retailers during the digitalisation period.
4. To assess & compare the level of digitalisation in Food & Grocery, Apparel & Consumer Electronic retail sectors.
5. To examine the impact of Covid-19 pandemic and lockdown on digitalisation in the retail sector.

1.7 Hypotheses

The hypotheses formulated for the study are as follows

1. H_0: There is no significant difference in the external factors leads to digitalisation among Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
2. Ho: There is no significant difference in the external factors leads to digitalisation with respect to internal factors.
3. Ho: There is no significant difference in the digitalisation of Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
4. H_0: There is no significant difference in the digitalisation of retail outlets with respect to internal factors.
5. H_o: There is no significant difference in the boons of digitalisation of Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
6. Ho: There is no significant difference in the boons of digitalisation with respect to internal factors.
7. H_0: There is no significant difference in the challenges faced by Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
8. Ho: There is no significant difference in the challenges of digitalisation with respect to internal factors.

1.8 Operational Definitions

The important terms used in the study and its operational definitions are given below.

Digitalisation

Digitalisation means the use of digital technologies and digital data to attain the objectives of retail business.

Organised Retail Outlets

Organised retail outlets are the outlets where the trading activities are undertaken by the licenced retailers. It refers to the outlets registered for GST.

Retailers

Retailers are the person who purchase goods from the wholesalers or manufacturers in bulk and sell it to customers in small quantity. They have the direct contact with the customers.

Food and Grocery Retail Outlets

Food and grocery retail outlets consists of retail sale of food products which includes both packed and unpacked food items. It consists of supermarkets, hyper market and discount stores etc.

Apparel Retail Outlets

Apparel retail outlets are the retail stores that purchase clothing and other accessories from wholesalers and manufacturer and sell it to the customers without altering the products.

Consumer Electronics Retail Outlets

Consumer electronic retail stores deals with electric goods and home entertainment products like TV, laptops, mobiles etc.

Boons of Digitalisation

Boons means positive outcomes of digitalisation or benefits of digitalisation.

Challenges

Challenges means challenges faced by the retailers during the digitalisation period.

Level of Digitalisation

Level indicates the mean percentage score of digitalisation in payment, sales, purchase, marketing, maintaining business records, inventory management, customer service and recruitment of employees classified as low, average, above average and high.

Impact of Covid 19 on Digitalisation

Impact means level of improvement on digitalisation due to Covid 19 pandemic and lockdown. The mean percentage scores of level of improvement in digitalisation of marketing, sales, mode of payment, customer service, inventory management, vendor management and customer relationship management are calculated and it is classified as low impact (if MPS is less than 35%), average impact (if MPS is between 35 to 50 %), above average impact (if MPS is between 50 to 75 %) and high impact (if MPS is above 75 %) (Loyd & Abidin, 1985).

1.9 Organisation of the Thesis

The entire research report is divided into eight chapters. The summarized form of all the chapters is given below.

Chapter 1 gives an introduction for the study. This chapter includes significance of the study, scope, statement of the research problem, research questions, objectives of the study, hypotheses, operational definitions and organisation of the thesis.

Chapter 2 deals with literature review. This chapter gives an ample review of the literature related to the study and identified the research gap. Review of literature was conducted under different heads

1) Digitalisation
2) Organised retail sector
    a) Food & Grocery sector
    b) Apparel sector
    c) Consumer Electronics sector
3) Digitalisation in retail sector

Chapter 3 discusses the theoretical framework of the study. The entire chapter is divided into three sections. The first section explains the concept Digital India, Digital Transformation and Cashless economy. The second section deals with Indian retail industry, evolution of retail sector and organised retail sector. The third section deals with Digitalisation in retail sector.

Chapter 4 elucidates the methodology used for the study. It explained research methods, data collection methods, variables, conceptual model, sample design, instrument used for data collection, validity, reliability, normality and data analysis tools.

Chapter 5 shows the data analysis and interpretation of factors lead to digitalisation and levels of digitalisation.

Chapter 6 deals with the data analysis and interpretation of boons of digitalisation and commonly used digital marketing tools, social media platforms and digital payment tools.

Chapter 7 presents the data analysis and interpretation of challenges of digitalisation and impact of Covid 19 pandemic and lockdown on digitalisation.

Chapter 8 gives summary of the study, findings and conclusions.

Chapter 9 includes recommendations, contributions from the study, implications of the study, limitations and scope for further research.

CHAPTER 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

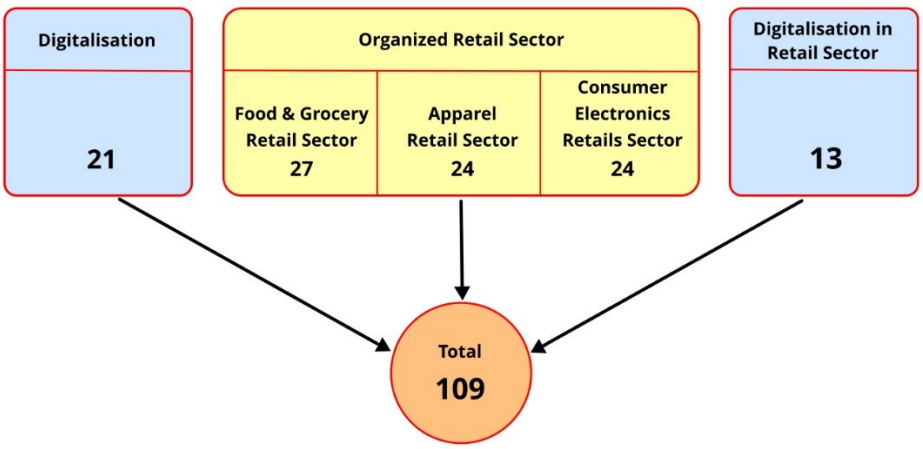
2.1 Introduction

Review of Literature paved a way for a clear understanding of the area of research already undertaken and throws a light on the potential areas which are yet to be covered. Keeping this view in mind, an attempt has been made to make a brief survey of work undertaken in the field of digitalisation in organised retail sector to acquire more knowledge about digitalisation, to identify the variable and to develop a theoretical framework for the study. Many articles, thesis, reports, conference proceedings etc. was reviewed from the period 1998 to 2022. The literature review was conducted after classifying the entire work into three sections.

1) Digitalisation
2) Organised Retail Sector
    a) Food & Grocery Sector
    b) Apparel Sector
    c) Consumer Electronics Sector
3) Digitalisation in Retail Sector

Fig 2.1

Diagrammatic Representation of Review of Literature



2.2 Digitalisation

(Plekhanov & Netland, 2019) developed a framework for digitalisation stages in firms, including analogue, coordinated transition, digitally fragmented, and fully fledged digital enterprise. Transitioning to more advanced stages of digitalisation is primarily driven by organisational reforms that unleash the full potential of digital technologies and align them with business requirements, in-house capabilities, and the external environment.

(Saxena, 2017) identified the impact of demographic and behavioural factors on digital marketing and the attitude of customers towards digitalisation and purchasing electronic goods through digital mode. It also assesses the factors that lead to the growth of digitalisation in India.

(Tigari, 2018) study focused on digitalisation its challenges, opportunities & impact on Indian economy. It depicts a clear picture about digital population, E-commerce sales, digital buyers and their preferred mode of payment during the period of 2016 & 2017. In India active internet users were 462.1 million in 2017, retail e-commerce sales in 2016 was 16073 million and 20059 million in 2017. The number of digital buyers in India shows an increasing trend from 2014 to 2017 and the preferred mode of payment is cash but the usage of UPI, RTGS, card payment also shows an increasing trend. **(Saima Khan, 2015)** discussed about the benefits and need of digitalisation and its impact on economy, employment, social and ecological. **(Aditya Sharma, 2015)**the concept digital India was well explained and also discussed about nine pillars of Digital India, challenges and merits of digital India as well as corporate support and investment. **(RBI, 2017)** this is a preliminary assessment report on demonetisation which explained the impact of demonetisation in different phases. Phase one dealt with macroeconomic impact, phase two with its impact on financial sector, phase three dealt with post demonetisation and changes in financial market, its external impact in phase four, digital payment in phase five and overall assessment in phase six. **(Kavita Rao, 2016)** illuminates the impact of demonetisation on the economy. It dealt with very short-term effect, short term effect with complete replacement and short-term effect with incomplete replacement, transition issues, payment mode and spending behaviour and impact on macro variable.

(Maurya, 2019) dealt with cashless economy and made a comparison to evaluate the changes occurred during the period prior to demonetisation and current status. Analysis reveals that there was a growth of 293% in the use of mobile banking, 226% in the use of M-wallet and there was decline of 100% in the use of paper voucher. **(Kaur, 2017)** described the concept of demonetisation and cashless payment systems in India. It gave a theoretical framework about the aim of cashless payment system as well as the effect of demonetisation on cashless transaction. **(KUMAR, 2015)** discussed about growth pattern of cashless system, various challenges and trends in finance. It also dealt with current monetary system, its drawback, demonetisation of currency and its impact.

(Nesterova Z.V, 2019) analysed the digitalisation business process, current status and trend of economy digitalisation in Austria. A case study was conducted in this area to identify the difficulties in adopting digital technologies. **(Shenglin Ben, 2017)** elucidates digital infrastructure in China and European union EU. It discussed about digital developments, digital divide, government projects, goal, development of digital infrastructure of both China and EU. **(Paivi Parviainen, 2017)** this paper explains digital transformation model of a company and the stages through which transformation process was undergone. It also dealt with the impact of digitalisation on business environment pointed out three viewpoints internal efficiency, external opportunities and disruptive change.

(Sivathanu, 2019) conducted an empirical study with a sample of 766 respondents to evaluate the usage of digital payment system during the period of demonetisation. **(Nayak, 2018)** focused on digitalisation in rural banking, it discussed about the issues and challenges faced during the implementation stage of digitalisation and also tried to identify the areas in which more support is needed for digitalisation.

(Dianne Dredge, 2019) has conducted a study on Digitalisation in Tourism. It was an in-depth study based on both qualitative and quantitative data. Quantitative data was collected from European commission. Three group SMEs, Public administration and Professional association were taken. It tried to identify the challenges faced during digitalisation and how it affects the stakeholders. It also tried to identify the opportunities and threats of digitalisation and also the reason for improving digitalisation.

(Maria Antikainen, 2018) in the study "Digitalisation as an Enabler of Circular Economy" aims to identify the opportunities and challenges of digitalisation in implementing circular economy-based business models and how these challenges are solved. Data required for the study were collected from a workshop which includes representatives from government organisations, NGOs, Industry and Academia and research. The major challenges faced during digitalisation was related to data ownership, they don't feel secured in sharing data, data integration, collaboration between partners and competence requirements. The solutions identified to solve these challenges were co-creation, networking with companies, NGOs etc.

(Jose, 2020) conducted a study on the adoption of cashless payment system among the people in Bangalore to identify the factors that motivated them towards cashless payments, whether the choice of cashless and cash payment changes according to the demographic characteristics of the customers.

(Deshmukh, 2020) aims to examine the digital banking services and its growth in Cooperative banks, digital technology used by them and the problems encountered by the customers while doing digital banking services.

(Chauhan, 2021) studied the concept digital marketing and its impact on Indian firms, tried to identify the factors that influenced the firms to switch to digital marketing, analysed the problems and challenges faced during the adoption stage and also about customers perception towards digital marketing.

(Reddy & S, 2019) examined the shift towards cashless economy and made a pre-post comparison of demonetization and also analysed the impact of digitalisation on Indian economy and the effect of digitalisation.

2.3 Organised Retail Sector

2.3.1 Food & Grocery

(Bill Aull, 2020) discussed about six main actions that the food retailers should take during this pandemic era. Among them two was future oriented and other four need to be done immediately. Food retailers should take measures to protect their employees and customers during this pandemic period for that they can use sophisticated technologies as well as other innovative method which suits the situation and also

ensure business continuity. Retailers should be able to understand local reality and should manage the demand and supply.

(Melton, 2020) a survey of online grocery shoppers was conducted during the period of covid-19 pandemic to identify their concern about in store shopping and also to know their experience of online shopping and reason behind online purchase. Most of the customers preferred this method because they don't want to go to shop and stand in long line during the pandemic period.

(K, Yasmin, 2019) studied the impact of organised food and grocery retailers on the sales performance, customers and employees of traditional retailers. It also evaluated the attitude of customers towards both retail outlets and how far the strategies adopted by them are effective. **(Singla, 2010)** examines the major FFV retail chains in India and its impact on traditional F& V retailers. **(Broadbridge, 2002)** examined the grocery shopping habits of rural communities, the factors considered while choosing the shops and attitude towards shopping from local stores. **(V, 2011)** evaluated the performance ok Kirana shops and how the growth of organized food retail sector affects the unorganized sector.

(Asthana, 2006) examined different type of retail formats in India, evaluated the behaviour of consumers towards different retail formats under food and grocery sector and also tried to identify the retailer's perception towards various retail formats.

(Bhirangi, 2017) observed the changes in the various business practices like Accounting, Inventory, Customer service, promotional tools and HR practise of both organized and unorganized food & grocery and jewellery retailers and also evaluated the impact of the performance of organized retailers on unorganized retailer. **(Chiliya, Herbst, & Lombard, 2009)** examines the marketing strategies adopted by grocery shops owners in Mdantsane also studied the relationship of marketing strategy with the business performance and financial management. **(Huda, Zubayer, & Faruq, 2011)** ascertained the marketing strategy adopted by grocery retail shops and also studied the relationship between location and quality of the product, building customer relationship, promotion, price fixation, preference for branded products and credit sale. **(Paninchukunnath, 2008)** conducted exploratory research on middle class customers of Margin free supermarkets in Kerala. **(Mittal, 2010)** examines the difference in the customer buying behaviour in food and grocery sector and verified the changes in the

buying behaviour of customers with different demographic characteristics and from different geographical areas. **(Zameer & Mukherjee, 2011)** tried to differentiate the behaviour of customers towards Kirana stores and to organized retail stores. It also identified that location, convenience, easy exchange are the factors that attracted the customers towards Kirana store and product choice and efficient store management are the factors that attract the customers towards organized retailers. **(Nair L. , 2011)** evaluated the perception of retailers and consumers about price and quality of the products of both National level brands and Private level brands in Food and Grocery. Identified the factor that influenced to choose Private level brand and most preferred categories in food and grocery. **(G, 2012)** evaluated the buying behaviour of consumers towards food and general store items of both organized and unorganized retail sector and also identified the reason behind the shift of consumers from unorganized retail store to organized retail store. **(Panda, 2013)** evaluated the behaviour of customers visited both organized and unorganized food and grocery retail stores in Odisha and their attitude towards traditional and modern store was also measured. Data was collected from 387 customers and was analysed using Paired sample T-test. **(Narayan & Chandra, 2015)** identified the factors influenced the shoppers to shop food and grocery from modern retail shops. Sample was selected using convenient sampling method and data was analysed using factor analysis.

(Kumar A. , 2017) analysed the instore marketing factor which influenced the buying behaviour of urban consumers of organized food and grocery stores. The data was collected from 193 shoppers from three different cities in India and was analysed using correlation and factor analysis.

(Gomes, 2018) exploratory research was conducted among food and grocery retailers of organized sector to identify the factors that influence the consumers to buy the products and techniques used by the retailers to attract the consumers. The study also evaluated the changes in the buying behaviour customers during the last five years. Convenient sampling method was adopted to select the sample from consumers and retailers and the data was analysed using Factor analysis, Multiple regression and ANOVA.

(Reddy P. V., 2015) aims to identify the factors lead to customer satisfaction of food and grocery stores and also whether these factors are able to predict the customer

satisfaction of upgrades stores. It also measured the behavioural outcomes of customer satisfaction.

(Chaudhuri, 2018) tried to identify the attributes that can measure service quality and evaluate the gap between actual and expected service quality of customers in organized grocery stores. It also evaluated whether the perception of customers about service quality, loyalty, trust, brand equity etc. of different forms of retail sector differ or not and the perception of customers from different demographic groups may differ or not.

(Rama Krishna Prasad, 2011) evaluated the growth and development of food and grocery retail sector and examined the effect of socio-economic and demographic characteristic of consumers, effect of temporal aspect, store format aspect and situational factors on retail format patronage behaviour.

(Sathya, 2013) determined the factors that influenced the customers to choose private level brands and identified the most preferred food and grocery product of private level brands. It also analysed the perception related to consumer factor, brand sensitivity and brand loyalty.

(Hemalatha, 2011) conducted qualitative research on organized food and grocery sectors in Bangalore. The study was divided into three-part; first part was related to growth and development of organized retail sector which was analysed using secondary data. Second part dealt with the challenges and issues faced by the employees, competitors etc. and third part was related to the prospects of food and grocery sector which was done through Delphi Technique.

(Gupta A. , 2015) identified the productivity factors and its impact on grocery stores. Measured the changes in the productivity according to the changes in the demographic factors and studied the relationship between customer experience and productivity.

(Nair H. K., 2013) determines the perception of customers about the service quality rendered by organized Food and Grocery retailers in Cochin and identifies various dimensions of service quality and how it influences the level service quality.

(Kumar A. , 2013) tried to identify the most preferred retail formats of food and grocery in Punjab. Evaluated whether the choice of retail formats varies according to consumers demographic characteristic, store attribute and consumers psychographic factors.

2.3.2 Apparel

(Stoel, 2004) in the study focussed on various dimensions of website quality of an apparel retailers and how these affect the consumer satisfaction. Data was collected from 273 female online shoppers and tried to identify the most significant predictors of consumer satisfaction.

(Ji Hye Park, 2002) studied on internet-based apparel shopping and it was based on the information available from the US apparel regarding online shopping. It focussed on the quality of content in their websites, availability of different kinds of product, customer services etc.

(Katelyn Fulton, 2013) main purpose of the study was to identify the sustainable initiatives undertaken by the apparel retailers on internet as well as the initiatives in supply chain based on GRI. Content of the selected websites were analysed and it was found that most of the companies focused on environmental and social aspects which were specified in Global Reporting Initiative (GRI).

(Hye-Shin Kim, 1998) this study depicts the environmental concern of apparel industry. They developed a model to learn how the environmental issues of apparel sector is related to general environmental issues?

(Hye-Shin Kim, 2006) the study analysed the content in the websites of selected apparel retailers like their product categories, online purchase etc. The main aim of the study was to know more about virtual communities hosted by apparel retailers. It was found that most of them were selling their products, they used message board tools and few had registration and membership policies.

(Tandon, 2020) Due to covid pandemic lockdown, apparel retailers faced 40-45% decline in their revenue in 2020 but by the second half of the financial 2021 they are expecting a demand recovery. Now home consumers have little demand for formal and occasional wear but summer season sale, festival season sale etc. will boost up this sector. By the third quarter they are expecting that apparel sales will touch 80% of pre-covid sales. Companies are now investing in digital platforms; they are modifying their websites & developing apps to increase online sales.

(Bean-Mellinger, 2019) discussed about the products that comes under the category of apparel retail sector. It also explained about amazon effect and how the changes in the lifestyle of consumers affect the apparel retail sector.

(Aggrawal, 2010) study focussed on consumers buying behaviour towards branded and unbranded products also verified whether demographical factors influenced their buying behaviour. It also evaluated the effect of pricing, advertising on consumers perception and also evaluated the relationship between culture and consumer perception.

(Mai, Hao, & Huong, 2016) the study tries to identify the role of social media especially Facebook in apparel retail sector. An online survey of Facebook users who follows apparel retailing pages was conducted to identify their perception towards this concept. The three main factors of this study were volume, quality and credibility of information in the respective Facebook pages.

(Joseph Regy, 2019) it clearly depicts the employee's engagement in retail firm and also studied the impact of high-performance work practice on them in apparel manufacturing unit. Factor analysis and regression were used for data analysis.

(Verma & Madan, 2011) conducted exploratory research to identify the main attribute that have an impact on the store image of apparel stores in India. 23 different apparel stores were selected from 3 different cities and was categorized into four retail formats. Data was collected from 345 respondents using systematic sampling method and was analysed using factor analysis and regression.

(Borgaonkar, 2014) aims to identify the functioning of organized retail markets around Pune. The study concentrated only on two sectors; Food and Grocery and Apparel and clothing. Determined the satisfaction level of customers and employees and also evaluated the impact of organized retail stores on small stores.

(P, 2016) conducted descriptive research on the impact of organised retail shops on unorganised shops. Data was collected from both the customers and retailers of organized and unorganized sector using judgement sampling method. The study analysed the opportunities and challenges faced by unorganized apparel retailers, factors that lead to the growth of retail shops and factors that inspired the consumers towards the specific retail shop.

(Suneel, 2018) compared the behaviour of online and offline apparel shoppers and identified the factors that influenced the shoppers to choose a particular store and a brand. It also determined the changes in the patronage behaviour of shoppers of both offline and online apparel industry.

(N, 2019) concentrated on the different aspects of service quality of apparel retail sector and its impact on store image and customer satisfaction and also the influence of demographic factors on the perceived value and customer loyalty.

(Tanwar, 2020) evaluated whether the store atmosphere of apparels influence the buying behaviour of consumers or not. Store atmosphere means ambience of the store which includes various factors like colour, lighting, display etc. and also verified the influence of demographic factors.

(Virabhadrappa, 2018) analysed how the atmosphere of the shops influence the buying behaviour. Studied the association of store image, atmosphere and demographic profile of the customers with that of the purchase decision of customers. It also identified the factors that influenced the customers to purchase apparels from organised retail outlets.

(Chaturvedi, 2017) aims to identify the effectiveness of social media sales promotional measures undertaken by the apparel retailers on the buying behaviour of consumers. It tries to determine which social media platform is more effective, level of changes in the sales due to sales promotional measures in social media.

(Pareek, 2015) studied the impact of visual merchandising on the buying behaviour of apparel consumers and also to identify exterior and interior visual merchandising measures adopted by apparel retailers and which more effective among the customers.

(Salvi, 2019) focused on the sales promotional measures undertaken by the branded apparel shops. It mainly concentrated on two sales promotion method; Buy one get one free and price discount and studied its influence on purchase, quantity purchased, frequency of purchase, brand switching behaviour and store switching behaviour of customers.

(Pandit, 2022) tried to identify the opportunities in the functional areas of apparel retailing and the challenges faced in marketing, HRM and Financial areas. It also identified the factors influence the buying behaviour of customers and the problems faced during purchase.

(Hasan, 2017) discussed about competitive positioning of apparel retail stores based on various factors like store image, product attribute and individual psychographic factors and also to suggest measures to develop competitive positioning of organised apparel retailers in the market.

(Malhotra, 2021) focused on the marketing strategies adopted by organised apparel retailers and its influence on the buying behaviour. It also studied the impact of price, promotion strategies, store location and customer services on the customer satisfaction.

(Chattopadhyay, 2019) examined the evolutionary trend of private level brand and contribution in volume towards total sales of both private level brands and other brands and compared their growth and predicted the trend.

2.3.3 Consumer Electronics

(**Prativindhya**, Impact of digital marketing on consumer Buying behaviour a study of consumer electronics goods, 2020) the study focused on three main aspects; buying behaviour, online shopping and digital marketing. It tried to identify the factors that motivate the consumers to purchase electronic goods, different aspects of online shopping and how the digital marketing affected the buying behaviour. Data was collected from 500 customers and was analysed using factor analysis and regression.

(Adil, 2013) focused on online shopping, it evaluated the buying behaviour of consumers, factors that influenced them to purchase electronic goods online and the barriers faced during online shopping. **(Patel, 2013)** aims to identify the factors that influenced the consumers to buy electronic products from Retail malls.

(M, 2015) evaluates the importance of sales force to apply the concept of emotional intelligence and tried to identify the competencies and impact of electronic goods through e-retailing mode and determined the level satisfaction of customers towards e-retailing and whether it changes according to demographic characteristics of customers and about the problems faced by the customers while purchasing through digital mode.

(Upendra Rao, 2017) tried to assess the e-commerce status and explore new prospects of e-tailing of electronic goods in India that matches global standard. It also evaluated

the opportunities, threats and challenges faced by the Indian retailers during electronic retailing.

(Kumar A. , 2012) evaluated the concept corporate governance and measured the extent to which clause 49 of the listing agreement was followed. A sample of fifteen listed companies from electronic industry was chosen for the study.

(Murali Mohan, 2020) examined the different type of product return policies and attitude of customers towards product return policy and studies the relationship between customers behaviour towards product return and their level of awareness about return policy, customer service and demographic factors of the customers.

(Tomar, 2021) focused on the role of e-marketing strategies on buying behaviour of electronics product. It identifies the factors that increases the need of the products, effect of demographic factors on the consumer buying behaviour and how the brand popularity influences the purchase behaviour.

(Ashadhas, 2018) evaluated the attitude of customers towards house hold electronic goods, their level of satisfaction, source through which they came to know about the product, factors that motivated them to purchase the product, after sales services provided by each unit and availability of spare parts. It also suggested marketing strategies that will help to improve sales performance.

(Baswan, 2017) evaluated the functional, non-functional, demographic and psychographic factors that influence the consumers to buy consumer electronics products and also verified whether there is any difference in the buying process of rural and urban area.

(Priyanka, 2021) focused on online buying behaviour of customers towards electronic products in Haryana. It identified the factors that motivated the customers to purchase the product online and also studied the effect of social media and brand image on consumer buying behaviour.

(Sharma, 2021) analysed the impact of advertisement and brand image of electronic products on the buying behaviour of consumers and identified the factors that influenced the customers to purchase electronic home appliances.

(Kushwaha, 2017) focused on the buying behaviour of urban consumers towards electronic household products in Nepal. It analysed the reasons for cognitive

dissonance, Intensity of anxiety, level of cognitive dissonance and the factors that create agony on the buying behaviour.

(A, 2020) aims to identify the reason and purpose of buying electronic product and the factors that helps in decision making process. It also dealt with the attitude of customers towards online shopping and problems faced by them.

(Mehta, 2021) examined both online and offline buying behaviour of customers towards electronic products. It also evaluated the factors that lead to changes in their buying behaviour and measured whether their behaviour changes according to personal or job profiles.

(Siddiqui, 2020) evaluated the buying behaviour and attitude of customers towards Chinese electronic products, level of awareness of Indian customers about Chinese products, comparison between country image and brand image, and also measures the post purchase behaviour of consumers towards Chinese products.

(S, 2021) conducted descriptive research to identify the influence of social medias, social networking sites on the buying behaviour of consumers of electronic products. Data was collected from consumers, marketers and consultants of electronic products and evaluated the impact of social media advertisement on buying behaviour.

(Kumari , 2019) examined the online buying behaviour of consumer in Tirunelveli district; factors motivated them to purchase electronic products through online, their level of satisfaction, perceived value, risk associated with it, post purchase behaviour and the association between convenience level of consumers and their post purchase behaviour.

(Sublaik, 2021) assessed the behaviour of customers while purchasing the products through online, identified the factor motivated them to purchase electronic products via online, determined the marketing tools used and studied its impact on their buying behaviour; also verified changes in the buying behaviour according to the changes in the demographic characteristics of customers.

(Krishna, 2021) studied the online buying behaviour of customers of selected electronic products; evaluated pre and post buying behaviour, problem faced during online shopping, consumerism, grievance redressal and their level of satisfaction.

(Amanullah, 2020) concentrated on brand loyalty and brand switching behaviour of the customers of mobile brands and evaluated the role of demographic factors in brand

switching. It also studied the impact of perceived value, quality, trust, loyalty and satisfaction of mobile brands on brand switching behaviour.

(Rani, 2021) analysed the green marketing practices adopted by electronic retailers and identified the attitude of consumers and level of awareness about energy saving product. A sample of 400 consumers and 100 electronic retailers was chosen using quota sampling.

(Agarwal, 2021) evaluated online buying behaviour of both rural and urban customers towards electronic products and analysed its growth trend and changes in the online buying behaviour due to Covid-19.

(Jain, 2018) focused on the concept environmentally friendly supply chain management; its different aspects and also observed whether the attitude of customers towards electronic products changes according to changes in shops, employees and demographic factors.

2.4 Digitalisation in Retail Sector

(Kamal Kumar, 2018) discussed about e-retailing, its benefits like more convenient to customers, 24 hours service availability, online interactive platform etc. and its challenges and about the factors that lead to the growth of e-retailing.

(Parasmehak Khokhar, 2020) it was a descriptive study, which aims to identify the attitude of retailers towards digitalisation, digital payment, factors that lead to digitalisation and also to evaluate the future of digitalisation in retail sector. A sample of hundred retailers were selected and a well-structured questionnaire was distributed among them to collect data. As per the results drawn most of the retailers are aware about digitalisation platforms but still, they prefer cash for payment and receipt.

(Mikko Hänninen, 2018) it is a qualitative case study which aim to understand multi sided digital platform and its implications on retail sector. For conducting the study four major players in digital platform Alibaba. Amazon, eBay and Rakuten group were selected. A detailed case description of these companies was done based on their market value, number of employees, revenue, net income and GMV. (Blitz, 2016) tried to identify the strategies and best practices of retail sector to overcome economic

transformation. (Vrechopoulos, 2010) discuss about emerging challenges in electronic retailing and customisation and control of store atmosphere.

(Pandey, 2017) conducted descriptive research on digital transformation of retail sector from the point of view of customers. Customers expects that digitalisation will leads to speed and efficient shopping and main drawback they felt was cyber security, consumer safety and possibility of high fraudulent activities.

(Piroth, -Muck, & Bruwer, 2020) discussed the digitalisation in the online grocery retail sector in Germany. An in-depth interview was conducted with industry experts and found that logistic issue was the key driver of online grocery retailing.

(Majola, 2022) in the article explained the impact of digitalisation on consumer trust and loyalty on the product they purchase online. Data was collected through focus group interview conducted in an online open forum. It was found that trust was the main factor influenced the consumers to purchase online.

(Singh & Rana, 2017) The aim of the study was to discover customer perceptions and the impact of demographic factors on digital payment adoption. Except for education, it was discovered that demographic factors have little influence on digital payment adoption. A person who has studied beyond matriculation and is internet savvy will be more likely to use the digital payment mode. It was also discovered that in areas/regions with a high level of education, such as Delhi NCR and other metropolitan areas, the possibility of accepting digital payments is much higher. The increase in Smartphone users and internet penetration in such areas has also facilitated the adoption of digital payment.

(Dimova, 2021) article explained the changes in the consumer behaviour due to digitalisation and also about the challenges faced by the retailers during digital transformation.

(Hagberg & Jonsson, 2022) conducted an in-depth study on digitalisation in existing business and evaluated it impact on retail industry.

(Alyahya & Faisal , 2021) examines the impact of digital marketing on firm and business performance during the coronavirus pandemic. The study concentrated on business firms who engage in marketing activities through advertising. An online survey was conducted among 100 respondents to determine their perspectives on the impact of digital marketing on business performance. According to the study, many

businesses are using digital marketing during this pandemic. Because the rules to control the spread of the coronavirus do not favour other marketing modes, many businesses have decided that digital marketing is the best option for their marketing needs.

(Bajaj & Chng, 2021) explained retail trends for SME, digitalisation and its barriers faced by SMEs while going digital, different schemes for digitalisation of SMEs etc.

2.5 Research Gap

The first section of this chapter dealt with the studies related to digitalisation. Second section focused on the studies conducted in the area of organised retail sector of food & grocery, apparel and consumer electronics and third part focused on digitalisation in the retail sector. The above-mentioned reviews revealed that good number of studies have been conducted in the area of organised retail sector of food & grocery, apparel and consumer electronics. Most of the major studies were in the area of consumer behaviour, marketing strategy, service quality, socio economic impact, challenges and issues faced by employees, sustainable initiatives, impact of organised retail stores on small stores, comparison of online and offline buying behaviour, store atmosphere, effectiveness of social media, sales promotion measures, impact of visual merchandising, digital marketing, corporate governance, green marketing practices and supply chain management.

There were not much major studies conducted in the area of digitalisation. Many articles were there in the area of challenges, opportunities and impact of digitalisation on Indian economy, concept of digital India, demonetisation, cashless economy, digital transformation, digital payment, digitalisation in tourism, digital banking services and digital marketing. While evaluating the literature specific towards digitalisation in retail sector, studies were conducted in the area of e-retailing, attitude of retailers towards digitalisation, digital transformation, digitalisation of online grocery retail sector and challenges faced by the retailers during digital transformation. But these studies were not specific to Kerala. No comprehensive studies are conducted in the area of digitalisation in the organised retail sector in Kerala. The following research gap is clearly evident.

- Identify the factors both external and internal that influenced the organised retail sector towards digitalisation.
- To identify the level of digitalisation in the different type of retail outlets i.e., food & grocery, apparel and consumer electronics.
- To identify the boons of digitalisation and challenges faced during digitalisation.

CHAPTER 3

THEORETICAL FRAMEWORK OF THE STUDY

THEORETICAL FRAMEWORK

3.1 Introduction

The present study highlights the factors that influenced the retail outlets towards digitalisation, boons and challenges of digitalisation. This chapter gives a theoretical background to digitalisation and an overview to Indian Retail sector. To get a clear picture about the theoretical concepts, this chapter is divided into three sections. The primary section gives an outline of digitalisation in India, second section gives an overview of Indian retail sector and third section incorporates the points relating to digitalisation in retail sector.

Section A

Digitalisation in India

3.2 Digital India- An Overview

Digital India, an initiative of Indian government was launched in the year 2015 with the goal of transforming India into a knowledge economy and society that is enabled by technology. It will also ensure that citizens can access government services online. The vision areas of the concept are: (vikaspedia, n.d.)

- Digital Infrastructure as a utility to every citizen.
- Governance and service on demand
- Digital empowerment of Citizens

The main objective of Digital India Mission is 'Power to Empower'. It also aims to provide high speed internet connection, access to common service center, common unique digital identity, electronic and cashless transaction, cyber security, availability of digital resources, digital government services, digital literacy, documents and certificate available on the cloud etc. (Digital India, n.d.)

Table 3.1

Digital India Initiatives and Current Status

Initiative	Description	Current Status
Aadhaar	It was launched in 2009 to provide every Indian resident with a unique identity or Aadhaar number.	According to the Unique Identification Authority of India (UIDAI), 129 crore residents of India possess Aadhaar as of April 2021.
Digi Locker	It was launched in 2015 to create a cloud-based platform to issue, exchange and verify essential documents or certificates.	As of April 2021, there are ~60.09 million registered Digi Locker users in India.
MyGov	It was launched in 2014 to bring the government closer to the people by providing an interface (online forum) for exchange of ideas.	As of April 2021, there are >171.51 lakh registered members on MyGov.
BharatNet	It was introduced in 2012 (renamed in 2015) to connect all 250,000 Gram Panchayats (GPs) in the country and provide 100 Mbps internet connectivity.	As of November 2020, there were ~146,872 service-ready GPs.
Smart Cities	It was initiated in 2015 to transform all Indian cities into smart cities by leveraging various technologies.	100 cities have been selected for area-based and pan-city development between 2019 and 2023.

Common Service Centres (CSCs)	Under the Digital India programme, CSC 2.0 aims to establish a self-sustaining network of 2.5 lakh CSC centres in Gram Panchayats. Was implemented by DeiTY (Department of Electronics and Information Technology).	As of 2020, there were 255,798 active CSC IDs and 687 districts had CSCs in India.
Digitisation of Post Offices	Under the Digital India programme, the government aims to convert ~150,000 post offices into multiservice centres.	As of February 2020, India Post Payments Bank (IPPB) enabled >1.36 lakh post offices to provide banking services, including access to every Aadhaar-linked bank account, at the customer's doorstep, resulting in ~2.5x increase in rural banking infrastructure.
Universal Access to Mobile	It was launched to provide mobile connectivity to >55,600 villages in India.	As of 2020, ~572,551 villages were provided with mobile and internet connectivity.
Public Wi-Fi Hotspots	It was introduced to develop public Wi-Fi hotspots to allow people to access internet without relying on mobile data.	India's public Wi-Fi hotspots were estimated to increase from 0.3 million in 2019 to 2.1 million in 2021, according to DigiAnalysis.
India Stack	India Stack aims to develop payment-enabled applications, using Aadhaar as the base for authentication.	The government uses JAM's (Jan Dhan-Aadhaar-Mobile) direct benefit transfers for ~317 services. In FY21, it conducted 2.6 billion transactions,

		transferring >US$ 46 billion to beneficiaries.
Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA)	It was launched in 2017 to help people in rural areas become digitally literate. The scheme aimed to cover 6 crore rural citizens by March 2020, achieving ~40% rural households by targeting one member from every eligible household.	As of July 2019, 23,097,324 beneficiaries were registered; of these, 13,491,306 beneficiaries were certified.
e-Health	It was introduced to provide timely and effective healthcare services such as online registrations, payments, reports and claims.	As of February 2021, 420 e-Hospitals were established across India.
E-education	It was started to provide online education in remote and urban areas using technologies such as smartphones, apps and Internet services.	In May 2020, the government launched PM eVIDYA, a programme for multimode access to digital/online education. In FY21, NISHTHA - Phase II was launched at the secondary level to customise modules for online delivery. As per the Union Budget 2021-22, under the NISHTHA training programme, ~ 5.6 million teachers will be trained in FY22.

Source: (IBEF, India Brand Equity Foundation, 2022)

3.3 Digital Transformation

The process of converting analog information into digital form is called as digitization. Digital transformation is a broader concept which examines the way to modify products, processes and businesses through application of digital technology. (Vial, 2019) defined Digital Transformation as "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies". Digital transformations frequently concentrate on enhancing the client experience, utilising digital technology to alter how clients connect with firms and their items, and enhancing client services.

Table 3.2

Definitions of Digital Transformation

Author(s)	Definition
(Liu, Chen, & -Chou, 2011)	Digital Transformation is an organizational transformation that integrates digital technologies and business processes in a digital economy.
(Matt, Hess, & Benlian, 2015)	Digital transformation strategies take on a different perspective and pursue different goals. Coming from business-centric perspective, these strategies focus on the transformation of products, processes, and organizational aspects owing to new technologies.
(Hess, Matt, Benlian, & Wiesböck, 2016)	Digital transformation (also known as digitalization), however, is concerned with the changes that digital technologies can bring about in a company's business model, products, processes and organizational structure.
(Parviainen, Tihinen, Kääriäinen, & Teppola, 2017)	Digital transformation is defined as changes in ways of working, roles, and business offering caused by the adoption

	of digital technologies in an organization, or in the operation environment of the organization.
(Bondar, Hsu, Pfouga, & Stjepandić, 2017)	Digital Transformation is a consistent networking of all economic sectors and as adaption of actors to new circumstances of the digital economy
(Schallmo, Williams , & Boardman, 2019)	The DT framework includes the networking of actors such as businesses and customers across all value-added chain segments, and the application of new technologies. As such, DT requires skills that involve the extraction and exchange of data as well as the analysis and conversion of that data into actionable information. This information should be used to calculate and evaluate options, in order to enable decisions and/or initiate activities. In order to increase the performance and reach of a company, DT involves companies, business models, processes, relationships, products, etc
(Hinings, Gegenhuber, & Greenwood, 2018)	Digital Transformation is the combined effects of several digital innovations bringing about novel actors (and actor constellations), structures, practices, values, and beliefs that change, threaten, replace or complement existing rules of the game within organizations, ecosystems, industries or fields

Source: (Kraus, Durst, Veiga, & Ferreira, 2021)

3.4 Cashless Economy

One of the apparent roles of Digital India is 'Faceless, Paperless, Cashless' economy. The Government of India has given the promotion of digital payments top priority in an effort to formally include all sectors of our nation in the use of these services. The goal is to make digital payments easy, affordable, rapid, and secure for all Indian citizens.

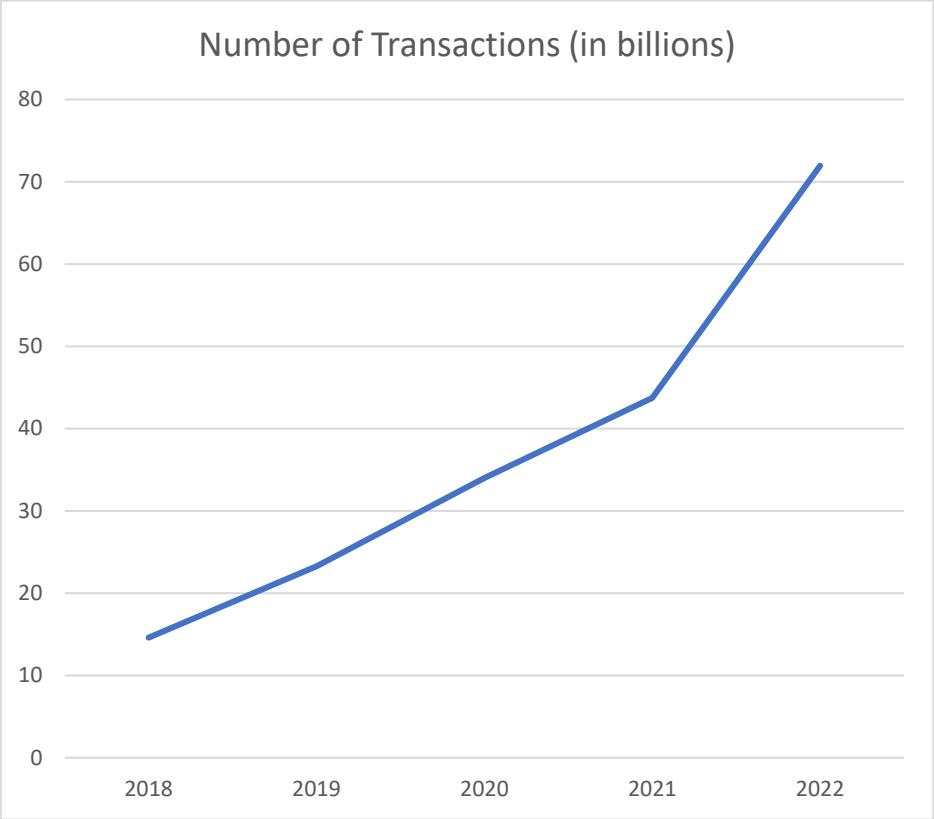
The finance minister announced in the Union Budget 2019-20 that TDS of 2% will be levied on cash withdrawals from a bank account that exceed Rs.1 crore in a year. The goal of our government's announcement was to discourage cash payments transactions between businesses. Furthermore, to promote digital transactions among corporate entities. The government announced that companies with an annual revenue of more than Rs.50 crore will be able to offer low-cost digital payment methods. Furthermore, the state waives any additional or Merchant Discount Rate charges for them and their customers. The Indian government has made an excellent decision to incentivize people to adapt to the emerging cashless economy. Prior to the pandemic, nearly 90% of all transactions in the Indian economy were conducted in cash. India will not be able to go cashless unless the financial sector adapts to digital payments. Incentivizing people is not enough, for India to become a cashless economy. The government must build the necessary infrastructure and technologies (Tranzact, 2021)

3.5 Digital Payment

The transaction that takes place through digital mode is called as digital payment. There will be no physical exchange of money and both the parties will be exchanging money through electronic medium. Digital payments have grown in India in the last two years of the coronavirus pandemic, owing primarily to the widespread use of UPI for daily transactions. The Reserve Bank of India's (RBI) Digital Payment Index (DPI) increased to 349.30 in March 2022, from 304.06 in September 2021. In March 2019, the index was 153.47, and by September 2019, it had risen to 173.49. In July, UPI recorded 6.28 billion transactions worth Rs 10.62 trillion. In Financial Year 2022, UPI processed over 46 billion transactions totaling Rs 84.17 trillion. It processed 22.28 billion transactions worth Rs 41.03 trillion in Financial Year 2021. As a result, the volume and value of transactions more than doubled in a year. The next goal for UPI is to process a billion transactions per day within three or five years (Panda, 2022). The following figure shows the total number of digital payments across India from the financial year 2018-2022.

Figure 3.1

Total number of Digital Payments across India from Financial Year 2018-2022



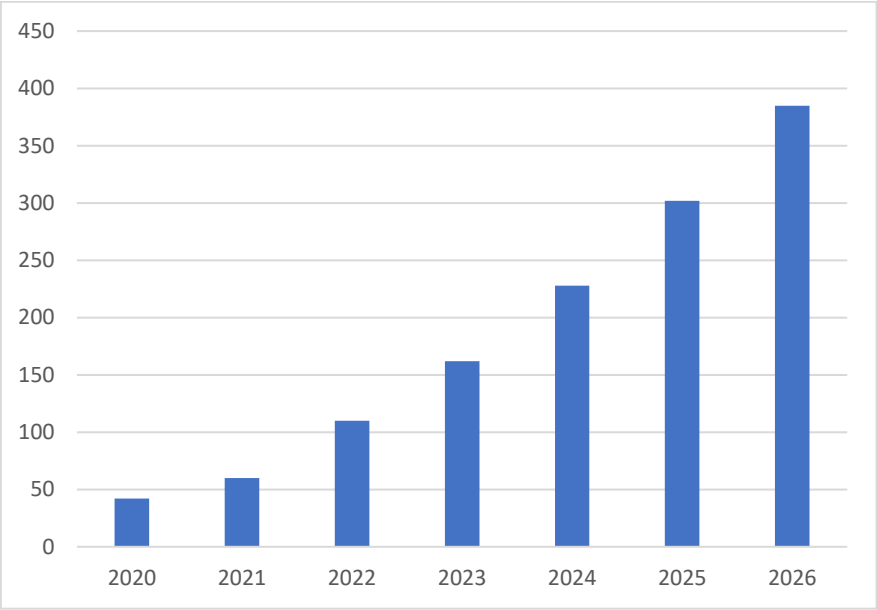
Source: (Statista, Finance & Insurance, 2022)

The above figure shows the total number of digital payment transactions in billions and it shows an increasing trend. In 2018, the total number of transactions was 14.59 billion, it increased to 23.26 billion in 2019, 34 billion 2020, 43.74 billion in the financial year 2021 and in 2022 it reached 71.95 billion.

The value of digital transaction across India in the financial year 2020 and 2021, with the estimates up to 2026 are shown in figure 3.2.

Figure 3.2

Value of Digital Transaction across India in Financial Year 2020 & 2021, with estimates until 2026 (in trillion Indian Rupees)



Source: (Statista, Finance & Insurance, 2022)

In the financial year 2020, the value of digital transactions across India was 42 trillion, in 2021 it was 60 trillion Indian rupees. The transaction value estimated for 2022 is 110 trillion and over 385 trillion by 2026.

3.6 Digital Payment Methods

There are about ten digital payment methods available now. Some methods have been around for more than a decade, while others have only recently gained popularity.

Banking Cards

Banking cards (credit/debit/prepaid) are commonly used by the customers for digital payments. It is more convenient, safe and secured than all other payment modes. For the security of the payment, cards will have two factor authentication i.e., security PIN and OTP. The customers can use the card for online payments, payments through PoS machines, digital payment apps etc.

Unstructured Supplementary Service Data (USSD)

USSD was developed for those sections of India's population who do not have access to proper banking or internet services. Mobile banking transactions are possible without an internet connection using USSD by dialing *99# on any essential feature phone.

Aadhaar Enabled Payment System (AEPS)

Customers can use their Aadhaar-linked accounts to transfer money between two Aadhaar-linked bank accounts under this system. According to NPCI data, AEPS had exceeded 205 million by February 2020. AEPS does not necessarily require any physical activity, such as visiting a branch, using debit or credit cards, or signing a document. This bank-led model enables digital payments at PoS (Point of Sale / Micro ATM) through a Business Correspondent (also known as Bank Mitra) with Aadhaar authentication. The AEPS fee for cash withdrawal at BC Points is approximately Rs.15 (Razorpay, 2021).

Unified Payment Interface (UPI)

Unified Payments Interface (UPI), one of the most widely used digital payment methods in India, brings together multiple bank accounts and their features on a mobile application. Users can link their bank accounts and transact through the app using their preferred account. When compared to other popular options such as NEFT, RTGS, or IMPS, UPI has significantly simplified bank transfers. To transfer and receive money, the Unified Payments Interface used a virtual id as a unique identification, eliminating the need to recollect and enter bank details each time. The Unified Payments Interface (UPI) saw its highest-ever number of transactions in April 2022, amounting Rs 9.83 trillion (Gateway, 2022).

Mobile Wallet

A mobile wallet is a way of carrying cash in digital form. Credit card or debit card information in the mobile devices can be linked to the mobile wallet application, or can transfer money online to the mobile wallet. Smartphone, tablet, or smart watch can

be used to make purchases instead of your physical plastic card. To load money into a digital wallet, an individual's account must be linked to it. Almost all the banks have their own e-wallets like Paytm, Freecharge, Mobikwik, Airtel Money, Jio Money, SBI Buddy, Vodafone M-Pesa, Axis Bank Lime etc. (Cashless India).

Bank Pre-paid Cards

A bank prepaid card is a pre-loaded debit card issued by a bank that is either single-use or reloadable for multiple uses. It differs from a standard debit card in that the latter is always linked to your bank account and can be used multiple times. This may or may not apply to a prepaid bank card. Any customer with a KYC-compliant account can create a prepaid card by simply visiting the bank's website (Razorpay, 2021).

Point of Sale

Traditionally, PoS terminals were those that were installed in all stores where customers made purchases with credit/debit cards. It is typically a portable device that reads bank cards. However, as technology advances, the scope of PoS expands, and this service is now available on mobile platforms and through internet browsers. PoS terminals are classified into three types: physical, mobile, and virtual. Physical PoS terminals are those found in shops and stores. Mobile PoS terminals, on the other hand, operate via a tablet or smartphone. This is advantageous for small business owners because it eliminates the need to invest in costly electronic registers. To process payments, virtual PoS systems employ web-based applications. (Digital Payment, 2022)

Internet Banking

Internet Banking allows customers of a specific bank to conduct transactions and other financial activities through the bank's website. To make or receive payments and access a bank's website, e-banking requires a consistent internet connection, which is referred to as Internet Banking. Most Indian banks now offer internet banking services. It has become one of the most popular methods of conducting online transactions. Every payment gateway in India offers virtual banking. Some of the most popular

methods of internet banking transactions are NEFT, RTGS, and IMPS (Razorpay, 2021).

Mobile Banking

The process of carrying out financial transactions/banking transactions via a smartphone is referred to as mobile banking. With the introduction of numerous mobile wallets, digital payment apps, and other services such as the UPI, the scope of mobile banking is only expanding. Many banks have their own apps, which customers can download to perform banking transactions at the touch of a button. Mobile banking is a broad term that refers to the wide range of services that can be obtained under this umbrella (Razorpay, 2021).

Micro ATM

Micro ATMs are devices used by Business Correspondents (BC) to provide customers with essential banking services. These Correspondents, who could even be local business owners, will act as a "Micro ATM" for instant transactions. They will use a device that will allow you to transfer money from your Aadhaar-linked bank account simply by scanning your fingerprint. Customers will essentially be served by Business Correspondents as banks. Customers must use their UID to validate their identity (Aadhaar). Micro ATMs will support the following essential services: withdrawal, deposit, money transfer, and balance inquiry. The only requirement for Micro ATMs is that your bank account be linked to Aadhaar (Razorpay, 2021),

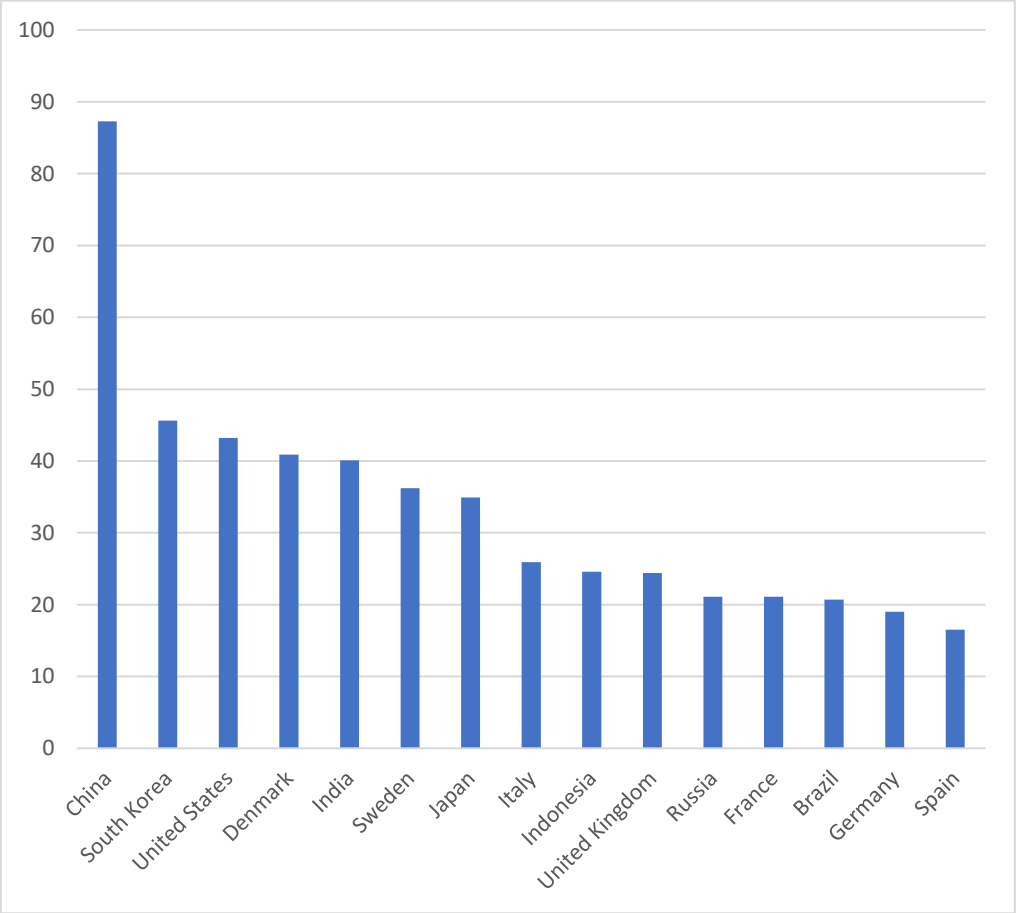
3.7 Mobile Payment App

The use of mobile payment app increased when the government announced demonetization of currency in 2016. Prior to that widely used mobile payment apps were Paytm, PhonePay and Freecharge. But after demonetization number of payment gateways were introduced in the country. National Payment Commission of India (NPCI) launched BHIM app, a unified payment interface in December 2016. Google introduced Google pay in 2017 and many other payment gateways were also launched. The companies like Paytm, PhonePay started to offer digital payment through

government UPI. Recently WhatsApp also open their payment gateway. The following figure shows the country wise adoption of mobile payment apps.

Figure 3.3

Country wise Adoption of Mobile Payment App

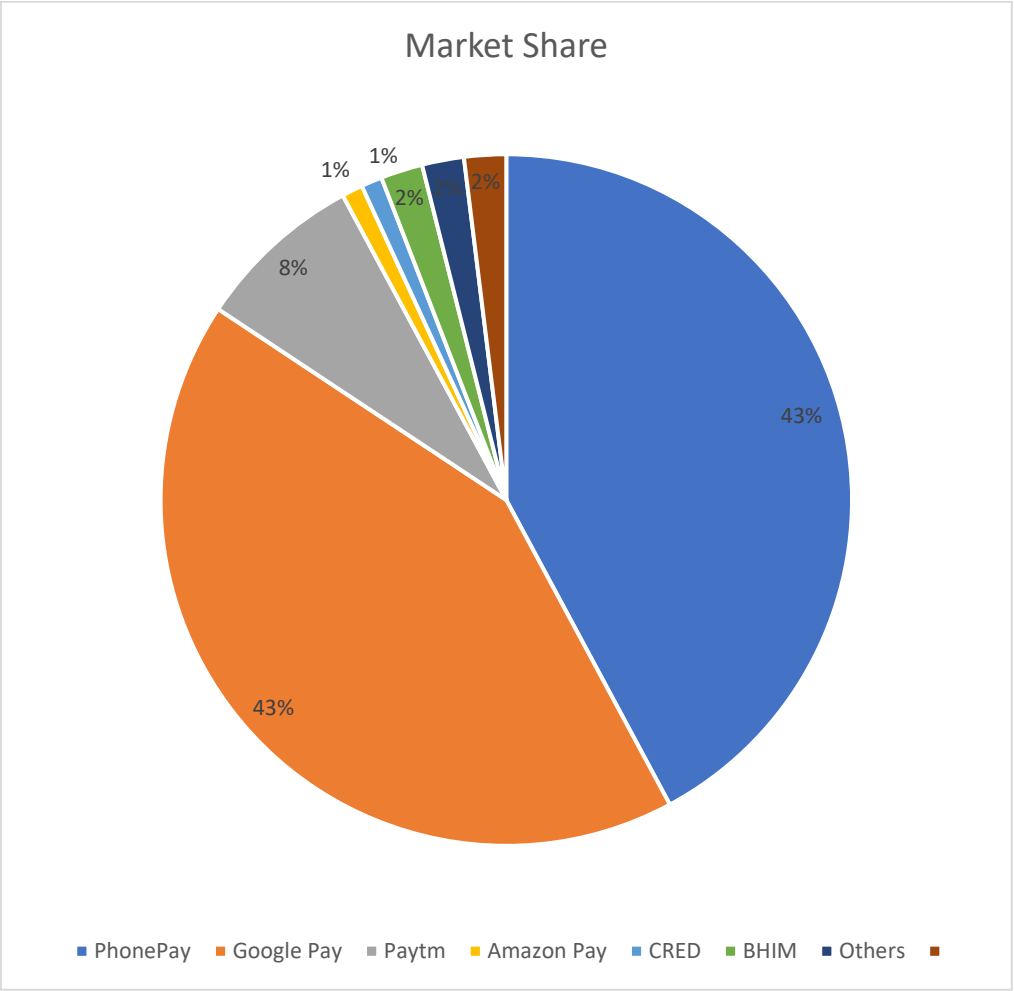


Source: (NPCI, 2022)

China has the highest adoption rate of mobile payment app followed by South Korea, United States, Denmark and India in the fifth position. Figure 3.4 shows the market share of Unified Payment Interface in India as of first half of 2022.

Figure 3.4

Market share of Unified Payment Interface in India as of 1st half of 2022

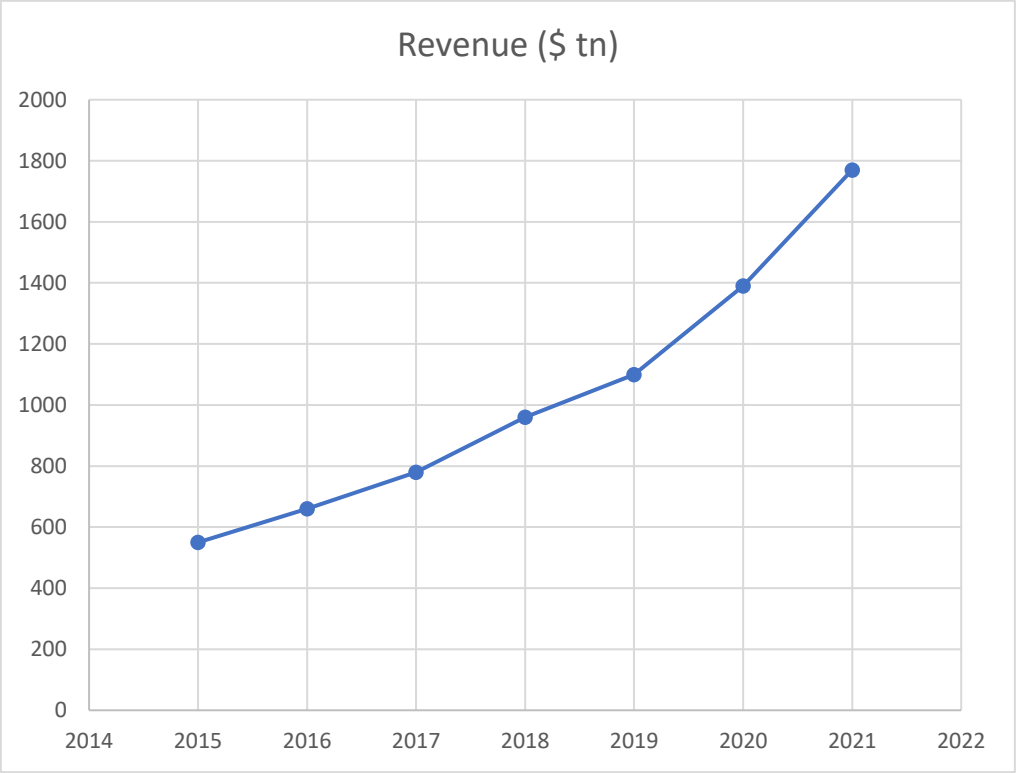


Source: (NPCI, 2022)

Phone Pay and Google pay have the highest (43%) market share of Unified Payment Interface (UPI) in India as of the first half of 2022 followed by Paytm (8%), Amazon pay and CRED (1%) each and BHIM with 2%. Figure 3.5 shows the transaction volume of Mobile Payment App.

Figure 3.5

Mobile Payment App Transaction Volume



Source: (BIS Research, Mordor Intelligence, Statista, & Curry, 2022)

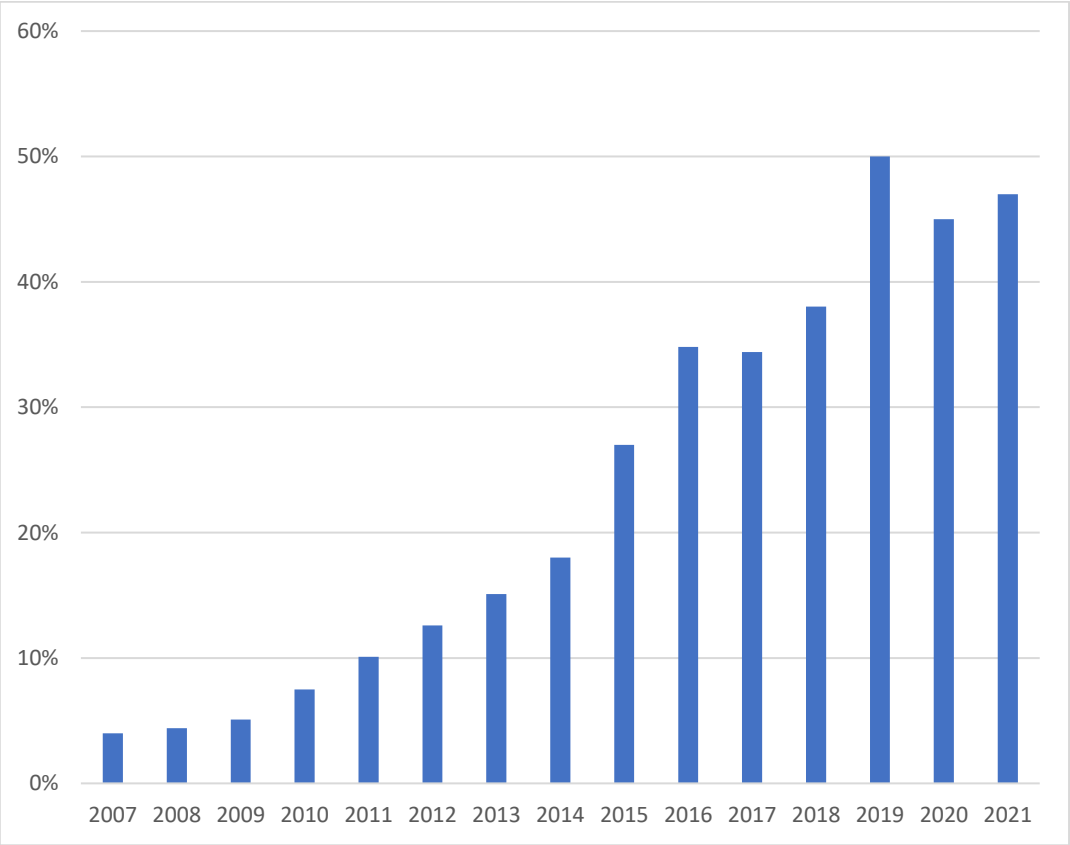
Mobile payments transaction volume was $ 0.55 trillion in 2015. It shows an increasing trend and reached $1.39 trillion in 2020 and reached $ 1.77 trillion in 2021.

3.8 Internet Usage in India

India is the second-largest online market in the world, after China, with over 900 million users. Despite the vast number and ongoing improvements in accessibility, the country's internet penetration rate was slightly under 50%, which was below the global average. India was ranked 87 out of 120 countries for internet usage (Basuroy, 2022). The following figure shows the internet penetration rate in India from 2007 to 2021.

Figure 3.6

Internet Penetration Rate in India 2007 to 2021



Source: (Statista, https://www.statista.com, 2022)

As per the above table, the internet penetration rate from 2007 to 2014 was 4%, 4.4%,5.10%, 7.50%, 10.10%, 12.60%, 15.10% and 18% respectively. In 2015 it increased to 27% and around 34% in 2016 and 2017. And in 2019 it reached 50% and thereafter a slight decrease in the internet penetration rate and finally in 2021 it was 47%.

Section B

Indian Retail Sector- An overview

3.9 Indian Retail Industry

The retail industry includes all businesses that sell goods and services to consumers. The retail industry grows steadily year after year and employs a large number of people worldwide, especially with the growing popularity of online retail (Assosia). Due to the entry of several new players, the Indian retail industry has emerged as one of the most dynamic and fast-paced industries. It accounts for more than 10% of the country's GDP and approximately 8% of employment. In terms of retail, India is the world's fifth-largest global destination. The United Nations Conference on Trade and Development's Business-to-Consumer (B2C) E-commerce Index 2019 ranked India 73rd. India is the world's fifth-largest retail destination, ranking 63 in the World Bank's Doing Business as per 2020 report (IBEF, Retail Industry report, 2022).

In recent years, there have been numerous investments and developments in India's retail sector. Between April 2000 and March 2022, India's retail trading sector attracted $3.96 billion in FDI. According to data released by the Ministry of Statistics and Programme Implementation (MoSPI), India's Consumer Price Index (CPI)-based retail inflation stood at 6.71% YoY in July 2022, owing to lower food prices. In fiscal year 2021-22 (ending March 20, 2022), the total volume of digital payment transactions was Rs. 8,193 crore (US$ 1.05 billion). In July 2022, UPI transactions were worth Rs. 10.62 lakh crore (US$ 132.95 billion), up from Rs. 10.14 lakh crore (US$ 126.94 billion) in June 2022 (IBEF, Retail Industry report, 2022).

3.10 Evolution of Retail: Indian Context

The retail sector in India is the largest of all the sectors, contributing more than 10% of the nation's GDP and over 8% of all jobs. With several competitors joining the market, India's retail industry has developed into one of the most dynamic and fast-paced sectors. In early eighties retailers were operated in an unstructured and segmented market and retailing consists of only peddlers, Kirana stores, vegetable

vendors and consumer durable stores. Retail sector underwent huge change in 1980s, big retail chains emerged in textile sector some of the examples are Bombay Dyeing, S Kumars' and Raymond and subsequently Titan launched an organized retail showroom. The new entrance in the retail sector led to a shift from manufacturers to pure play retailers.

By 1995, well-known retailers including Food World, Music World, Planet M, and Crossword began operating in India. Large retail formats like supermarkets, hypermarkets, and shopping centers have developed. Tata Group, Future Group, Bharti, and Reliance, the major players in the retail sector, have come forth with aggressive and ambitious investment plans in the retail sector. In addition, the Government of India's approval of retail reforms, which permit FDI of 51% in multi-brand stores in India, is likely to help organized retail grab a sizable portion of the market in the near future (Sikri & Wadhwa, 2012). The following figure shows the evolution of retail in four different phases.

Phase 1 : Initiation- Pre 1990s

Phase 2 : Conceptualization (1990-2005)

Phase 3 : Expansion (2005-2010)

Phase 4 : Consolidation (2010 onwards)

Table 3.3

Evolution of Retail in India

Initiation (Pre 1990s)	Conceptualization (1990-2005)	Expansion (2005-2010)	Consolidation (2010 onwards)
Manufacturers opened their own outlets	**Pure-play retailers realized the potential of this market** Majority in the apparel segment	**Substantial investment commitment from large Indian corporates**. Entry in food and general merchandise category Pan-India expansion to top 100 cities Repositioning by existing players	**Cumulative FDI inflows stood at US$ 3.96 billion in the retail trading sector between April 2000-March 2022.** Retail 2020: Retrospect, Reinvent, Rewrite Movement to smaller cities and rural areas More than 5-6 players with revenue over US$ 1 trillion by 2020 Large-scale entry of international brands Approval of FDI limit in multi-brand retail up to 51% Sourcing and investment rules for supermarkets relaxed 100% FDI in single-brand retail under the automatic route

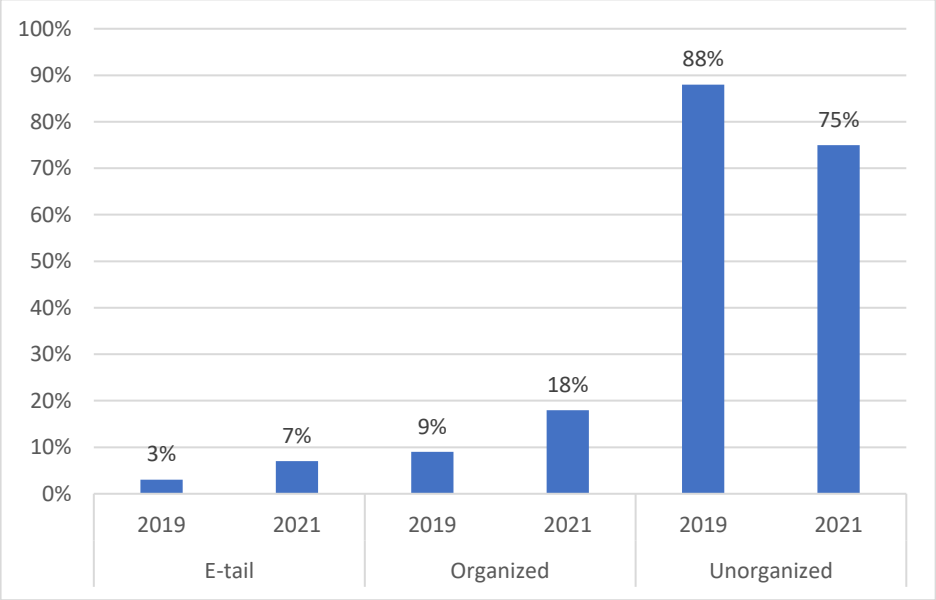
Source: (Technopak Advisors Pvt Ltd, BCG, News Articles, DPIIT)

3.11 Distribution of Retail Industry

Retail Industry is mainly classified into three; Unorganized retailers, organized retailers and e-tailers. As per the retail industry update in (Statistical Anarock Retail Report, 2020), Indian retail industry is dominated by unorganized retailers. Unorganized retailers constitute (88%), organized (9%) and e-tailers (3%). The following figure shows the distribution of retail industry in 2019 with a forecast for 2021.

Figure 3.7

Distribution of Retail Industry across India in 2019, with a forecast for 2021



Source: (Statista, Retail and Trade, 2022)

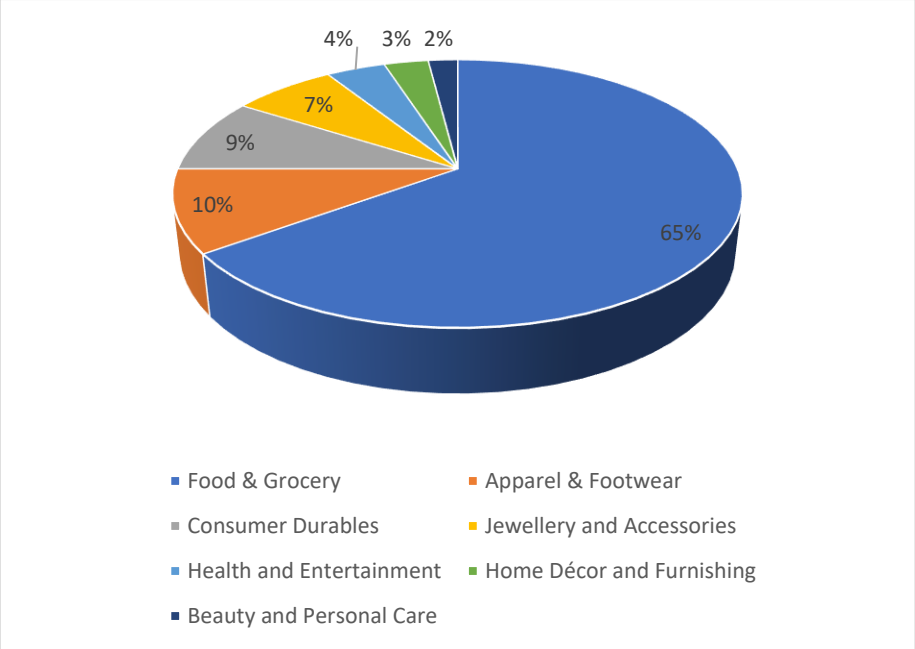
As per the report of Statista Research Department, Indian retail industry was dominated by unorganized retail (88%) in 2019. It was estimated that the share of unorganized retail will be reduced to 75% by 2021 with an increase of market share of organized retail from 9% in 2019 to 18% by 2021 and online retailers from 3% in 2019 to 7% by 2021.

3.12 Organised Retail Industry

In India, organised retailing refers to trading activities carried out by licenced retailers, i.e., those who are registered for GST, income tax, and so on. These include supermarkets, hypermarkets, shopping malls and retail chains, as well as privately owned traditional large retail businesses like Pothys, The Chennai Silks, which operate in a specific region or part of the country. Organized retailing has gained popularity in India's major cities, with modern organised retail stores saturating the majority of metropolitan and other major cities. Many semi-rural areas have also seen the emergence of such organised retail outlets. The following figure shows the proportion of organized retail market in India.

Figure 3.8

Organised Retail Market



Source: (Statistical Anarock Retail Report, 2020)

Within the organised retail sector, food and grocery holds 65% of retail sector, Apparel and Footwear (10%), Consumer durables & IT (9%), jewellery and accessories (7%), Health & Entertainment (4%), Home décor and furnishing (3%) and Beauty & personal care (2%).

Food and Grocery

Food and grocery are the largest segment in the Indian retail sector, with a $570 billion opportunity and accounting for 66% of total retail spend in the country. The organized food and grocery retail market is expected to reach $60 billion by 2025. The market is expected to grow at an 8% CAGR, driven by macroeconomic factors such as rising per capita income, urbanization, and an increase in nuclear families. Conversion from unpackaged to packaged, premiumization, and convenience demand are some of the key segment drivers (National Investment Promotion and Facilitation Agency).

Apparel

The market size of apparel and footwear retailing is growing in a faster rate with significant growth rates in recent years, and it is expected to grow significantly in the forecasted period, 2022 to 2030. The clothing and footwear industries drive the fashion industry. The continuous growth of the population, changing lifestyles, and economic developments have resulted in a significant increase in the production of clothing and footwear. (Verified Market Research). The apparel retailing industry consists of companies that operate by retailing apparel for men, women, and children of all ages in various categories of consumer. Apparel retailing stores typically purchase clothing and accessories from manufacturers and wholesalers and then market the products to general consumers without altering the original clothing. Over the next five years, the apparel retailing industry's retail conditions are expected to improve as per-capita disposable income rises and consumer confidence recovers, but e-commerce and online shopping are expected to mitigate industry gains and flourish more profits. As a result, industry establishments are expected to focus on providing more online options to customers in order to compete with major retailers and e-commerce stores. International competition will also continue to limit industry growth, as online shoppers gain greater access to boutique clothing in international markets (Apparel Retailing Market Research Report).

The global footwear market is worth billions of dollars in the United States. The footwear market, which is part of the clothing and apparel industry, includes shoes, sneakers, luxury footwear, athletic footwear, and sporting shoes, as well as other

related goods. The global footwear market is expected to be worth nearly 382 billion US dollars in 2022 (Smith, 2022).

Consumer Durables

The consumer durables retail market has grown dramatically over the last decade. It consists of Television sets, audio systems, VCD players, washing machines, microwave ovens, air conditioners etc. The demand for Indian consumer durables has increased in the domestic market, it faces stiff competition from international companies such as Sony, Samsung, LG, and Philips (Business Map of India-Consumer Durable Retail).

Jewellery and Accessories

The retail jewellery industry provides consumers with fashion accessories made from the world's rarest precious metals, stones, and gems. This age-old industry has saturated almost the entire civilized world, including the United States, and a relatively small number of well-known, deeply entrenched players dominate the industry (Ingram). India was one of the first countries to produce fine jewellery from minerals and metals, and the majority of Indian jewellery is still made by hand. 96% of the market was dominated by the family jewellers. Currently, the country has a small but growing organized sector. Organized players, such as Tata with its Tanishq brand, have grown steadily to capture a 4% market share.

Health and Entertainment

Indian healthcare is the second largest consumer-spending sector, with a current market value of approximately US$ 65 billion. It is worth noting that only about US$ 5.5-5 million of this total amount is associated with hospital supplies and healthcare equipment. Retail health is an emerging segment that will turn out to be a profitable business opportunity in the near future. Retail healthcare is expected to focus on providing convenient and high-quality treatments and care to millions of people in India. Furthermore, retail health has the potential to emerge as a segment that can target both existing and new patient populations in the country and globally (Warsi, 2019).

The Indian Media and Entertainment (M&E) industry is a leading light in the Indian economy, making significant strides. The growing availability of fast and cheap internet, rising incomes, and increased purchases of consumer durables have all aided the industry significantly. In comparison to other markets, India's media and entertainment industry is unique. The industry is well-known for its high volume and rising Average Revenue Per User (IBEF, India Brand Equity Foundation, 2022).

Home Décor and Furnishing

Home Décor and furnishings include furniture, appliances, art objects, wall-to-wall carpeting etc. They add value to the appeal and comfort of various home spaces. Across India, the availability of innovative and affordable home furnishings is increasing. The India home furnishings market is expected to grow at an 8.77% CAGR between 2022 and 2027.

Beauty and Personal Care

According to Assocham, the size of India's beauty, cosmetic, and grooming market will increase from $ 6.5 billion to $ 20 billion by 2025, owing to rising middle-class disposable income and people's growing aspirations to live a good life and look good. FMCG companies are releasing a variety of products in various price ranges to cater to consumers with varying levels of purchasing power. Cosmetics consumption among teenagers increased significantly between 2005 and 2015 due to increased awareness and desire to look good. Indeed, this product category is one of the fastest growing for manufacturers of a variety of products, including body sprays.

Section C

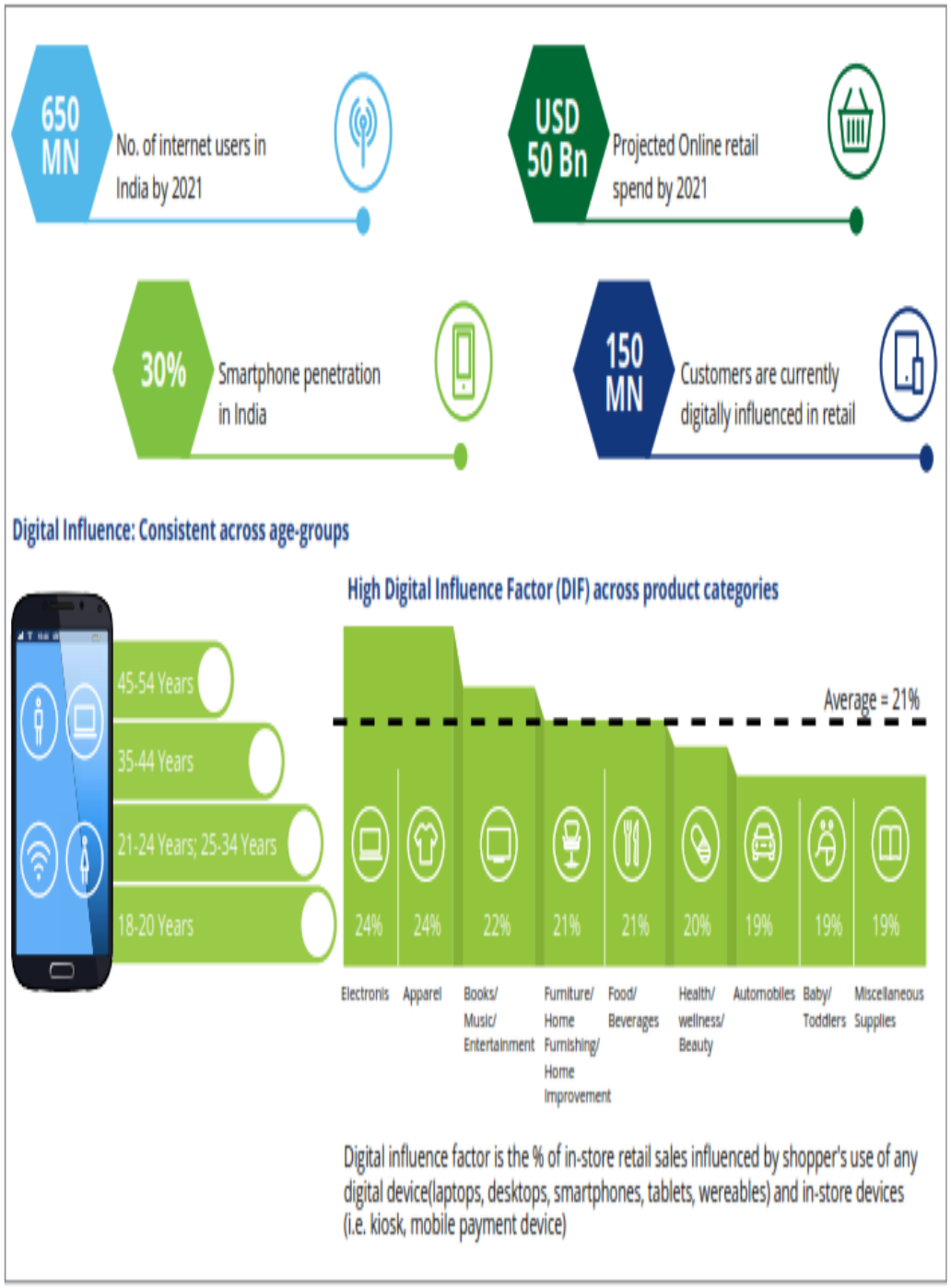
3.13 Digital Transformation in Retail Industry

Digital transformation is permeating every field and industry. Organizations go digital in order to improve their services and facilities and increase customer satisfaction. The concept of digital transformation in retail is based on the needs and requirements of customers. When considering digital transformation in retail, retailers must rethink every aspect of their business, from inventory management, employee training, and customer experience management. By providing customers with the services and products they require, digital transformation in retail can navigate customer retention and satisfaction (Takyar, Digital Transformation in Retail – Remodelling Retail Industry)

With the advancement of technology in the twenty-first century, the retail sector is undergoing a global revolution, and digitalization is solely responsible for it. In recent years, the retail industry has undergone significant changes in order to improve business operations and become more customer-oriented. Both online and offline retail markets are attempting to eliminate limitations in their services through the use of various advanced technologies and the creation of personalized customer experiences. According to Statista, India's retail market is expected to be worth $1.7 trillion. The retail industry is transitioning to a more advanced digital scenario and environment in order to carry out operations in a more personalized manner. The retail industry is rapidly adopting digital transformation methodologies in order to fundamentally change the entire process. It develops new and innovative business models that enable the industry to concentrate on discrete strategy rather than just one technique or approach. With technological advancement and the use of digital marketing methodologies, retailers can engage with customers more precisely and effectively to learn about their various queries, prospects, concerns, and requirements, which will help them deliver products and services. Traditional technologies' limitations have been removed by digital transformation, allowing the retail industry to be more responsive to current market trends and demands (Bansal)

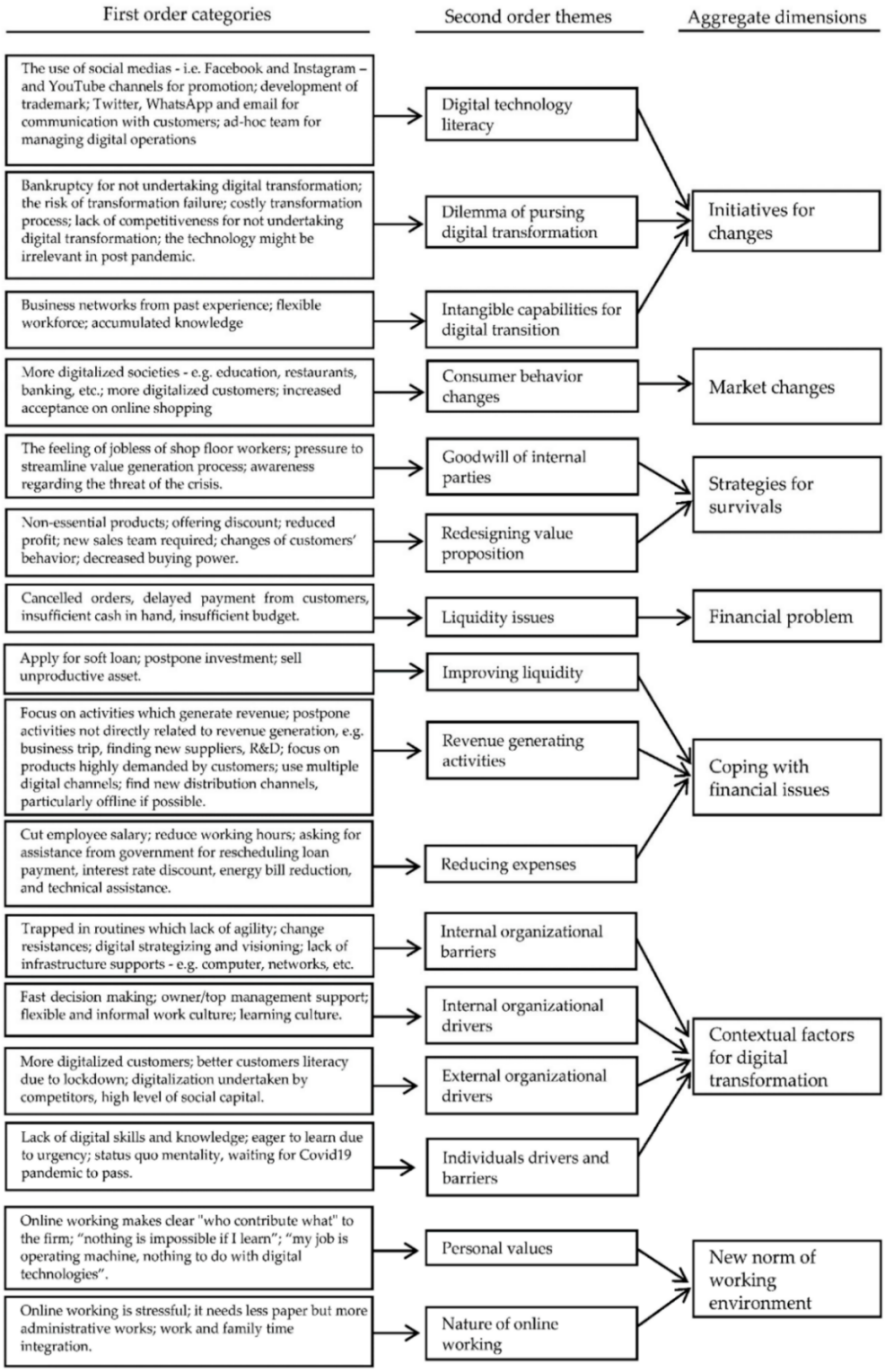
Figure 3.9

Digital Retail Statistics in India



Source: (Deloitte, Disruptions in Retail through, 2017)

Figure 3.10
Digital Transformation in Retail Industry



Source: (Priyono, Moin, & Putri, 2020)

3.14 Challenges in the Transformation of Retail Industry

Digital transformation brings about considerable changes in the retail industry. The main challenges faced by the retail sector during digital transformation are as follows:

Change in Management: Many departments operate independently, describing and managing their touch-points in different ways and complying to different standards and metrics. Transformation poses a threat to traditional ways of doing things, triggering a self-defense mechanism that prevents change. Furthermore, changes in roles make it difficult to indicate ROI and take ownership. As a result, retailers frequently have reservations about implementing new methods of operation.

Commitment: While initiatives are currently ongoing in many cases, they are not transformational enough. These initiatives usually result in a mobile app or a new website that only slightly improves the customer experience. Furthermore, the commitment to implement digital transformation in an enterprise extends beyond concept generation. It requires leadership emphasis, assurance of resources and budget, and the ability to confidently follow the initiative.

Complexity: Retailers cannot handle everything themselves due to the complexity of digital transformation. While outsourcing can relieve some of the burden, retailers must exercise caution when selecting partners. To co-create digital journeys for all customers, stakeholders, and enterprise entities, a different kind of partnership is required. It is necessary to identify those digital moments in a retailer's operational journey and customer experience that can have a transformative impact.

Technology: A strong foundation is required for a complete digital transformation to be effective, whether it is a single view of orders, products, inventory, or customers, or a scalable design to support dynamic changes in the business. Furthermore, one of the significant challenges is selecting the right technologies that can add value. Simultaneously, it is critical to take calculated risks in order to determine which new infrastructure and technologies are appropriate for an organization (Takyar, Digital Transformation in Retail – Remodelling Retail Industry).

3.15 Impact of Digital on Retailers

Digital allows retailers to reach customers, engage better with current customers, reduce operational costs, and improve employee motivation, among other benefits that have a positive impact on revenue and margins. The three key elements of business and operation models are strategy, front end and back end. The following figure shows the impact of Digital on Retailers.

Figure 3.11

Impact of Digital on Retailers

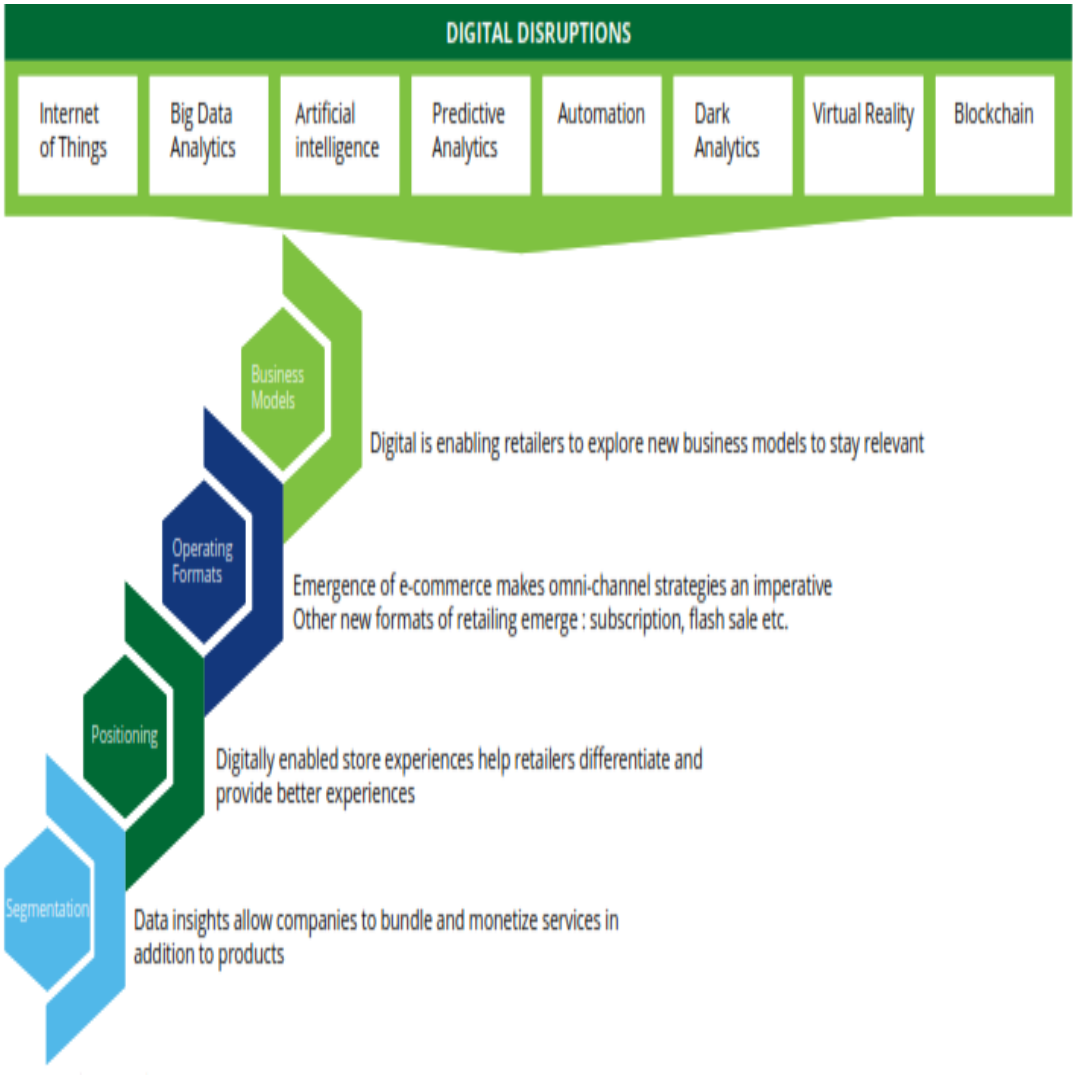
Source: (Deloitte, Analysis, 2017)

3.16 Impact of Digital Disruptions on Retail Strategy

Traditionally, retailers have differentiated themselves through superior customer service, high operational efficiency, or a superior product/service value proposition. The impact of digital disruptions of retail strategy concentrates on segmentation, positioning, operating format and business models

Figure 3.12

Digital Disruptions



Source: (Deloitte, Analysis, 2017)

3.17 Digital Enabling Store of the Future

The following table shows the retail journey of Digital enabling Store of the Future.

Table 3.4

Digital Enabling Store of the Future

Retail Journey	Traditional Store	Store of the Future
Discover and Create Awareness	• Newspaper ads • Television marketing • Leaflets	• Predictive analysis of social media profiles of customers for targeted marketing • Micro Segmentation based Digital Marketing • Push notifications on customer's devices to create awareness
Research and Comparison	• Store staff driven research • In-store signage and display to direct customers towards chosen products	• Digital kiosks present in the stores to enable product search • Virtual shelves • Endless Aisles • Smart Beacons detect customers, profile them and redirect them within stores • In-store navigation • Wearable tech and mobile shopping assistants
Selection	• Physical Trial rooms	• Virtual mirror • Virtual trial rooms

		• Click & Select option on mobile devices • Personalization enabled by recommendation engine, product customization
Purchase	• Physical Point of Sale	• Multi nodal purchase options – click & collect, mobile POS, digital wallets • Attractive pricing using precision marketing • Self-Check out • Mobile web-rooming
Retention & Loyalty	• Traditional membership and card-based loyalty programs	• Block chain-based loyalty programs • Automatic discounted prices offered to loyal customers • Bundling of services / products for loyal customers • Subscription and auto replenishment
Logistics & Warehousing	• Linear supply chains • Traditional logistics and warehouse management	• Digital Supply Networks • Shared logistics capabilities • Digitally enabled logistics services • Continuous automated monitoring • Drone based deliveries

Finance	• Conventional financial reporting and management	• Use of RPA to automate financial functions • IOT-enabled processes
Procurement and Vendor Management	• Traditional supplier-customer relationships	• Collaboration with vendors for success • Block-chain technology for contract management & supplier payments
Assortment-mix & Planning	• Decisions basis experience & judgement • Ad-hoc assortment prioritization	• Data-driven algorithms for store's assortment planning • Adopt predictive models & real-time forecasting • RFID chips to make supply chain more responsive
People & Organization Structure	• Traditional ways of training and managing resources • Adopted in isolation and based on historical values.	• Simplifying employee processes through automation • Digital retail transforming KPIs being used to measure and reward staff • Adoption of smart systems to manage staff shifts and checkout procedures

(Deloitte, Analysis, 2017)

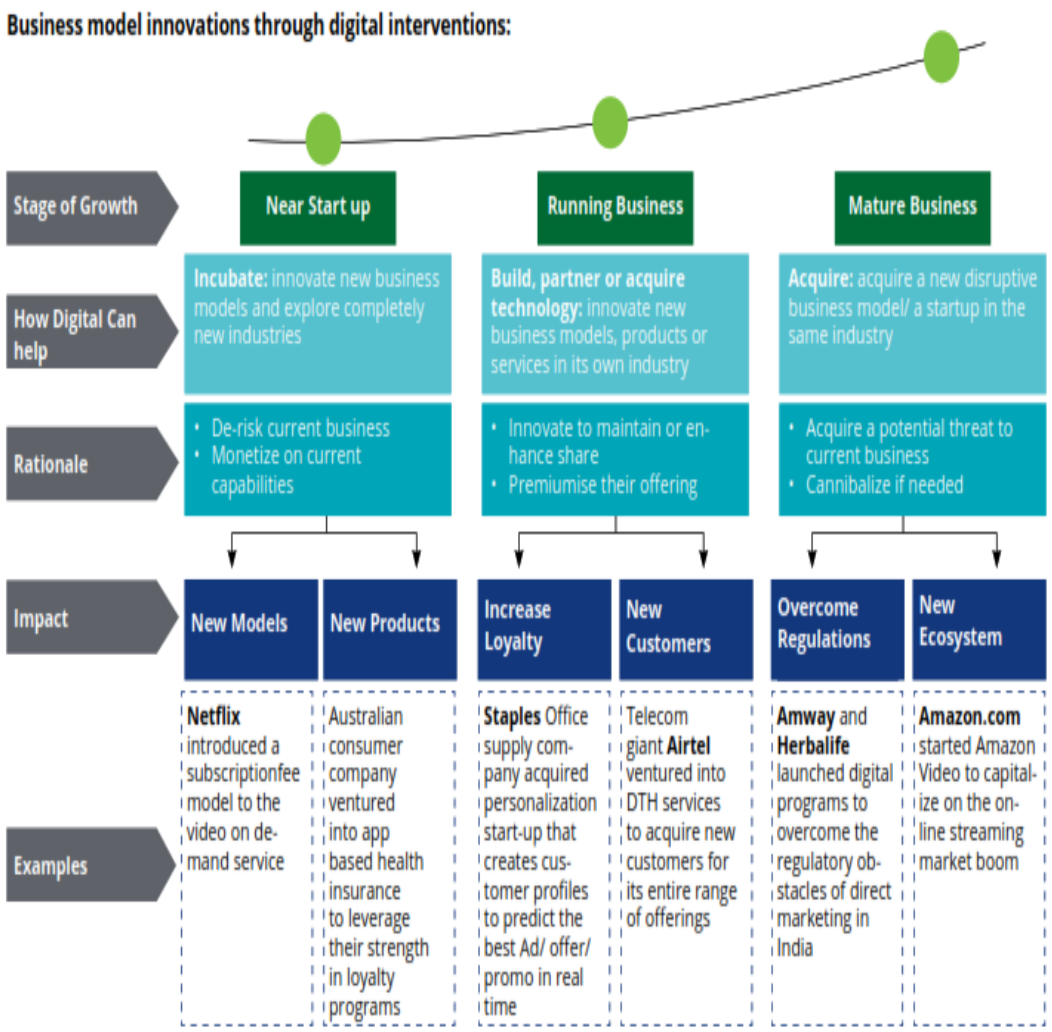
3.18 Business Model Innovation through Digital Intervention

With the emergence of technological disruptions, the paths between the digital and physical worlds have become increasingly blurred, with far-reaching implications for how retailers operate. Almost every retailer is being impacted by this ongoing digital

transformation, whether through its own initiatives or due to competitive pressure. Though business models have always evolved over time, the convergence of technologies such as mobile, cloud, social, and Big Data analytics has accelerated the rate at which today's businesses are evolving — as well as the extent to which they change the way they innovate, operate, and serve customers. Digital transformation is a disruptive force for some businesses, forcing them to play catch-up.

Figure 3.13

Business Model Innovation through Digital Intervention



Source: (Deloitte, Analysis, 2017)

Table 3.5

Emerging Digitally Disruptive Business Models

Model	Description	Examples
The Subscription Model	Disrupts through "lock-in" by taking a product or service that is traditionally purchased on an ad hoc basis, and locking-in repeat customer by charging a subscription fee for continued access to the product/service	Netflix, Dollar Shave Club, Apple Music
The Freemium Model	Disrupts through digital sampling, where users pay for a basic service or product with their data or 'eyeballs'. Rather than money, and ten charging to upgrade to their full offer. Works where marginal cost for extra units and distribution are lower than advertising revenue or the sale of personal data	Spotify, LinkedIn, Dropbox
The Free Model	Disrupts with an 'if-you're-not-paying-for-the-product- you-are-the-product' model that involves selling personal data or 'advertising eyeballs' harvested by offering consumers a 'free' product or service that captures their data/attention	Google, Facebook
The Marketplace Model	Disrupts with the provision of a digital marketplace that brings together buyers and sellers directly, in return for a transaction or placement fee or commission	eBay, iTunes, App Store, Uber, AirBnB

The Access over-Ownership Model	Disrupts by providing temporary access to goods and services traditionally only available through purchase. Includes "Sharing Economy" disruptors, which takes a commission from people monetizing their assets (home, car, capital) by lending them to 'borrower"	Zipcar, Peerbuy, AirBnB
The Hypermarket Model	Disrupts by 'brand bombing	Amazon, Apple
The Experience Model	Disrupts by providing a superior experience, for which people are prepared to pay	Tesla, Apple
The Pyramid Model	Disrupts by recruiting an army of resellers and affiliates who are often paid on a commission only model	Amazon, Microsoft, Dropbox
The On-Demand Model	Disrupts by monetizing time and selling instant-access at a premium. Includes taking a commission from people with money but no time who pay for goods and services delivered or fulfilled by people with time but no money	Uber, Operator, Taskrabbit
The Ecosystem Mode	Disrupts by selling an interlocking and interdependent suite of products and services that increase in value as more are purchased. Creates consumer dependency	Apple, Google

(Caudron & Peteghem)

CHAPTER 4

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the systematic procedure used for the research. The procedures that have been followed to carry out the research, as well as the methods, tools, strategies adopted to conduct the study. Hence this chapter explains the research methodology of the study 'Digitalisation in select organised retail sector in Kerala'. This study is limited to only three organised retail sectors i.e., Food and Grocery, Apparels and Consumer Electronics retail sector. The main objectives of the study were:

1. To evaluate the factors that leads to digitalisation in the select organised retail sectors in Kerala.
2. To determine the boons of digitalisation in the retail sector.
3. To identify the challenges faced by the retailers during the digitalisation period.
4. To assess and compare the level of digitalisation in Food & grocery, Apparel & Consumer electronic retail sectors.
5. To examine the impact of Covid-19 pandemic and lockdown on digitalisation in the retail sector.

4.2 Research Methods

The research work is both descriptive and exploratory in nature. It is descriptive in the light of facts that it describes the characteristic and studies the relationship between the variables. It is exploratory because it developed a new scale for external factors leads to digitalisation, boons of digitalisation and challenges of digitalisation.

4.3 Data Collection Methods

Both secondary and primary data were used for the study.

Secondary Data

The secondary data source is regarded as a crucial resource for conducting research. Based on the secondary data, the researcher identified the variables, created a theoretical framework and developed the conceptual model of the study. The secondary data required for the study was mainly gathered from the following sources:

- Books
- Published and unpublished thesis
- Journals and conference proceeding
    - International Journal of Economic and Business Review.
    - International Journal of Retail & Distribution Management
    - Journal of Fashion Marketing and Management
    - Clothing and Textile research journal.
    - Indian Journal of Management.
    - Journal of Retail Marketing & Distribution Management
    - International Journal of Research in Business Management
    - Journal of Digital & Social Media Marketing
    - 10th CIRP Conference on Industrial Product-Service Systems
    - International Journal of Management, IT & Engineering,
    - 2nd International Scientific Conference on New Industrialization: Global, National, Regional Dimension (SICNI 2018)
    - International Journal of Information system and Project Management
    - International Journal of Digital Library Services
    - Journal of Retailing and Consumer Services
    - International journal of trend in Scientific Research & Development (IJTSRD)
- Websites
- Reports

Primary Data

The study mainly depends on the primary data collected from the organised retail outlets of Food & Grocery, Apparel and Consumer Electronics using pre-tested questionnaire. The questionnaire was distributed either to the retailer or to the manager of the respective outlet.

4.4. Variables Identified for the Study

Based on the secondary data and discussions with the retailers, digital marketing experts and academicians; the following variables were identified. The variables identified to study the factors leads to digitalisation, boons of digitalisation, challenges of digitalisation and impact of Covid 19 on digitalisation are shown in table 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6 respectively.

Table 4.1
Internal Factors

Internal factors	Age of the unit
	Type of unit
	Size of the unit
	Number of employees
	Digital department

Source: Compiled by the researcher

Table 4.2

External Factors lead to Digitalisation

Customers	Customers started to prefer digital payment
	Customers started to search websites to know about the products which influenced us to go digital
	Social medias started to influence the buying behaviour of customers
	Customers started to prefer online shopping which led us too digital

Suppliers	Suppliers prefer digital mode for order placement
	Suppliers prefer digital payment
	It is easy to get price quotes from different suppliers
	As the list of available products are shared online it is easy to place orders
	It is easy to compare the quotation of different suppliers when it is digitally shared
	It is easy to identify the suppliers who supply quality products at reasonable price
Government	Provide funding and subsidies for digital transformation
	Promote digital technologies and tools
	Provide digital services
	Encouraged digital payments
Financial Institutions	All documents can be shared online.
	Since the transactions are digitalised processing time is less.
	Repayment of loan can be done digitally
	Financial statements are shared digitally
	Easiness of vendor payment settlement
Competitors	Competitors started to market their product digitally
	Competitors Launched their own website
	Competitors developed an app for sale of products
	Competitors started to accept digital payments
	Competitors are maintaining the digital records
	Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers

Source: (Plekhanov & Netland, 2019) (Nguyen, 2015) (Verhoef, 2019) (Tarute, 2018)

Table 4.3

Digitalisation

Digitalisation	Payment
	Sales
	Purchase
	Marketing
	Maintenance of Business records
	Inventory Management
	Customer service
	Recruitment of employees

Source: Compiled by the researcher

Table 4.4

Boons of Digitalisation

Economic Boons	
Operational performance	Digitalisation improves the operational performance of the retail outlets
	Operational performance of the traditional period was much better
Increase in market share	Digitalisation enables the business to access new (geographical) markets
	Digitalisation increases customer awareness of our product/services (broader customer access)
	Digitalisation permits differentiating our products/services from those of our competitors.
	Digitalisation provides customers with better information about our product/services.
	Digitalisation opens an avenue for customers to make his/her purchase easiness.
Technological Boons	
New market opportunities	Digitalisation helps to identify new market opportunities
	Digitalisation helps to expand the business
	Recording of stock is fully digitalised

Inventory management	As the inventory management is fully digitalised it is easy to assess the stock level.
	Improves purchase efficiency
Digital Marketing	Digital marketing is much better than traditional marketing
	Digital marketing reduces the cost of marketing
	Digital marketing allows you to target your needed audience.
	Most commonly used digital marketing platforms are social media
	TV ads are much better than social media ad
	We share the offers and discounts to the customers through WhatsApp/ Facebook/Instagram.
Social Boons	
Better customer support	Digitalisation enables us to offer wide variety of products/services to the customers.
	Digitalisation enables us to offer goods at reduced price to the customers.
	Digitalisation helps to provide better customer service
	Going digital has helped to better understand the customer preference.
	Digitalisation enables production of need oriented products/services.
Digital payment	We are accepting payment through POS machines.
	We prefer to make payment in cash
	We are accepting payment through e-wallet/UPI.
	Digitalisation reduced the risk of handling cash
	Digital mode of payment is preferred by the customer.
Employment opportunities	Digitalisation led to increase in employment opportunities
	Employment opportunities increased only for technically qualified person.
	More employment opportunity raised in social media marketing
	Improved recruitment process

Source: (Plekhanov & Netland, 2019), Compiled by the researcher

Table 4.5

Challenges of Digitalisation

General Awareness	
Employees	Employees were not aware about digitalisation process.
	Employees were not aware to do digital marketing
	When a new software was installed for accounting or inventory management, employees were not confident to use it
	Insufficient technical knowledge was a major challenge of employees during digitalisation
	In the initial stage only card payment was accepted, we were not aware about e-wallets
	Employees find difficult to maintain the records digitally
Customers	Customers were not aware about digitalisation process.
	Customers were not confident to do digital payment, they used to do cash payment.
	Customers were ready to do card payment through POS
	It was difficult to make the customers aware about digital marketing measures taken by retailers
	Social media marketing only attracts youth.
Formulation	
Infrastructure	We don't have a website
	We were not having any mobile application for sale
	We didn't have an IT wing
	We didn't have a proper network connection
Technical Issues	Lot of technical issues were there in the initial stage
	We didn't have any technology partners
	During the rush period, sometimes the payment site goes down
	Sometime the software/ system gets hang and couldn't enter the transactions digitally

Implementation	
Cost	Organisations are not ready to do the investment as the initial cost of setup is quite high
	Cost of recruiting technically skilled labourers is high
	High cost is required for developing website, mobile application, SEO etc.
	Investing in digitalisation set up is a waste of money.
	A separate wing is needed for digital marketing
	High cost is required for training the existing employees
Skilled Labourers	Lack of digitally skilled work force
	High remuneration to existing technically qualified staff
	High remuneration to newly recruited technically qualified staff
Training to existing staff	When a new software or application is introduced, employees have to be trained
	An expert trainer has to be selected for training
	Remuneration to the trainer is high

Source: (Chen, Lin, Chen, Chao, & Pandia, 2021) (Bajaj & Chng, 2021) (Arora, 2019) Compiled by the researcher

Table 4.6

Impact of Covid-19 Pandemic and Lockdown over Digitalisation

Impact of Covid-19 pandemic and lockdown over digitalisation	Marketing
	Sales
	Mode of Payment
	Customer service
	Inventory Management
	Vendor Management
	Customer Relationship Management

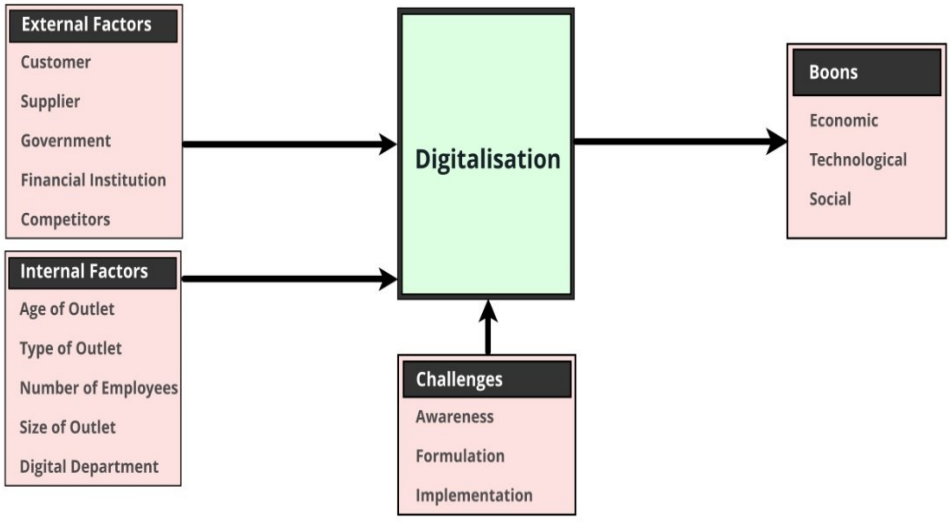
Source: (KPMG, 2020) (Alyahya & Faisal , 2021) Compiled by the researcher

4.5 Conceptual Model of the Study

The conceptual model was developed with the help of the variables mentioned above. The conceptual model is shown in figure 4.1.

Figure 4.1

Conceptual Model of the Study



The conceptual model of the study 'Digitalisation in the select organised retail sector in Kerala' shows the internal and external factors that influence the retail outlets towards digitalisation, challenges faced by retailers during digitalisation period and finally the positive outcomes of digitalisation.

4.6 Sample Design

The population of this study consists of organised retail outlets in Kerala. Non-probability sampling technique is used for selecting the sample respondents. The samples are selected in different stages.

Stage 1: Selection of Cities

Three largest cities in Kerala where large number of organised retail outlets are located.

- Thiruvananthapuram
- Ernakulam
- Kozhikode

Stage 2: Selection of Retail Sector

Three retail sector was selected based on its contribution in organised retail. As per the retail Industry update (Rating, 2019) (IBEF, 2019). Food & Grocery, Apparel and Consumer Electronics holds the major part of organised retail and hence these three sectors were selected.

Stage 3: Selection of Retail Outlet

Researcher selected retail outlets from food & grocery, apparel and consumer electronics using convenience sampling method as the official database regarding organised retail outlets is not available

Table 4.7

Selection of Sample Retailers

Sl. No.	Retail Outlet	South Zone	Central zone	North zone	Total
1	Food & Grocery	31	31	48	110
2	Apparels	33	42	35	110
3	Consumer electronics	34	39	37	110
	Total	98	112	120	330

Source: Survey Data

4.7 Determination of Sample Size

The sample size of the organised retail outlet is determined using the statistical equation below. The variable with the largest standard deviation out of the 60 respondents in the pilot research was chosen.

n = Number of sample size

z= Standardized value corresponding to a confidence level (1.96 for 95% confidence level)

s= Sample standard deviation or estimate (0.917)

e= acceptable magnitude of error (assumed as .10)

$$n = \left[\frac{1.96 \times 0.917}{.10}\right]^2$$

$$= (17.9732)^2$$

$$=323.04$$

The calculated sample size is 323.04, it is rounded of to 330 as the researcher decided to take equal number of samples from each unit.

4.8 Instruments for Data Collection

Questionnaire was used for collecting data from the organised retail outlets of Food and Grocery, Apparels and Consumer Electronics.

4.8.1 Questionnaire Design

Based on the research questions and variables identified in the literature review, the initial draft questionnaire was developed and expert comments were solicited and prepared the second draft of questionnaire. In order to ensure that the questionnaire is free from all the ambiguities, it was distributed to three retail outlets; one each from food & grocery, apparels and consumer electronics. Researcher observed whether the respondents face any difficulties in filling the questionnaire and also noticed the points which needs more clarification. After making these changes researcher developed the final questionnaire.

4.8.2 Scaling Techniques

The scaling technique used in the study is Likert's scale. The respondents were asked to mark their response for each item in a five-point Likert's scale ranging from strongly agree (5) to strongly disagree (1) and level of digitalisation ranging from fully digitalised (5) to not digitalised (1).

4.8.3 Pilot Study

The pilot study was carried out to assess the precision of each aspect of the questionnaire. A well-structured questionnaire was distributed to a small group of organised retailers from the population under study. The researcher selected 60 organised retail outlets conveniently from Kozhikode District, which includes; 20 food and grocery retail outlets, 20 apparel retail outlets and 20 consumer electronics retail outlets. Reliability of the data collected was verified using Cronbach's Alpha Reliability Coefficient and the statements which had the values less than 0.7 was eliminated from the questionnaire. Based on the reliability statistics, three variables (sales and profit, improves forecasting and maintenance of record) were deleted. In case of external factor leads to digitalisation, the construct financial institution had reliability statistics 0.579, after deleting one statement it changed to 0.697. In boons of digitalisation, the construct inventory management had a reliability statistic 0.487, after deleting one statement it changed to 0.853. In challenges faced during digitalisation, the construct general awareness of employees had a reliability statistic 0.554, after deleting one statement it changed to 0.769 and the construct skilled laborer had 0.427 but after deleting one statement it changed to 0.685.

4.8.4 Structure of the Questionnaire

The questionnaire comprises of six sections.

1. Internal factors
2. External factors
3. Boons of digitalisation
4. Challenges of digitalisation
5. Levels of digitalisation

6. Impact of Covid-19 on digitalisation

The first section of the questionnaire dealt with internal factors of retail outlets. These were type of retail unit, year of starting the unit, type of outlet, number of employees, size of outlet and digital department.

The second part of the questionnaire dealt with the external factors leads to the digitalisation of the retail sector. Twenty-five statements were prepared for the measurement of the identified variables. The third part of the questionnaire was about the boons of digitalisation, 32 statements were prepared for the measurement of the variables. The fourth section dealt with the challenges faced by retailers during the digitalisation period, 31 statements were prepared to measure these variables. The questions were designed as closed ended and the respondents were asked to make their response in a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1).

Question 5 measures the levels of digitalisation in the retail sector. Eight variables were identified and the respondent was asked to rate the level of digitalisation from fully digitalised (5) to not digitalised (1).

The sixth question was related to the impact of Covid-19 lockdown on retail digitalisation. Seven variables were identified and their level of digitalisation before and after Covid-19 lockdowns was measured. Final questions were to identify the commonly used digital marketing tool, social media platform for digital marketing and digital payment tools.

4.9 Validity

Testing the validity of constructs and examining the construct's reliability are two ways to make sure that measurement errors are kept to a minimal. An instrument's validity is determined by confirming that it measures the variables it is designed to. (Field, 2009) If the results of a measuring device are repeatable, it is reliable. (Kothari, 2004) Validity of an instrument is measured using confirmatory factor analysis and reliability is tested using Cronbach’s Alpha test. There are three different types of validity viz., content validity, face validity, and convergent validity.

4.9.1 Content Validity

In order to ensure the validity of instrument, the researcher took the experts opinion. Instrument was reviewed by the panel of experts in the field of digitalisation, retail store managers, academicians and statisticians. All the modifications suggested by the panel was done in the questionnaire and ensured the content validity.

4.9.2 Face Validity

Face validity of the instrument was tested with the help of experts. The experts evaluated the appropriateness of the instrument and ensured the measurement of concepts and confirmed face validity

4.9.3 Construct Validity

Construct validity explains how well the indicators reflect the concepts that are not directly observable. Convergent validity and discriminant validity together forms construct validity and it is measured using confirmatory factor analysis. Convergent validity is one of the techniques to construct validity and describes the degree to which a measure is connected with other measures that are theoretically expected with. All the indicators have high factor loadings with significant p values and Average Variance Extracted (AVE) of all the constructs are greater than 0.5 and composite reliability is greater than 0.7, it indicates convergent validity. The square root of AVE of all the components are greater than the inter construct correlation, hence discriminant validity is ensured.

4.10 Reliability Analysis

“Reliability is an indicators of measures internal consistency” (Zikmund, Babin, Carr, & Griffin). The internal consistency of the scaled statements was measured using Cronbach’s Alpha reliability test. A strong internal consistency is said to be demonstrated by an alpha value of 0.70 or higher, while a significant alpha value is one that is 0.60 or higher (Cronbach & Meehl, 1994) The result of Cronbach’s Alpha reliability test is shown in the table 4.8

Table 4.8

Reliability Statistics

Variables	Cronbach's Alpha	N of Items
External Factors		
Customers	0.703	4
Suppliers	0.888	6
Government	0.834	4
Financial Institutions	0.789	5
Competitors	0.880	6
Boons of Digitalisation		
Economic Boons		
Operational performance	0.812	2
Increase in market share	0.875	5
Technological Boons		
New market opportunities	0.900	2
Inventory management	0.842	3
Digital Marketing	0.869	6
Social Boons		
Better customer support	0.898	5
Digital payment	0.866	5
Employment opportunities	0.723	4
Challenges of Digitalisation		
General Awareness		
Employees	0.839	6
Customers	0.887	5
Formulation		
Infrastructure	0.901	4
Technical Issues	0.790	4
Implementation		
Cost	0.721	6

Skilled Labourers	0.807	2
Training to existing staff	0.842	3

Source: Calculated from Primary Data

Table 4.8 shows that all the constructs have reliability statistics greater than 0.7, hence it is proved that internal consistency of the scaled statements is reliable.

4.11 Normality Test of the Data

It is very essential to test the normality of the data before conducting any statistical analysis as the statistical procedures and tests differs for normal data and non-normal data. Parametric tests are used for normal data and distribution free methods for non-normal data. To test normality, Kolmogorov-Smirnov test is used. If p value is less than 0.05, it indicates the data is not normal and if p value is greater than 0.05 the data is normal. The following table gives the result of the K-S test. The test indicates that the data is normal.

Table 4.9

K S Test for Normality

Variable	N	Mean	Standard Deviation	Kolmogorov-Smirnov Z	p value
Customers	330	15.26	2.74	1.547	0.061
Suppliers	330	18.94	4.47	1.635	0.051
Government	330	11.09	2.93	1.427	0.077
Financial Institutions	330	17.70	2.77	1.644	0.051
Competitors	330	14.53	4.61	1.294	0.098
Operational performance	330	7.61	1.46	0.995	0.160
Increase in market share	330	18.92	3.60	1.094	0.137
New market opportunities	330	7.55	1.69	1.558	0.060
Inventory management	330	12.10	1.88	1.108	0.134
Digital Marketing	330	21.95	4.35	1.000	0.159

Better customer support	330	17.14	3.68	0.966	0.167
Digital payment	330	11.97	1.59	1.001	0.159
Employment opportunities	330	9.56	2.04	0.715	0.237
General Awareness - Employees	330	15.67	4.06	0.794	0.214
General Awareness - Customers	330	15.53	2.71	1.368	0.086
Infrastructure	330	12.65	5.28	1.382	0.084
Technical Issues	330	8.34	2.77	0.858	0.196
Cost	330	20.21	3.78	0.906	0.183
Skilled Labourers	330	5.94	1.32	1.605	0.055
Training to existing staff	330	10.96	1.56	1.559	0.060

Source: Calculated from Primary Data

4.12 Data Analysis Method

The data collected from the respondents were analyzed using both univariate and multivariate techniques. The data were analyzed in the sequence of objectives. The internal factors of retail outlets were analyzed using descriptive statistics, reliability was tested using Cronbach Alpha test and validity using Confirmatory factor Analysis. Data analysis was done using SPSS 20.0 and AMOS-18. Exploratory factor analysis was conducted to ascertain the number of factors that exist among the set of variables (Zikmund, Babin, Carr, & Griffin) . In the study, EFA was used to identify the structure of variables and measure the constructs; external factors that leads to digitalisation, boons of digitalisation and challenges faced by retailers during digitalisation. To investigate the connections between the variables and to explain the theoretical framework's concept, confirmatory factor analysis was performed. This was done using AMOS-18 (Arbucke, 2006a). Here Confirmatory factor analysis was used to validated the latent construct external factors, levels of digitalisation, boons and challenges of digitalisation. The General rule of thumb of model fit indices are shown in the table below:

Table 4.10

Model fit Indices with General Rule of Thumb

Sl.no.	Fit Indices	General Rule of Thumb
1	P value	> 0.05 (Hair Jr., Black, Babin, & Anderson, 2021)
2	Normed χ^2	< 5 (Hair Jr., Black, Babin, & Anderson, 2021)
3	GFI	>0.9 (Hair, C.W, Anderson, & Tatham, 2006)
4	AGFI	>0.9 (Daire H & Michael, 2008)
5	NFI	>0.9 (Hu & Bentler, 1999)
6	TLI	>0.9 ((Hu & Bentler, 1999)
7	CFI	>0.9 (Hu & Bentler, 1999)
8	RMR	<0.8 (Hu & Bentler, 1999)
9	RMSEA	<0.8 (Hair, C.W, Anderson, & Tatham, 2006)

Mean is the measures of central tendency. Mean of external factor, level of digitalisation, boons of digitalisation, challenges and impact of covid-19 and lockdown on digitalisation was computed.

Standard Deviation is a statistical technique used to measure the variations of the variable from the mean. Low standard deviation means values are close to the mean and high standard deviation indicates wide spread.

Percentage Analysis was applied on internal factors lead to digitalisation and to measure the proportion of changes in the level of digitalisation due to covid-19 pandemic and lockdown.

Mean Percentage Score (MPS) was computed to identify the level of digitalisation and level of impact of covid-19 pandemic and lockdown on digitalisation. One sample Z test was conducted to test the significance.

$$MPS = \frac{\text{Mean score of the variable} \times 100}{\text{Maximum possible score}}$$

Each construct of digitalisation was measured on a five-point Likert's scale ranging from not digitalised (1) to fully digitalised (5). The total score of each item was identified and computed MPS. This score was classified into four groups;

MPS< 35%	: Low
MPS between 35% and 50%	: Average
MPS between 50% and 75%	: Medium
MPS above 75%	: High

Source: (Loyd & Abidin, 1985)

The Coefficient of Variation (CV) is the most commonly used technique particularly in studies like this to compare the variability of two or more than two series of their relative variation. While determining the level of influence of external factors towards digitalisation, level of boons derived from adopting digital methods, level of challenges faced during the digitalisation and also to identify the level of impact of covid-19 pandemic and lockdown on digitalisation, C.V is used to determine the mean percentage score vary or not. The series, for which the coefficient of variation is greater, is said to be more variable or conversely less consistent, less uniform, less stable or less homogeneous. The formula for calculating coefficient of variation is;

$$\mathbf{C.V} = \frac{\text{Standard deviation}*100}{\text{Mean}}$$

One way ANOVA was used to make a comparison between different retail outlets; Food & grocery, Apparel and Consumer electronics with regard to external factors, level of digitalization, benefits and challenges faced during digitalisation. It is used to test the difference in a single dependent variable among two or more groups and if the difference exists between the groups; Post hoc test or multiple comparison test was conducted to assess which groups mean differs from others. One-way ANOVA was also used to compare the internal factors like age of outlets, type of outlet, number of employees and size of outlets with the external factors that lead to digitalisation, level of digitalisation, boons and challenges of digitalisation.

One-Sample Z-test is used to know whether the difference between the mean of a sample mean and the mean of a population is large enough to be statistically significant, that is, if it is unlikely to have occurred by chance.

Independent Sample Z test was used to compare the internal factor; digital department with external factor, level of digitalization, benefits and challenges of digitalization.

The test Statistics is $Z = \frac{\left(\bar{x}_1 - \bar{x}_2\right)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$

Correlation is a statistical technique used to measure the degree of relationship between two variables. Correlation technique was used to study relation of external factor leads to digitalisation, boons of digitalisation and challenges of digitalisation with that of level of digitalisation.

4.11 Period of the study

The period of study was from September 2017 to March 2023.

2017-19 : Literature review and research gap identified.

2019-20 : Theoretical Framework of the study

2020-21 : Developed Research Design & Finalized the conceptual model

2021-22 : Drafted the questionnaire, Pilot Study and Data Collection (October 2021 to April 2022)

2022-23 : Data Analysis and Report drafting

4.12 Chapter Summary

This chapter discussed the research design adopted for the study, sources of data, sample design, variables identified, conceptual model, instruments used for data collection, reliability and validity of the instruments and tools used for data analysis.

CHAPTER 5

FACTORS AND LEVELS OF DIGITALISATION

FACTORS AND LEVELS OF DIGITALISATION

5.1 Introduction

This chapter intends to measure the first and fourth objectives of the study, to evaluate the factors that leads to digitalisation and the levels of digitalisation in the selected organised retail outlets in Kerala. The sample was collected from 330 retail outlets which consist of 110 from food and grocery retail outlets, 110 from apparel retail outlets and 110 from consumer electronics retail outlets. This chapter evaluated the factors that leads to digitalisation and observes whether these factors are same for different retail outlets. It also measured the levels of digitalisation and tried to find out the overall level of digitalisation in the selected organised retail outlets in Kerala.

The result is exposed through two sections. Section A discussed the factors that leads to digitalisation, observed the changes among food & grocery, apparel and consumer electronic retail sector and also compared both internal and external factors of digitalisation. Section B discussed digitalisation in the selected organised retail outlets and compared it with both internal and external factors of digitalisation. For analyzing the data both simple and advanced statistical tools are used. Statistical tools like Mean, Standard deviation, Percentage analysis, Coefficient of variation, reliability analysis, one sample z test, one sample ANOVA, independent sample z test and correlation was used.

SECTION A

5.2 Factors lead to Digitalisation in the Select Organised Retail Sector

It provides information about the factors that leads to digitalisation of organised retail outlets. Both internal and external factors are considered in the study. Internal factors include age of the outlets, types of outlets, number of employees, size of outlet and digital department. The internal factors are analyzed using descriptive statistics and the results are shown in table 5.1. External factors include customers, suppliers, government, financial institution and competitors. Five-point Likert's scale was used to measure the external factors. In order to check the internal consistency of the scaled

statement reliability analysis utilizing Cronbach's Alpha Reliability test was executed and result is shown in table 5.5.

Table 5.1

Internal Factors

Sl. No.	Internal Factors of digitalisation	*Frequency*	*Per cent*
1	**Type of retail unit**		
	Food & Grocery	110	33.3
	Apparel	110	33.3
	Consumer Electronics	110	33.3
	Total	330	100
2	**Age of Outlet**		
	Up to 10 years	184	55.8
	11-20 years	94	28.5
	20-30 years	37	11.2
	Above 30 years	15	4.5
	Total	330	100
3	**Type of outlet**		
	Sole Proprietor	77	23.3
	Partnership	143	43.3
	Private Ltd. Co.	110	33.3
	Total	330	100
4	**Numbers of employees in the unit**		
	Less than 25	233	70.6
	25-50	35	10.6
	50-100	31	9.4
	100 & above	31	9.4
	Total	330	100
5	**Size of the outlet (in sq. ft.)**		
	Less than 1000	114	34.5
	1000-5000	155	47.0

	5000-10000	27	8.2
	10000-20000	15	4.5
	20000 & above	19	5.8
	Total	330	100
6	**Separate digital department**		
	Yes	155	47.0
	No	175	53.0
	Total	330	100
	Operational level in which digital team is available		
	Accounts / Finance	71	21.5
	Marketing	118	35.8
	Purchase	16	4.8
	Customer care	46	13.9
	Internal communication	1	0.3
	All of the above	32	9.7

Source: Primary Data

The table 5.1 shows the demographic profile of the organised retail outlets. Total sample size was 330. Equal number of retail outlets were chosen from Food & Grocery, Apparel and Consumer electronics. 55.8% of the retail outlets have an age up to 10 years, 28.5% have an age between 11 to 20 years, 11.2% have an age between 20 to 30 years and 4.5% have an age above 30 years.

It was observed that 43.3% of the retail outlets are partnership firms, 33.3% are registered as private limited company and 23.3% are sole proprietors. Majority of the retail outlets (70.6%) have less than 25 employees, 10.6% of the retail outlets have employees between 25 and 50, 9.4% have employees between 50 & 100 and 9.4% have employees above 100.

Size of most of the retail outlets (47%) were between 1000 and 5000 square feet, 34.5% of the retail outlets have a size less than 1000 square feet, 8.2% have a size between

5000 and 10000 square feet, 5.8% have a size above 20000 square feet and 4.5% have size between 10000 and 20000.

It was found that 53% of the retail outlets does not have separate digital department only 47% have separate digital department. Among them only 9.7% of the retail outlets have digital department for Accounts/Finance, Marketing, Purchase, Customer care and Internal communication. 35.8% of the retail outlets have separate digital department for marketing, 21.5% have for accounts/ finance, 13.9% have for customer care, 4.8% have for purchase and 0.3 have for internal communication.

5.2.1 Exploratory Factor Analysis of External Factors of Digitalisation

EFA approach is a conventional approach to scale refinement consists of following steps, identifying the items relevant to the particular domain from literature, designing a survey instrument to measure these items, conducting a field survey, performing EFA (frequently with varimax rotation) on the item responses, to identify the major factors according to the item factor loading. It is a data-driven approach to identify the underlying factors or latent variables for a set of variables. Exploratory factor analysis was performed on 25 items of External Factors lead to digitalisation. The items of the variables were analysed using Principal Component Analysis (PCA) method from SPSS. The following steps was used to conduct factor analysis:

- The Correlation matrix
- Kaiser- Meyer-Oilkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity –Chi Square.
- Total Variance Explained
- Factors underlying external factors leads to digitalisation

5.2.1.1 Correlation Matrix

Inspection with correlation matrix revealed the presence of variables with co-efficient of 0.3 and above. Therefore, 25 variables were retained for further analysis of Kaiser-Meyer-Oilkin Measure of Sampling Adequacy (KMO).

5.2.1.2 Kaiser- Meyer-Oilkin Measure of Sampling Adequacy (KMO)

KMO represents the ratio of squared correlation between 25 variables to its partial correlation. KMO values varies between 0 and 1, as per rule of thumb. If the values are close to 1, it indicates that correlation are comparatively good (Field 2013).

Table 5.2

EFA Model Fit- External Factors

Variable	No. of Variables	Kaiser-Meyer-Oklin Measure of Sampling Adequacy	Bartlett's Test of Sphericity – Chi Square	df	Sig.
External Factors	25	0.716	6323.800	300	<0.001

Source: Primary Data

Result of Chi Square showed a higher value (6323.800), it shows the appropriateness to conduct factor analysis (Field, 2009). As per the above table Chi Square value is 6323.800 at degrees of freedom 300 with significance (P<0.001). According to (Kaiser, 1974) KMO value less than 0.5, will not be accepted. KMO value between 0.5 and 0.7 are average, between 0.7 and 0.8 are good, between 0.8 and 0.9 are great and value above 0.9 are superb (Hutcheson & Sofroniou, 1999). As per the table, KMO value is 0.716, it implies that sample adequacy is good. Table 5.3 describes the result of Principal component analysis after which five components of external factors leads to digitalisation are identified with eigenvalue greater than one.

Table: 5.3

Total Variance Explained of External Factors of Digitalisation

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	6.456	25.824	25.824
2	4.218	16.873	42.696
3	3.312	13.250	55.946
4	1.983	7.931	63.877
5	1.689	6.755	70.631

Extraction Method: Principal Component Analysis.

Through Principal Component Analysis, the components of external factors are identified with eigen value greater than 1 and it is shown in above table. External factors lead to digitalisation construct yielded five components from twenty-five items. The factor structure developed from EFA has got adequate factor loadings for each factor with a minimum chance of cross-loadings. The first component explains 25.824% of variance with an eigen value of 6.456. The cumulative percentage of variance from first factor to fifth factor is 70.631. The analysis explains that extracted five components are sufficient to explain the variables.

Table 5.4 specifies the details of each factor along with component loadings. The exploratory maximum likelihood factor analysis identified five components with an Eigen value greater than one. The factors identified are named as customers, suppliers, government, financial institution and competitors.

Table 5.4

Factors underlying External Factors of Digitalisation

Factor	Codes	Statements	Factor loading
Customers	Cu1	Customers started to prefer digital payment	0.696
	Cu2	Customers started to search websites to know about the products which influenced us to go digital	0.790
	Cu3	Social medias started to influence the buying behaviour of customers	0.843
	Cu4	Customers started to prefer online shopping which led us too digital	0.699
Suppliers	Su1	Suppliers prefer digital mode for order placement	0.737
	Su2	Suppliers prefer digital payment	0.815
	Su3	It is easy to get price quotes from different suppliers	0.807

	Su4	As the list of available products are shared online it is easy to place orders	0.850
	Su5	It is easy to compare the quotation of different suppliers when it is digitally shared	0.747
	Su6	It is easy to identify the suppliers who supply quality products at reasonable price	0.633
Government	Go1	Provide funding and subsidies for digital transformation	0.683
	Go2	Promote digital technologies and tools	0.821
	Go3	Provide digital services	0.829
	Go4	Encouraged digital payments	0.810
Financial Institutions	FI1	All documents can be shared online.	0.700
	FI2	Since the transactions are digitalised processing time is less.	0.790
	FI3	Repayment of loan can be done digitally	0.834
	FI4	Financial statements are shared digitally	0.823
	FI5	Easiness of vendor payment settlement	0.676
Competitors	Co1	Competitors started to market their product digitally	0.807
	Co2	Competitors Launched their own website	0.844
	Co3	Competitors developed an app for sale of products	0.651
	Co4	Competitors started to accept digital payments	0.760
	Co5	Competitors are maintaining the digital records	0.773
	Co6	Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers	0.852

Source: Primary Data

The above table discloses five factors with its assigned names. The first factor 'Customers' have four indicators namely Customers started to prefer digital payment (0.696), Customers started to search websites to know about the products which influenced us to go digital (0.790), Social medias started to influence the buying behaviour of customers (0.843) and Customers started to prefer online shopping which led us too digital (0.699). These variables are related to customers, therefore, first factor named as 'Customers'. Even if the customers have four variables, social medias started to influence the buying behaviour of customers' have highest impact on the factor customer as it has the highest factor loading.

The second factor named 'Suppliers' have six indicators namely Suppliers prefer digital mode for order placement (0.737), Suppliers prefer digital payment (0.815), It is easy to get price quotes from different suppliers (0.807), As the list of available products are shared online it is easy to place orders (0.850), It is easy to compare the quotation of different suppliers when it is digitally shared (0.747) and It is easy to identify the suppliers who supply quality products at reasonable price (0.633). These variables are related to suppliers, therefore, second factor named as 'Suppliers'. Even if the suppliers have six indicators, 'As the list of available products are shared online it is easy to place orders' has highest influence on suppliers.

The third factor named 'Government' have four indicators namely Provide funding and subsidies for digital transformation (0.683), Promote digital technologies and tools (0.821), Provide digital services (0.829) and encouraged digital payments (0.810). These variables are related to the services provided by the government and hence named as 'Government'. The variable 'Provide digital services' have highest influence on government.

The fourth factor named 'Financial Institution' have five indicators namely All documents can be shared online (0.700), Since the transactions are digitalised processing time is less (0.790), Repayment of loan can be done digitally (0.834), Financial statements are shared digitally (0.823) and Easiness of vendor payment settlement (0.676). Even though there are five indicators, 'Repayment of loan can be done digitally' have highest influence on financial institution.

The fifth factor named 'Competitors' have six indicators namely Competitors started to market their product digitally (0.807), Competitors Launched their own website (0.844), Competitors developed an app for sale of products (0.651), Competitors started to accept digital payments (0.760), Competitors are maintaining the digital records (0.773) and Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers (0.852). Even though there are six indicators, 'Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers' have highest influence on competitors.

5.2.2 Reliability Statistics

In order to check the internal consistency of the scaled statement reliability analysis utilizing Cronbach's Alpha Reliability test was executed and result is shown in table 5.5.

Table no. 5.5

Reliability Statistics-External Factors of Digitalisation

Sl. No.	Constructs with its code name	Cronbach's Alpha	Number of Items	Code name given to the variables
1	Customers (Cu)	0.703	4	Cu1, Cu2, Cu3 & Cu4
2	Suppliers (Su)	0.888	6	Su1, Su2, Su3, Su4, Su5 &Su6
3	Government (Go)	0.834	4	Go1, Go2, Go3 &Go4
4	Financial Institutions (FI)	0.789	5	FI1, FI2, FI3, FI4 & FI5
5	Competitors (Co)	0.880	6	Co1, Co2, Co3, Co4, Co5 &Co6
			25	

Source: Primary Data

Table 5.5 demonstrates that all the constructs relating to external factors lead to digitalisation have an Alpha value greater than 0.7, which shows that all statements are reliable.

5.2.2 Confirmatory Factor Analysis of External Factors

Confirmatory Factor Analysis is a statistical method used to assess the ability of the predefined model to fit observed data. Confirmatory factor analysis is used to verify the measurement models for the latent constructs Customers, Suppliers, Government, Financial institutions and Competitors.

Table 5.6

Structural Model Fit Indices with General Rule of Thumb

Sl.no.	Fit Indices	General Rule of Thumb
1	P value	> 0.05 (Hair Jr., Black, Babin, & Anderson, 2021)
2	Normed χ^2	< 5 (Hair Jr., Black, Babin, & Anderson, 2021)
3	GFI	>0.9 (Hair, C.W, Anderson, & Tatham, 2006)
4	AGFI	>0.9 (Daire H & Michael, 2008)
5	NFI	>0.9 (Hu & Bentler, 1999)
6	TLI	>0.9 ((Hu & Bentler, 1999)
7	CFI	>0.9 (Hu & Bentler, 1999)
8	RMR	<0.08 (Hu & Bentler, 1999)
9	RMSEA	<0.08 (Hair, C.W, Anderson, & Tatham, 2006)

5.2.2.1 Confirmatory Factor Analysis for Customers

Confirmatory factor analysis was carried out for the construct customers with four items Cu1, Cu2, Cu3 & Cu4.

Table 5.7

Model fit Indices for CFA –Customers

Latent Variable	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Customers	.097	2.754	.996	.958	.993	.972	.995	.017	.073

Source: Primary Data

Model fit indices table 5.7 shows that the calculated P-value is 0.097 which is greater than 0.05 and Normed $\chi 2$ (2.754) which is less than 5, these indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (.996) and Adjusted Goodness of Fit Index (AGFI) value (.958) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.993), Tucker – Lewis Index (TLI) value (.972) and Comparative Fit Index (CFI) value (.995) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .017 and .073 respectively, which are also less than .08 thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 5.8

The Regression Coefficients –Customers

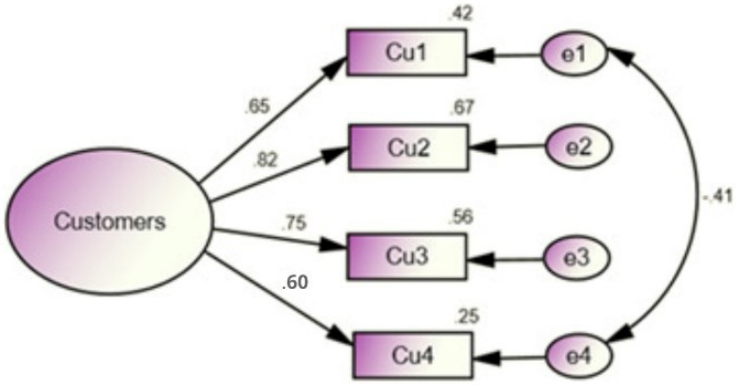
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Customers	Cu1	0.648	13.957	<0.001	42.0
	Cu2	0.817	20.755	<0.001	66.7
	Cu3	0.750	17.594	<0.001	56.3
	Cu4	0.596	9.861	<0.001	24.7

Source: Primary Data

Confirmatory Factor Analysis showed in Table 5.8 says that every four variables, Cu1 to Cu4, have an influence on customers. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The result of CFA is shown in Figure 5.1.

Figure 5.1

CFA model for Customers



5.3.2.2 Confirmatory Factor Analysis of Suppliers

Confirmatory factor analysis was carried out for the construct suppliers with six items Su1, Su2, Su3, Su4, Su5 &Su6. The model fit indices are shown in table 5.9.

Table 5.9

Model fit Indices for CFA – Suppliers

Latent Variable	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Suppliers	.521	.806	.997	.983	.997	1.003	1.000	.009	.000

Source: Primary Data

Model fit indices table 5.9 shows that the calculated P-value is 0.521 which is greater than 0.05 and Normed $\chi 2$ (0.806) which is less than 5, these indicates the model is perfectly

fit. Here Goodness of Fit Index (GFI) value (.997) and Adjusted Goodness of Fit Index (AGFI) value (.983) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.997), Tucker - Lewis Index (TLI) value (1.003) and Comparative Fit Index (CFI) value (1) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .009 and .000 respectively, which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 5.10

The Regression Coefficients – Suppliers

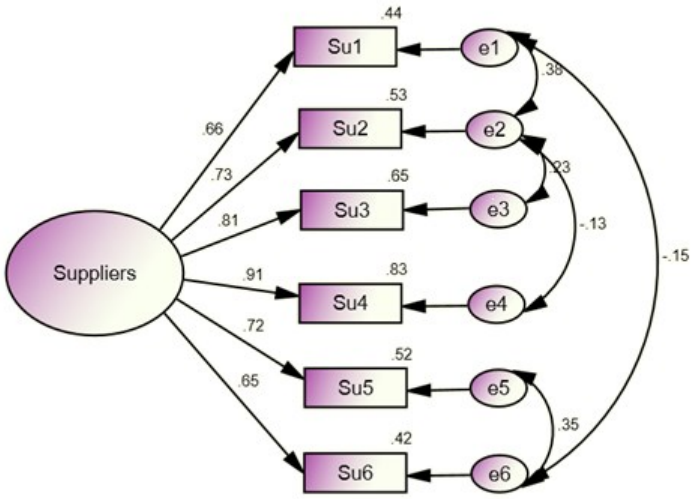
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Suppliers	Su1	0.660	14.337	<0.001	43.6
	Su2	0.728	16.717	<0.001	53.0
	Su3	0.809	20.328	<0.001	65.4
	Su4	0.912	27.835	<0.001	83.2
	Su5	0.724	16.564	<0.001	52.4
	Su6	0.649	13.989	<0.001	42.1

Source: Primary Data

Confirmatory Factor Analysis showed in Table 5.10 says that every six variables, Su1 to Su6, have an influence on suppliers. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The result of CFA is shown in Figure 5.2.

Figure 5.2

CFA model for Suppliers



5.2.2.3 Confirmatory Factor Analysis of Government

Confirmatory factor analysis was carried out for the construct government with four items Go1, Go2, Go3 & Go4. Model fit indices for CFA of government is shown in table 5.11.

Table 5.11

Model fit Indices for CFA – Government

Latent Variable	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Government	.278	1.179	.998	.982	.998	.998	1.000	.005	.023

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 5.12 present the regression coefficients.

Table 5.12

The Regression Coefficients – Government

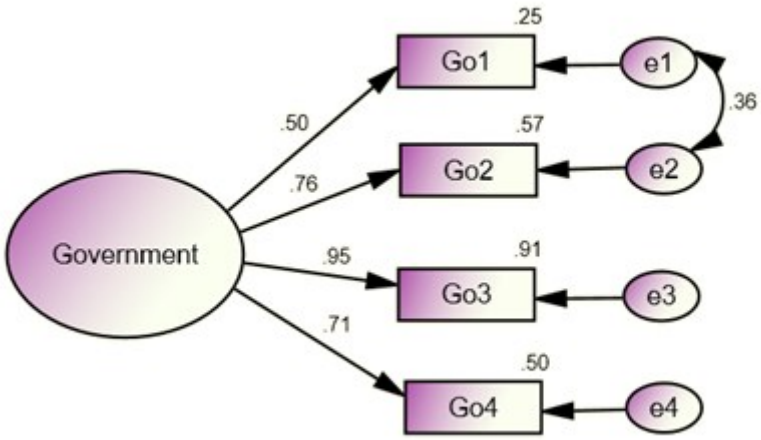
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Government	Go1	0.501	9.885	<0.001	24.8
	Go2	0.758	17.929	<0.001	57.5
	Go3	0.952	33.503	<0.001	90.6
	Go4	0.709	16.007	<0.001	50.3

Source: Primary Data

Confirmatory Factor Analysis showed in Table 5.12 says that all the variables, Go1 to Go4, have an influence on Government. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The result of CFA is shown in Figure 5.3.

Figure 5.3

CFA model for Government



5.2.2.4 Confirmatory Factor Analysis of Financial Institutions

The variables contributing to 'Financial Institutions' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 5.13 and in Table 5.14 respectively.

Table 5.13

Model fit Indices for CFA – Financial Institutions

Latent Variable	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Financial Institutions	.723	.324	.999	.994	.999	1.010	1.000	.003	.000

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 5.14 present the regression coefficients.

Table 5.14

The Regression Coefficients – Financial Institutions

Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Financial Institutions	FI1	0.528	10.621	<0.001	27.9
	FI2	0.641	13.741	<0.001	41.1
	FI3	0.896	26.249	<0.001	80.3
	FI4	0.885	25.287	<0.001	78.3
	FI5	0.520	8.539	<0.001	19.4

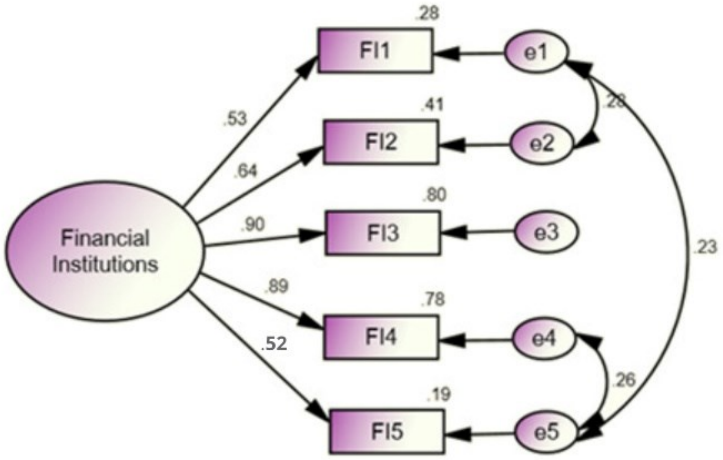
Source: Primary Data

Here all the constructs (FI1 to FI5) have regression coefficient values more than 0.4. Hence all the constructs have significant influence on Financial Institutions. The

variance explained of the construct FI3 has the highest (80.3%) and the variance explained of the construct FI5 is the lowest (19.4%).

Figure 5.4

CFA model for Financial Institutions



5.2.2.5 Confirmatory Factor Analysis for Competitors

Confirmatory factor analysis was carried forward for the construct competitors with six items Co1 to Co6. The model fit indices are shown in table 5.15

Table 5.15

Model fit Indices for CFA – Competitors

Latent Variable	P	Normed $\chi 2$	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Competitors	.057	2.143	.989	.954	.990	.984	.995	.020	.059

Source: Primary Data

Model fit indices table 5.15 shows that the calculated P-value is 0.057 which is greater than 0.05 and Normed $\chi 2$ (2.143) which is less than 5, these indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (.989) and Adjusted Goodness of Fit Index (AGFI) value (.954) is greater than 0.9 which represents it is a good fit. The calculated

Normed Fit Index (NFI) value (.990), Tucker - Lewis Index (TLI) value (.984) and Comparative Fit Index (CFI) value (.995) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .020 and .059 respectively, which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 5.16

The Regression Coefficients – Competitors

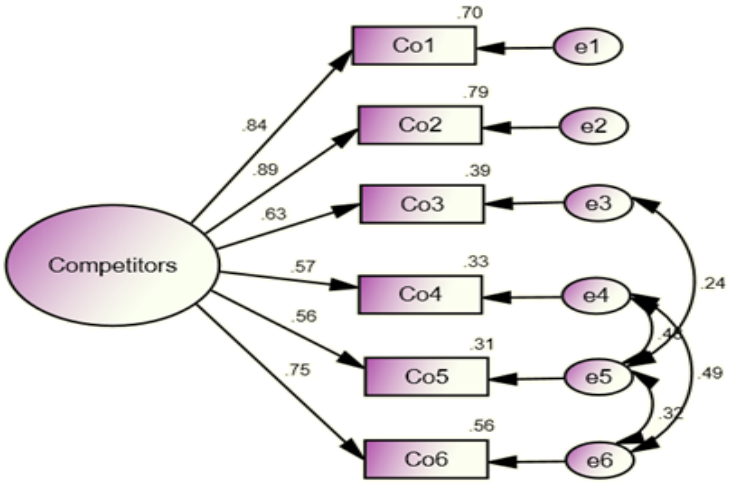
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Competitors	Co1	0.839	22.021	<0.001	70.4
	Co2	0.889	25.626	<0.001	79.0
	Co3	0.628	13.347	<0.001	39.4
	Co4	0.571	11.736	<0.001	32.6
	Co5	0.555	11.312	<0.001	30.8
	Co6	0.747	17.471	<0.001	55.8

Source: Primary Data

As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The variance explained of the construct Co2 is the highest (79%), Co1 is 70.4%, Co6 is 55.8%, Co3 is 39.4%, Co4 is 32.6% and Co5 is 30.8%.

Figure 5.5

CFA model for Competitors



5.2.3 Level of Influence of External Factors to Digitalisation

In order to find the level of influence of External Factors on digitalisation, the respondents are asked questions under various heads like Customers, Suppliers, Government, Financial Institutions and Competitors on five-point Likert scale. The responses are scored as 1 for 'Strongly disagree', 2 for 'Disagree', 3 for 'Neither agree nor disagree', 4 for 'Agree' and 5 for 'Strongly agree'. The total score of the 25 questions for all 330 respondents is found out, based on which the mean % score of level of External Factors on digitalisation $\left[MPS = \frac{MeanScore \times 100}{Maximumpossiblescore}\right]$is calculated. This score is classified into one of the four groups as low if the mean % score is less than 35%, average if the mean % score is between 35 to 50 per cent, above average if the mean % score lies in the interval 50 to 75% and high if the mean % score is above 75%. A one sample Z test is carried out to test the significance. The following table gives the Mean, SD, Mean % Score and Z value of the variable considered. (Loyd & Abidin, 1985)

Table 5.17

Level of Influence of External Factors to Digitalisation

Variables	N	Mean	Standard Deviation	Mean % score	CV	z	p value
External Factors	330	77.52	10.58	62.02	13.65	25.790	<0.001

Source: Primary Data

The mean percentage score of level of influence of External Factors to digitalisation is 62.02% which indicate that level of influence of External Factors to digitalisation is above average. The CV indicates that this score is stable as the value is less than 20%. P value is less than 0.05 and Z value is positive, which indicates that the test is significant.

5.2.4 Comparison of External Factors and Type of Retail Units

In order to identify whether there is any difference in the external factors with respect to types of retail units viz. Food & grocery, Apparel and Consumer Electronics the following hypothesis was formulated.

H_0: There is no significant difference in the external factor leads to digitalisation among the different retail sectors.

H_1: There is significant difference in the external factor leads to digitalisation among the different retail sectors.

A one sample analysis of variance is used to test hypothesis about means when there are three or more groups of one independent variable. In this case, type of retail unit was considered to be the independent variable, which included three groups (a) Food & Grocery (b) Apparel (c) Consumer Electronics. So, ANOVA was used to compare the mean scores of different type of retail unit and the result is exhibited in Table 5.18.

Table 5.18

External Factors and Type of Retail Unit

Variable	Type of retail unit	N	Mean	S.D.	F	p value
External Factors	Food & Grocery	110	72.81	9.59	18.223	<0.001
	Apparel	110	79.51	9.66		
	Consumer Electronics	110	80.25	10.90		

Source: Primary Data

The results of the ANOVA test depicted in the above table reveals that the statistical value of p is less than 0.05 hence, we reject the null hypothesis. It means that the external Factors lead to digitalisation is different for different type of retail units.

Since the ANOVA test indicate that the significant difference exist among the type of retail units for External Factors, post hoc test or multiple comparison test was conducted to identify which among the type of retail units differs significantly and the result is exhibited in the Table 5.19. The result of the analysis indicates that for External Factors, Food & Grocery differs with Apparel and Consumer Electronics. The Difference between the groups is indicated by (*).

Table 5.19

Multiple Comparison Tests for External Factors and Type of Retail Units

Variable			Mean Difference (I-J)	Std. Error	Sig.
External Factors	Food & Grocery	Apparel	-6.70000*	1.357	0.000
		Consumer Electronics	-7.43636*	1.357	0.000
	Apparel	Food & Grocery	6.70000*	1.357	0.000
		Consumer Electronics	-0.736	1.357	0.588
	Consumer Electronics	Food & Grocery	7.43636*	1.357	0.000
		Apparel	0.736	1.357	0.588

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison table 5.19 depicts that external factor that leads to digitalisation is significantly different (p value less than 0.05) in case of Food & grocery and Apparel, Food & grocery and consumer electronics but it is significantly same (p value greater than 0.05) in the case of Apparel and Consumer electronics.

In order to identify the influence of external factors i.e., Customers, suppliers, government, financial institutions and competitors on different type of retail outlets like food and grocery, apparel and consumer electronics are significant, one sample Analysis of Variance was used and result is shown in table 5.20.

Table 5.20

Components wise External Factors and Type of Retail Unit

Variable	Type of retail unit	N	Mean	S.D.	F	p value
Customers	Food & Grocery	110	15.56	2.29	1.222	0.296
	Apparel	110	15.22	2.97		
	Consumer Electronics	110	14.99	2.90		
Suppliers	Food & Grocery	110	16.73	4.98	28.027	<0.001
	Apparel	110	19.20	3.43		
	Consumer Electronics	110	20.88	3.86		
Government	Food & Grocery	110	9.29	2.77	42.974	<0.001
	Apparel	110	12.48	2.28		
	Consumer Electronics	110	11.50	2.76		
Financial Institutions	Food & Grocery	110	17.65	2.76	0.867	0.421
	Apparel	110	17.49	2.28		
	Consumer Electronics	110	17.97	3.20		
Competitors	Food & Grocery	110	13.58	3.31	3.631	0.028
	Apparel	110	15.12	4.57		
	Consumer Electronics	110	14.90	5.56		

Source: Primary Data

The result of ANOVA depicted in the above table reveals that p value of the external factors suppliers, government and competitors are less than 0.05, it indicates that there is significant difference in the influence of suppliers, government and competitors on different type of outlets. But in case of customers and financial institutions, p value is greater than 0.05. It means that the influence of the external factors; customers and financial institutions on the different type of retail units are same.

As there exists a significant difference in the externals factors suppliers, government and competitors post hoc test or multiple comparison test was conducted to identify which among the type of retail units differs significantly and the result is exhibited in the Table 5.21

Table 5.21

Multiple Comparison Tests for Component wise External factors and Type of Retail Units

Variable			Mean Difference (I-J)	Std. Error	Sig.
Suppliers	Food & Grocery	Apparel	-2.47273*	0.558	0.000
		Consumer Electronics	-4.15455*	0.558	0.000
	Apparel	Food & Grocery	2.47273*	0.558	0.000
		Consumer Electronics	-1.68182*	0.558	0.003
	Consumer Electronics	Food & Grocery	4.15455*	0.558	0.000
		Apparel	1.68182*	0.558	0.003
Government	Food & Grocery	Apparel	-3.19091*	0.353	0.000
		Consumer Electronics	-2.20909*	0.353	0.000
	Apparel	Food & Grocery	3.19091*	0.353	0.000
		Consumer Electronics	.98182*	0.353	0.006

	Consumer Electronics	Food & Grocery	2.20909*	0.353	0.000
		Apparel	-.98182*	0.353	0.006
Competitors	Food & Grocery	Apparel	-1.53636*	0.617	0.013
		Consumer Electronics	-1.31818*	0.617	0.033
	Apparel	Food & Grocery	1.53636*	0.617	0.013
		Consumer Electronics	0.218	0.617	0.724
	Consumer Electronics	Food & Grocery	1.31818*	0.617	0.033
		Apparel	-0.218	0.617	0.724

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison test reveals that there is significant difference (P value <0.05) in case of the external factor suppliers and government. Hence it can be concluded as the influence of the factor supplier and government towards digitalisation of different type of retail units are different. But in case of the external factor competitors p value is greater than 0.05 for apparel and consumer electronics retail units, it indicates that influence of the factor competitors towards digitalisation is same for the apparel retail outlet and consumer electronics retail outlet.

5.2.5 Comparison of Internal and External Factors leads to Digitalisation

The influence of internal factors like age of outlet, type of outlet, number of employees and size of outlets on external factors to digitalisation are tested using one sample analysis of variance and the influence of internal factor digital department using independent sample z test.

5.2.5.1 Comparison of Age of Outlet and External Factors

A one sample analysis of variance is used to test hypothesis about means when there are three or more groups of one independent variable. In this case, age of outlet was considered to be the independent variable, which included four groups (a) Up to 10 years (b) 11-20 years (c) 20-30 years (d) Above 30 years.

Ho: There is no significant difference in the external factors leads to digitalisation with respect to age of outlet.

H_1: There is significant difference in the external factors leads to digitalisation with respect to age of outlet.

Table 5.22

External Factors and Age of Outlet

Variable	Age of Outlet	N	Mean	S.D.	F	p value
External Factors	Up to 10 years	184	76.10	10.64	2.871	0.037
	11-20 years	94	78.72	9.88		
	20-30 years	37	80.70	10.82		
	Above 30 years	15	79.60	11.56		

Source: Primary Data

The results of one sample analysis of variance show that there is a significant difference in the mean score of external factors and age of outlets. The mean score of retail outlets who belongs to the 20-30 years (80.70), is higher than all other age of outlets. At the same time, the rest of the age groups have almost similar scores and the least score goes to the group of (up to 10 years). The p-value which is less than 0.05 confirms that this difference is significant too. Therefore, H_1 is accepted and rejected H_0. Post hoc tests or multiple comparison tests have been conducted to identify which among the age of outlets differs significantly and the result is exhibited in the Table 5.23. The result of the analysis indicates that for External Factors, up to 10 years differs with 11-20 years and 20-30 years.

Table 5.23

Multiple Comparison Tests for External Factors and Age of Outlet

Dependent Variable	Age of Outlet		Mean Difference (I-J)	Std. Error	Sig.
External Factors	Up to 10 years	11-20 years	-2.62558*	1.330	0.049
		20-30 years	-4.60488*	1.890	0.015
		Above 30 years	-3.502	2.817	0.215
	11-20 years	Up to 10 years	2.62558*	1.330	0.049
		20-30 years	-1.979	2.036	0.332
		Above 30 years	-0.877	2.917	0.764
	20-30 years	Up to 10 years	4.60488*	1.890	0.015
		11-20 years	1.979	2.036	0.332
		Above 30 years	1.103	3.211	0.732
	Above 30 years	Up to 10 years	3.502	2.817	0.215
		11-20 years	0.877	2.917	0.764
		20-30 years	-1.103	3.211	0.732

Source: Primary Data Significant difference are indicated by (*).

The post hoc test result reveals that age of outlet up to 10 years are significantly (P value less than 0.05) different from 11-20 years and 20-30 years but significantly same (P-value greater than 0.05) with above 30 years. Age of outlet 11-20 years is significantly different from up to 10 years since the p value is less than 0.05 but significantly same with20-30 years and above 30 years. Age of the outlet 20-30 years are significantly different with up to10 years but significantly same with 11-20 and above 30 years. Finally, age of outlet above 30 years is significantly same with up to 10 years, 11-20 years and20-30 years.

Table 5.24

Component wise External Factors and Age of Outlet

External Factor	Age of Outlet	N	Mean	S.D.	F	p value
Customers	Up to 10 years	184	15.09	2.56	1.954	0.121
	11-20 years	94	15.79	2.66		
	20-30 years	37	15.08	3.53		
	Above 30 years	15	14.40	2.90		
Suppliers	Up to 10 years	184	18.78	4.65	1.017	0.385
	11-20 years	94	18.70	4.41		
	20-30 years	37	19.86	3.99		
	Above 30 years	15	20.07	3.56		
Government	Up to 10 years	184	10.86	3.02	0.954	0.415
	11-20 years	94	11.46	2.88		
	20-30 years	37	11.32	2.55		
	Above 30 years	15	11.07	2.96		
Financial Institutions	Up to 10 years	184	17.37	2.95	2.659	0.048
	11-20 years	94	18.15	2.35		
	20-30 years	37	18.41	2.63		
	Above 30 years	15	17.27	2.79		
Competitors	Up to 10 years	184	14.00	4.17	3.409	0.018
	11-20 years	94	14.63	4.75		
	20-30 years	37	16.03	5.30		
	Above 30 years	15	16.80	5.93		

Source: Primary Data

The table 5.24 shows the result of the influence external factors customers, suppliers, government, financial institutions and competitors towards digitalisation with regard to age of outlets. The p value obtained for the construct customers, suppliers and government are greater than 0.05, it implies that the influence of these factors towards

digitalisation with respect to age of outlets are same. But the p value of the construct financial institutions and competitors are less than 0.05 which implies that there is significant difference in the influence of these factors on digitalisation with respect to age of outlets. In order to identify which among the age group differ significantly multiple comparison test or post hoc test have been conducted and the result is shown in the table 5.25.

Table 5.25

Multiple Comparison Tests for Component wise External Factors and Age of Outlet

External Factors	Age of Outlet		Mean Difference (I-J)	Std. Error	Sig.
Financial Institutions	Up to 10 years	11-20 years	-.77937*	0.348	0.026
		20-30 years	-1.03584*	0.495	0.037
		Above 30 years	0.103	0.738	0.889
	11-20 years	Up to 10 years	.77937*	0.348	0.026
		20-30 years	-0.256	0.533	0.631
		Above 30 years	0.882	0.764	0.249
	20-30 years	Up to 10 years	1.03584*	0.495	0.037
		11-20 years	0.256	0.533	0.631
		Above 30 years	1.139	0.841	0.177
	Above 30 years	Up to 10 years	-0.103	0.738	0.889
		11-20 years	-0.882	0.764	0.249
		20-30 years	-1.139	0.841	0.177
Competitors	Up to 10 years	11-20 years	-0.628	0.578	0.279
		20-30 years	-2.02703*	0.822	0.014
		Above 30 years	-2.80000*	1.225	0.023
	11-20 years	Up to 10 years	0.628	0.578	0.279
		20-30 years	-1.399	0.885	0.115
		Above 30 years	-2.172	1.268	0.088

	20-30 years	Up to 10 years	2.02703*	0.822	0.014
		11-20 years	1.399	0.885	0.115
		Above 30 years	-0.773	1.396	0.580
	Above 30 years	Up to 10 years	2.80000*	1.225	0.023
		11-20 years	2.172	1.268	0.088
		20-30 years	0.773	1.396	0.580

Source: Primary Data Significant difference are indicated by (*).

Multiple comparison result shows that the influence of financial institutions towards digitalisation differs significantly with the age of outlet (up to 10 years) with that of 11-20 and 20-30 years. The influence of competitors towards digitalisation differs significantly with the age of the outlets up to 10 years with of 20-30 & above 30 years, 20-30 years with that of up to 10 years and above 30 years with that of up to 10 years.

5.2.5.2 Comparison of External Factors and Type of Outlet

A one sample analysis of variance is used to test hypothesis. In this case, type of outlet was considered to be the independent variable, which included three groups (a) Sole Proprietor (b) Partnership (c) Private Ltd. Co. The hypothesis formulated to test the mean of different types of outlets is given below.

Ho: There is no significant difference in the external factors leads to digitalisation with respect to type of outlet.

H_1: There is significant difference in the external factors leads to digitalisation with respect to type of outlet.

Table 5.26

External Factors and Type of Outlet

Variable	Type of outlet	N	Mean	Standard Deviation	F	p value
External Factors	Sole Proprietor	77	72.19	11.03	16.670	<0.001
	Partnership	143	77.84	11.33		
	Private Ltd. Co.	110	80.84	7.39		

Source: Primary Data

The result of one-way ANOVA shown in table 5.26 demonstrate that the mean of external factors that leads to digitalisation is different for different type of outlets. Private Limited company have the highest mean score of 80.84, followed by Partnership by 77.84 and sole proprietor by 72.19. As the p value is less than 0.05, the difference is significant. Therefore, accepted H_1 and rejected H_0 in this context. Post hoc tests or multiple comparison tests have been conducted to identify which among the type of outlets differs significantly and the result is exhibited in the Table 5.27.

Table 5.27

Multiple Comparison Tests for External Factors and Type of Outlets

Dependent Variable	Type of outlet		Mean Difference (I-J)	Std. Error	Sig.
External Factors	Sole Proprietor	Partnership	-5.64436*	1.429	0.000
		Private Ltd. Co.	-8.64156*	1.502	0.000
	Partnership	Sole Proprietor	5.64436*	1.429	0.000
		Private Ltd. Co.	-2.99720*	1.282	0.020
	Private Ltd. Co.	Sole Proprietor	8.64156*	1.502	0.000
		Partnership	2.99720*	1.282	0.020

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison table 5.27 shows that there is significant difference (p value is less than 0.05) among different types of outlets sole proprietor, partnership and private limited company.

Table 5.28

Component wise External Factors and Types of Outlets

External Factors	Types of outlets	N	Mean	Standard Deviation	F	p value
Customers	Sole Proprietor	77	14.12	2.35	15.809	<0.001
	Partnership	143	15.09	2.88		
	Private Ltd. Co.	110	16.27	2.45		
Suppliers	Sole Proprietor	77	16.78	3.89	22.094	<0.001
	Partnership	143	18.62	4.88		
	Private Ltd. Co.	110	20.86	3.38		
Government	Sole Proprietor	77	9.86	3.21	22.085	<0.001
	Partnership	143	10.72	3.05		
	Private Ltd. Co.	110	12.44	1.88		
Financial Institutions	Sole Proprietor	77	15.44	2.62	42.166	<0.001
	Partnership	143	18.29	2.93		
	Private Ltd. Co.	110	18.53	1.55		
Competitors	Sole Proprietor	77	16.00	4.05	14.531	<0.001
	Partnership	143	15.13	4.87		
	Private Ltd. Co.	110	12.74	4.07		

Source: Primary Data

The above table reveals whether there is any significant difference in the digitalisation of different type of retail outlets like sole proprietor, partnership and private limited company with respect to external factors like customers, suppliers, government, financial institutions and competitors. The p value obtained for all the external factors are less than 0.05, it implies that there is significant difference in the digitalisation of different types of retail outlets with respect to external factors. In order to identify which among the type of outlets are significantly different multiple comparison test are conducted.

Table 5.29

Multiple Comparison Tests for Component wise External Factors and Types of Outlets

External Factors	Types of Outlets		Mean Difference (I-J)	Std. Error	Sig.
Customers	Sole Proprietor	Partnership	-.97403*	0.371	0.009
		Private Ltd. Co.	-2.15584*	0.390	0.000
	Partnership	Sole Proprietor	.97403*	0.371	0.009
		Private Ltd. Co.	-1.18182*	0.333	0.000
	Private Ltd. Co.	Sole Proprietor	2.15584*	0.390	0.000
		Partnership	1.18182*	0.333	0.000
Suppliers	Sole Proprietor	Partnership	-1.83616*	0.594	0.002
		Private Ltd. Co.	-4.08442*	0.625	0.000
	Partnership	Sole Proprietor	1.83616*	0.594	0.002
		Private Ltd. Co.	-2.24825*	0.533	0.000
	Private Ltd. Co.	Sole Proprietor	4.08442*	0.625	0.000
		Partnership	2.24825*	0.533	0.000
Government	Sole Proprietor	Partnership	-.86314*	0.390	0.028
		Private Ltd. Co.	-2.57922*	0.410	0.000
	Partnership	Sole Proprietor	.86314*	0.390	0.028
		Private Ltd. Co.	-1.71608*	0.350	0.000
	Private Ltd. Co.	Sole Proprietor	2.57922*	0.410	0.000
		Partnership	1.71608*	0.350	0.000
Financial Institutions	Sole Proprietor	Partnership	-2.84515*	0.350	0.000
		Private Ltd. Co.	-3.08571*	0.368	0.000
	Partnership	Sole Proprietor	2.84515*	0.350	0.000
		Private Ltd. Co.	-0.241	0.314	0.444
	Private Ltd. Co.	Sole Proprietor	3.08571*	0.368	0.000
		Partnership	0.241	0.314	0.444

Competitors	Sole Proprietor	Partnership	0.874	0.627	0.164
		Private Ltd. Co.	3.26364*	0.659	0.000
	Partnership	Sole Proprietor	-0.874	0.627	0.164
		Private Ltd. Co.	2.38951*	0.562	0.000
	Private Ltd. Co.	Sole Proprietor	-3.26364*	0.659	0.000
		Partnership	-2.38951*	0.562	0.000

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison test result shows that there is significant difference between different type of retail outlets except partnership and private limited company of the construct financial institution and sole proprietor and partnership of the construct competitors.

5.2.5.3 Comparison of External Factors and Number of Employees

The number of employees in the outlet was considered to be the independent variable, which included four groups (a) Less than 25 (b) 25-30 (c) 50-100 (d) 100 & above. So, ANOVA was used to compare the mean of different numbers of employees in the outlet and the result is exhibited in Table 5.30

Ho: There is no significant difference in the external factors lead to digitalisation with respect to number of employees.

H_1: There is significant difference in the external factors lead to digitalisation with respect to number of employees.

Table 5.30

External Factors and Number of Employees

Variable	Number of employees	N	Mean	S.D.	F	p value
External Factors	Less than 25	233	74.88	9.80	23.325	<0.001
	25-50	35	82.00	9.94		
	50-100	31	81.35	8.03		
	100 & above	31	88.48	9.54		

Source: Primary Data

The results of the ANOVA test depicted in Table 5.30 reveals that the statistical value of p is less than 0.05 which indicates that there is significant difference between the different number of employees in the outlet. Hence, we reject the hypothesis H_0, and accept H_1.

Since the ANOVA test indicate that the significant difference exist among the number of employees post hoc test or multiple comparison test is conducted to identify which among the number of employees in the outlet differs significantly and the result is exhibited in the Table 5.31.

Table 5.31

Multiple Comparison Test for External Factors and Number of Employees

Dependent Variable	Number of Employees		Mean Difference (I-J)	Std. Error	Sig.
External Factors	Less than 25	25-50	-7.12017*	1.748	0.000
		50-100	-6.47501*	1.844	0.001
		100 & above	-13.60404*	1.844	0.000
	25-50	Less than 25	7.12017*	1.748	0.000
		50-100	0.645	2.379	0.786
		100 & above	-6.48387*	2.379	0.007
	50-100	Less than 25	6.47501*	1.844	0.001
		25-50	-0.645	2.379	0.786
		100 & above	-7.12903*	2.450	0.004
	100 & above	Less than 25	13.60404*	1.844	0.000
		25-50	6.48387*	2.379	0.007
		50-100	7.12903*	2.450	0.004

Source: Primary Data Significant difference are indicated by (*).

Post hoc test result shown in table 5.31 reveals that the number of employees less than 25 is significantly different from 25-50, 50-100 and 100 & above. The number of employees 25-50 is significantly different from less than 25 and 100 & above but

significantly same with 50-100. The number of employees 50-100 are significantly different from less than 25 and 100 & above but significantly same with 25-50. The number of employees 100 & above are significantly different from all other groups.

Table 5.32

Component wise External Factors and Number of employees

Variable	Number of employees	N	Mean	S.D.	F	p value
Customers	Less than 25	233	14.74	2.49	16.884	<0.001
	25-50	35	15.34	3.02		
	50-100	31	16.26	3.20		
	100 & above	31	18.03	1.64		
Suppliers	Less than 25	233	17.97	4.24	15.446	<0.001
	25-50	35	20.20	4.79		
	50-100	31	21.23	3.92		
	100 & above	31	22.45	3.36		
Government	Less than 25	233	10.70	2.93	5.126	0.002
	25-50	35	11.63	2.71		
	50-100	31	12.23	2.35		
	100 & above	31	12.26	3.12		
Financial Institutions	Less than 25	233	17.20	2.81	10.854	<0.001
	25-50	35	18.51	2.15		
	50-100	31	18.61	2.14		
	100 & above	31	19.68	2.37		
Competitors	Less than 25	233	14.26	4.10	4.374	0.005
	25-50	35	16.31	5.05		
	50-100	31	13.03	4.96		
	100 & above	31	16.06	6.37		

Source: Primary Data

The result of one-way Anova depicted in the above table reveals the significant influence of the external factors customers, suppliers, government, financial institutions and competitors on digitalisation with respect to the number of employees in the outlets. The p value obtained for all the factors are less than 0.05, it implies that there is significant difference in the influence of external factors towards digitalisation with respect to number of employees. To identify which among the classes of number of employees have significant difference, the post hoc tests are conducted and the result is shown below:

Table 5.33

Multiple Comparison Test for Component wise External Factors and Number of Employees

Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.
Customers	Less than 25	25-50	-0.600	0.464	0.197
		50-100	-1.51558*	0.489	0.002
		100 & above	-3.28977*	0.489	0.000
	25-50	Less than 25	0.600	0.464	0.197
		50-100	-0.915	0.631	0.148
		100 & above	-2.68940*	0.631	0.000
	50-100	Less than 25	1.51558*	0.489	0.002
		25-50	0.915	0.631	0.148
		100 & above	-1.77419*	0.650	0.007
	100 & above	Less than 25	3.28977*	0.489	0.000
		25-50	2.68940*	0.631	0.000
		50-100	1.77419*	0.650	0.007
Suppliers	Less than 25	25-50	-2.22575*	0.761	0.004
		50-100	-3.25156*	0.803	0.000
		100 & above	-4.47736*	0.803	0.000
	25-50	Less than 25	2.22575*	0.761	0.004
		50-100	-1.026	1.036	0.323
		100 & above	-2.25161*	1.036	0.030
	50-100	Less than 25	3.25156*	0.803	0.000
		25-50	1.026	1.036	0.323

		100 & above	-1.226	1.067	0.251
	100 & above	Less than 25	4.47736*	0.803	0.000
		25-50	2.25161*	1.036	0.030
		50-100	1.226	1.067	0.251
Government	Less than 25	25-50	-0.925	0.521	0.077
		50-100	-1.52194*	0.550	0.006
		100 & above	-1.55420*	0.550	0.005
	25-50	Less than 25	0.925	0.521	0.077
		50-100	-0.597	0.709	0.400
		100 & above	-0.629	0.709	0.375
	50-100	Less than 25	1.52194*	0.550	0.006
		25-50	0.597	0.709	0.400
		100 & above	-0.032	0.730	0.965
	100 & above	Less than 25	1.55420*	0.550	0.005
		25-50	0.629	0.709	0.375
		50-100	0.032	0.730	0.965
Financial Institutions	Less than 25	25-50	-1.31686*	0.481	0.007
		50-100	-1.41548*	0.507	0.006
		100 & above	-2.47999*	0.507	0.000
	25-50	Less than 25	1.31686*	0.481	0.007
		50-100	-0.099	0.654	0.880
		100 & above	-1.163	0.654	0.076
	50-100	Less than 25	1.41548*	0.507	0.006
		25-50	0.099	0.654	0.880
		100 & above	-1.065	0.674	0.115
	100 & above	Less than 25	2.47999*	0.507	0.000
		25-50	1.163	0.654	0.076
		50-100	1.065	0.674	0.115
Competitors	Less than 25	25-50	-2.05248*	0.823	0.013
		50-100	1.230	0.868	0.158
		100 & above	-1.80271*	0.868	0.039
	25-50	Less than 25	2.05248*	0.823	0.013
		50-100	3.28203*	1.120	0.004
		100 & above	0.250	1.120	0.824
	50-100	Less than 25	-1.230	0.868	0.158
		25-50	-3.28203*	1.120	0.004

		100 & above	-3.03226*	1.154	0.009
	100 & above	Less than 25	1.80271*	0.868	0.039
		25-50	-0.250	1.120	0.824
		50-100	3.03226*	1.154	0.009

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison result shows that there exists a significant difference between the number of employees less than 25 with 50-100 and 100 & above, 25-50 with 100 & above, 50-100 with 100 & above for the construct customers. In case of suppliers, there exist a significant difference between different groups of number of employees except 25-50 and 50-100, 50-100 and 100 & above. In case of the construct government there exists a significant difference only between the number of employees less than25 with 50-100 and l100 & above. In case of financial institutions there exists a significant difference between the number of employees less than 25 with that of all other groups. There exists a significant difference between number of employees less than 25 with 25-50 and 100 & above, 25-50 and 100 & above, 50-100 and 100 & above in case of the construct competitors.

5.2.5.4 Comparison of External Factors and Size of Outlet

In this case, size of outlet was considered to be the independent variable, which included five groups (a) Less than 1000 (b) 1000-5000 (c) 5000-10000 (d) 10000-20000 (e) 20000 & above. A one sample analysis of variance is used to test hypotheses.

Ho: There is no significant difference in the external factors lead to digitalisation with respect to size of outlet.

H_1: There is significant difference in the external factors lead to digitalisation with respect to size of outlet.

Table 5.34

External Factors and Size of Outlet

Variable	Size of outlet (in sq. ft.)	N	Mean	Standard Deviation	F	p value
External Factors	Less than 1000	114	72.11	10.02	27.008	<0.001
	1000-5000	155	77.79	8.54		
	5000-10000	27	85.67	8.68		
	10000-20000	15	84.47	9.20		
	20000 & above	19	90.74	10.32		

Source: Primary Data

The results of the ANOVA test depicted in Table 5.34 reveals that the statistical value of p is less than 0.05 which indicates that there is significant difference between the different size of outlet. Hence, we reject the hypothesis H_0, and accept H_1.

Since the ANOVA test indicate that the significant difference exist among the size of outlet post hoc test or multiple comparison test is conducted to identify which among the size of outlet differs significantly and the result is exhibited in the Table 5.35.

Table 5.35

Multiple Comparison Tests- External factors and Size of Outlet

Dependent Variable	Size of outlet (in sq. ft.)		Mean Difference (I-J)	Std. Error	Sig.
External Factors	Less than 1000	1000-5000	-5.68829*	1.138	0.000
		5000-10000	-13.56140*	1.974	0.000
		10000-20000	-12.36140*	2.533	0.000
		20000 & above	-18.63158*	2.285	0.000
	1000-5000	Less than 1000	5.68829*	1.138	0.000
		5000-10000	-7.87312*	1.923	0.000
		10000-20000	-6.67312*	2.494	0.008
		20000 & above	-12.94329*	2.242	0.000
		Less than 1000	13.56140*	1.974	0.000

	5000-10000	1000-5000	7.87312*	1.923	0.000
		10000-20000	1.200	2.970	0.686
		20000 & above	-5.070	2.762	0.067
	10000-20000	Less than 1000	12.36140*	2.533	0.000
		1000-5000	6.67312*	2.494	0.008
		5000-10000	-1.200	2.970	0.686
		20000 & above	-6.27018*	3.185	0.050
	20000 & above	Less than 1000	18.63158*	2.285	0.000
		1000-5000	12.94329*	2.242	0.000
		5000-10000	5.070	2.762	0.067
		10000-20000	6.27018*	3.185	0.050

Source: Primary Data Significant difference are indicated by (*).

The result of multiple comparison test reveals that size of outlet 5000-10000 is significantly same (p value greater than 0.05) with 10000-20000. The size of the outlet 10000-20000 is significantly same (p value greater that 0.05) with 5000-10000 and 20000 & above. The size of the outlet 20000 & above is significantly same with 5000-10000 and 10000-20000. Rest of the groups differ with all other groups.

Table 5.36

Component wise External Factors and Size of Outlet

External Factors	Size of outlet	N	Mean	Standard Deviation	F	p value
Customers	Less than 1000	114	13.68	2.31	29.748	<0.001
	1000-5000	155	15.46	2.51		
	5000-10000	27	17.19	2.17		
	10000-20000	15	18.07	2.02		
	20000 & above	19	18.11	1.73		
Suppliers	Less than 1000	114	17.39	4.40	18.359	<0.001
	1000-5000	155	18.55	4.12		

	5000-10000	27	22.89	2.52		
	10000-20000	15	22.93	2.22		
	20000 & above	19	22.58	4.19		
Government	Less than 1000	114	10.70	3.02	2.161	0.073
	1000-5000	155	11.03	2.72		
	5000-10000	27	12.33	2.99		
	10000-20000	15	11.87	2.75		
	20000 & above	19	11.58	3.67		
Financial Institutions	Less than 1000	114	16.25	3.02	18.642	<0.001
	1000-5000	155	18.08	2.09		
	5000-10000	27	19.04	2.50		
	10000-20000	15	19.20	2.11		
	20000 & above	19	20.26	2.62		
Competitors	Less than 1000	114	14.09	3.72	4.322	0.002
	1000-5000	155	14.67	4.30		
	5000-10000	27	14.22	5.63		
	10000-20000	15	12.40	6.19		
	20000 & above	19	18.21	6.95		

Source: Primary Data

The above table shows the influence of the external factors: Customers, Suppliers, Government, Financial Institutions and Competitors towards digitalisation varies with regard to the size of outlet. The p value obtained for the construct customers, suppliers, financial institutions and competitors are less than 0.05, it indicates that the influence

in these external factors varies with the size of outlet. But in case of the construct government, its influence towards digitalisation remains same (P>0.05) for all the categories of size of outlet.

In order to determine which among the size of outlets have significant difference, Post hoc test are conducted and the result is depicted in the following table.

Table 5.37

Multiple Comparison Tests- Component wise External Factors and Size of Outlet

External factors	Size of outlet		Mean Difference (I-J)	Std. Error	Sig.
Customers	Less than 1000	1000-5000	-1.77385*	0.291	0.000
		5000-10000	-3.50097*	0.505	0.000
		10000-20000	-4.38246*	0.647	0.000
		20000 & above	-4.42105*	0.584	0.000
	1000-5000	Less than 1000	1.77385*	0.291	0.000
		5000-10000	-1.72712*	0.492	0.001
		10000-20000	-2.60860*	0.637	0.000
		20000 & above	-2.64720*	0.573	0.000
	5000-10000	Less than 1000	3.50097*	0.505	0.000
		1000-5000	1.72712*	0.492	0.001
		10000-20000	-0.881	0.759	0.246
		20000 & above	-0.920	0.706	0.193
	10000-20000	Less than 1000	4.38246*	0.647	0.000
		1000-5000	2.60860*	0.637	0.000
		5000-10000	0.881	0.759	0.246
		20000 & above	-0.039	0.814	0.962
	20000 & above	Less than 1000	4.42105*	0.584	0.000
		1000-5000	2.64720*	0.573	0.000
		5000-10000	0.920	0.706	0.193
		10000-20000	0.039	0.814	0.962
Suppliers	Less than 1000	1000-5000	-1.16887*	0.501	0.020
		5000-10000	-5.50292*	0.869	0.000
		10000-20000	-5.54737*	1.115	0.000

		20000 & above	-5.19298*	1.006	0.000
	1000-5000	Less than 1000	1.16887*	0.501	0.020
		5000-10000	-4.33405*	0.847	0.000
		10000-20000	-4.37849*	1.098	0.000
		20000 & above	-4.02411*	0.987	0.000
	5000-10000	Less than 1000	5.50292*	0.869	0.000
		1000-5000	4.33405*	0.847	0.000
		10000-20000	-0.044	1.307	0.973
		20000 & above	0.310	1.216	0.799
	10000-20000	Less than 1000	5.54737*	1.115	0.000
		1000-5000	4.37849*	1.098	0.000
		5000-10000	0.044	1.307	0.973
		20000 & above	0.354	1.402	0.801
	20000 & above	Less than 1000	5.19298*	1.006	0.000
		1000-5000	4.02411*	0.987	0.000
		5000-10000	-0.310	1.216	0.799
		10000-20000	-0.354	1.402	0.801
Financial Institutions	Less than 1000	1000-5000	-1.83826*	0.310	0.000
		5000-10000	-2.79142*	0.538	0.000
		10000-20000	-2.95439*	0.690	0.000
		20000 & above	-4.01754*	0.623	0.000
	1000-5000	Less than 1000	1.83826*	0.310	0.000
		5000-10000	-0.953	0.524	0.070
		10000-20000	-1.116	0.679	0.101
		20000 & above	-2.17929*	0.611	0.000
	5000-10000	Less than 1000	2.79142*	0.538	0.000
		1000-5000	0.953	0.524	0.070
		10000-20000	-0.163	0.809	0.841
		20000 & above	-1.226	0.752	0.104
	10000-20000	Less than 1000	2.95439*	0.690	0.000
		1000-5000	1.116	0.679	0.101
		5000-10000	0.163	0.809	0.841
		20000 & above	-1.063	0.868	0.221
	20000 & above	Less than 1000	4.01754*	0.623	0.000
		1000-5000	2.17929*	0.611	0.000
		5000-10000	1.226	0.752	0.104

		10000-20000	1.063	0.868	0.221
Competitors	Less than 1000	1000-5000	-0.583	0.558	0.297
		5000-10000	-0.135	0.968	0.890
		10000-20000	1.688	1.242	0.175
		20000 & above	-4.12281*	1.120	0.000
	1000-5000	Less than 1000	0.583	0.558	0.297
		5000-10000	0.449	0.943	0.634
		10000-20000	2.271	1.222	0.064
		20000 & above	-3.53956*	1.099	0.001
	5000-10000	Less than 1000	0.135	0.968	0.890
		1000-5000	-0.449	0.943	0.634
		10000-20000	1.822	1.456	0.212
		20000 & above	-3.98830*	1.354	0.003
	10000-20000	Less than 1000	-1.688	1.242	0.175
		1000-5000	-2.271	1.222	0.064
		5000-10000	-1.822	1.456	0.212
		20000 & above	-5.81053*	1.562	0.000
	20000 & above	Less than 1000	4.12281*	1.120	0.000
		1000-5000	3.53956*	1.099	0.001
		5000-10000	3.98830*	1.354	0.003
		10000-20000	5.81053*	1.562	0.000

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison test result reveals that there exists a significant difference in the influence of external factors towards digitalisation with respect to the size of outlets except 5000-10000 sq. ft. with 10000-20000 sq. ft. and 20000 & above sq. ft. in case of the constructs customers and suppliers. In case of the influence of the construct financial institutions towards digitalisation, there exists a significant difference in the influence with respect to the size of outlet less than 1000 sq. ft. with that of all others. But in case of the outlets with square feet 1000-5000 is significantly different from that of the outlets with the square feet less than 1000 and 20000 & above. The influence of the construct competitors towards digitalisation is significantly different in case of outlets with the square feet 20000 & above with that of the outlets with the square feet less than 1000, 1000-5000, 5000-10000 and 10000-20000.

5.2.5.5 Comparison of External Factors and Digital Department

An independent sample Z test are often used to compare the mean of variables with two different groups, that is, for presence and absence of a separate dedicated digital department in the unit. Hence a Z test was conducted, and the results are shown in Table 5.38.

Ho: There is no significant difference in the external factors lead to digitalisation with respect to presence and absence of a separate dedicated digital department in the unit

H_1: There is significant difference in the external factors lead to digitalisation with respect to presence and absence of a separate dedicated digital department in the unit.

Table 5.38

External Factors and Digital Department

Variable	Digital department in your unit	N	Mean	S.D.	Z	p value
External Factors	Yes	155	83.90	9.00	12.497	<0.001
	No	175	71.87	8.46		

Source: Primary Data

The result shows that significant difference exists between presence and absence of a separate dedicated digital department in the unit. The p value in this case is less than 0.05, indicates that the result is not significant.

Table 5.39

Component wise External Factors and Digital Department

External Factors	Digital department in your unit	N	Mean	S.D.	Z	p value
Customers	Yes	155	17.08	1.78	14.553	<0.001
	No	175	13.65	2.41		
Suppliers	Yes	155	21.28	3.01	10.326	<0.001
	No	175	16.86	4.52		
Government	Yes	155	11.77	3.23	4.041	<0.001
	No	175	10.49	2.50		

Financial Institutions	Yes	155	19.08	2.25	9.644	<0.001
	No	175	16.48	2.61		
Competitors	Yes	155	14.68	5.55	0.558	0.578
	No	175	14.40	3.59		

Source: Primary Data

The above table shows the result of independent sample z test. It reveals the influence of the external factors' customers, suppliers, government, financial institutions and competitors on digitalisation of retail outlets with respect to the internal factor separate digital department. The p value obtained for the construct customer, supplier, government and financial institutions are less than 0.05, it implies that the influence of these factors significantly differs with respect to the separate digital department in their outlet. But in case of the construct competitors (P>0.05) the influence is same.

SECTION B

5.3 DIGITALISATION

Digitalisation is a process of incorporating digital technologies to the business. Now a days most of the companies, business organisations, banking sector, insurance sector, retail sector started to adopt digital methods in their business to ensure smooth functioning of the organisation. Digitalisation increases the operational efficiency of the business, enable cashless transaction, improves customers experience, ensures proper maintenance of accounts, inventory management etc. Business organisations started to purchase and sell their products through online and customers are attracted towards online advertisements especially through social medias, which influenced the business organisation towards digital marketing.

This study focused on organised retail sector and it aims to find out the level of digitalisation in the organised retail sector especially in Food & Grocery, Apparel and Consumer Electronics. The researcher has identified eight construct to measure the digitalisation in retail outlets namely Payment (LD1), Sale (LD2), Purchase (LD3),

Marketing (LD4), Maintaining Business Records (LD5), Inventory Management (LD6), Customer Service (LD7) and Recruitment of employees (LD8). In order to identify the extent to which the retail outlets are digitalised, the respondents are asked to mark their response about the digitalisation of these variables on five-point Likert scale ranging from 1 to 5. The level of digitalisation of each construct is measured on a Five Point Likert Scale ranging from 5 for fully digitalised. 4,3 &2 for partly digitalised and 1 for not digitalised. Fully digitalised means 100% they are digitalised and not digitalised means they are not using any digital technology or digital data in their outlets. Partly digitalised have three level, 2 means they are slightly using digital technologies and data, 3 means they are moderately using digital technologies and data and 4 means they are highly using digital technologies and data.

5.3.1 Confirmatory Factor Analysis of Digitalisation

Confirmatory Factor Analysis is used to validate the measurement models for the constructs LD1 and LD8. The model fit indices and regression coefficients are shown in the table 5.40 and 5.41 respectively.

Table 5.40

Model fit Indices for CFA – Digitalisation

Variable	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Digitalisation	.051	2.890	.978	.929	.987	.978	.991	.026	.076

Source: Primary Data

Model fit indices table 5.40 shows that the calculated P-value is 0.051 which is greater than 0.05 and Normed χ2 (2.890) which is less than 5, these indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (.978) and Adjusted Goodness of Fit Index (AGFI) value (.929) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.987), Tucker - Lewis Index (TLI) value (.978) and Comparative Fit Index (CFI) value (.991) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .026 and .076 respectively, which are also less than .08. Thus, it

indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 5.41

The Regression Coefficients –Digitalisation in Retail Sector

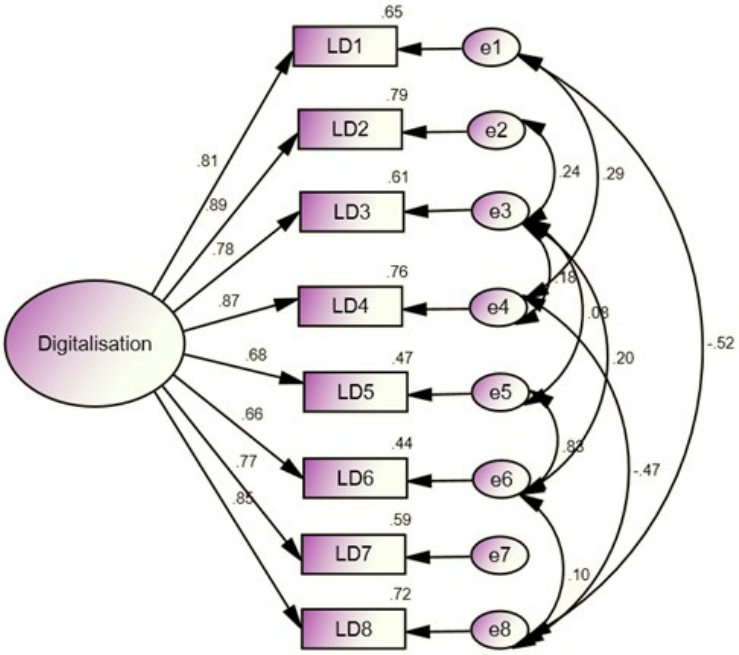
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Digitalisation	LD1	0.808	20.276	<0.001	65.3
	LD2	0.891	25.800	<0.001	79.4
	LD3	0.780	18.904	<0.001	60.8
	LD4	0.873	24.332	<0.001	76.2
	LD5	0.685	15.162	<0.001	46.9
	LD6	0.664	14.465	<0.001	44.1
	LD7	0.766	18.274	<0.001	58.7
	LD8	0.848	22.586	<0.001	71.9

Source: Primary Data

Confirmatory Factor Analysis showed in Table 5.41 says that every eight variables, LD1 to LD8, have an influence on digitalisation. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The result of CFA is shown in Figure 5.6.

Figure 5.6

CFA Model of Digitalisation



5.3.2 Level of Digitalisation

In order to measure the Level of digitalisation, the respondents are asked 8 questions on five-point Likert scale ranging from 1 for not digitalised to 5 for fully digitalised. The total score of the 8 questions for all 330 respondents is found out, based on which the mean % score of level of digitalisation is calculated $\left[MPS = \frac{MeanScore \times 100}{Maximumpossiblescore}\right]$. This score is classified into one of the four groups as low if the mean % score is less than 35%, average if the mean % score is between 35 to 50 per cent, above average if the mean % score lies in the interval 50 to 75% and high if the mean % score is above 75%. Table 5.42 shows the level of digitalisation of each construct in the retail outlets (Loyd & Abidin, 1985).

Table 5.42

Level of Digitalisation in Organised Retail Sector

Digitalisation	N	Mean	S.D.	Maximum	Mean % score	Rank	Level
Payments	330	3.66	1.06	5	73.21	3	Above average
Sales	330	2.48	1.27	5	49.52	7	Average
Purchase	330	2.85	1.03	5	57.03	6	Above average
Marketing	330	3.30	1.32	5	66.00	5	Above average
Maintaining business records	330	4.19	0.85	5	83.88	1	High
Inventory management	330	4.02	1.03	5	80.36	2	High
Customer Service	330	3.41	1.05	5	68.24	4	Above average
Recruitment of employees	330	2.07	1.21	5	41.33	8	Average

Source: Primary Data

The table 5.42 shows the level of digitalisation in payment, sales, purchase, marketing, maintaining business records, inventory management, customer service and recruitment of employees. Maintaining business records have the highest mean 4.19 with a standard deviation of 0.85, which is ranked as 1 for digitalisation followed by inventory management with a mean of 4.02 (rank 2), payment, customer service, marketing, purchase, sales and recruitment of employees with rank 3,4,5,6,7& 8 respectively. Mean percentage score of maintaining business records and inventory management are 83.88 and 80.36, which indicates that its level of digitalisation is high.

The mean percentage score of payment (73.21), customer service (68.24), marketing (66) and purchase (57.03) which is between 50 to 75%, which implies that level of digitalisation is above average. The mean percentage score of sales (49.52) and recruitment of employees (41.33) which is between 35 to 50%, which implies that level of digitalisation is average.

Table 5.43

Level of Digitalisation among Different Types of Retail Outlets

Type of retail unit	Digitalisation	N	Mean	S.D.	Mean % score	Rank	Level
Food & Grocery	Payments	110	3.72	1.13	74.36	3	Above Average
	Sales	110	2.65	1.02	52.91	7	Above Average
	Purchase	110	2.76	0.98	55.27	6	Above Average
	Marketing	110	3.35	1.22	67.09	5	Above Average
	Maintaining business records	110	4.21	0.87	84.18	1	High
	Inventory management	110	3.96	1.07	79.27	2	High
	Customer Service	110	3.40	1.13	68.00	4	Above Average
	Recruitment of employees	110	1.83	0.98	36.55	8	Average
Apparel	Payments	110	3.69	1.06	73.82	3	Above Average
	Sales	110	2.32	1.34	46.36	7	Average
	Purchase	110	2.65	0.98	52.91	6	Above Average
	Marketing	110	3.22	1.42	64.36	5	Above Average
	Maintaining business records	110	4.07	0.95	81.45	1	High

	Inventory management	110	3.82	1.19	76.36	2	High
	Customer Service	110	3.43	1.15	68.55	4	Above Average
	Recruitment of employees	110	2.11	1.23	42.18	8	Average
Consumer Electronics	Payments	110	3.57	1.01	71.45	3	Above Average
	Sales	110	2.46	1.40	49.27	7	Average
	Purchase	110	3.15	1.06	62.91	6	Above Average
	Marketing	110	3.33	1.31	66.55	5	Above Average
	Maintaining business records	110	4.30	0.72	86.00	1	High
	Inventory management	110	4.27	0.74	85.45	2	High
	Customer Service	110	3.41	0.85	68.18	4	Above Average
	Recruitment of employees	110	2.26	1.35	45.27	8	Average

Source: Primary Data

Table 5.43 shows the level of digitalisation among different type of retail units. Level of digitalisation of maintaining business records and inventory management is high for food and grocery, apparel and consumer electronics. Level of digitalisation in payment, customer service, marketing and purchase is above average for apparel and consumer electronic sector and average for sales and recruitment of employees. In case of food and grocery retail sector level of digitalisation is above average for payment, sales, purchase, marketing and customer service and it is average for recruitment of employees.

Table 5.44

Overall Level of Digitalisation

Variables	N	Mean	S.D.	Mean % score	CV	z	p value	Level
Digitalisation	330	25.98	7.34	64.95	28.26	14.793	<0.001	Above average

Source: Primary Data

The mean percentage score of digitalisations is 64.95% which indicate that level of digitalisation is above average. The CV indicates that this score is not stable as the value is more than 20%. The p value obtained is less than 0.05 and Z value is positive, which indicates that the test is significant. It means the level of digitalisation of retail outlets are above average.

5.3.3 Comparison of Digitalisation in Food & Grocery, Apparel and Consumer Electronic Retail Sector

In order to identify whether there is any difference in the digitalisation of Food & Grocery, Apparel and Electronic Retail Sector the following hypothesis was formulated.

H_0: There is no significant difference in the Digitalisation among the different type of retail units.

H_1: There is significant difference in the Digitalisation among the different type of retail units.

A one sample analysis of variance is used to test hypothesis about means; when there are three or more groups of one independent variable. In this case, type of retail unit was considered to be the independent variable, which included three groups (a) Food & Grocery (b) Apparel (c) Consumer Electronics. So, ANOVA was used to compare the mean scores of different type of retail unit and the result is exhibited in Table 5.45.

Table 5.45

Digitalisation in Food & Grocery, Apparel and Consumer Electronic Retail Sector

Variable	Type of retail unit	N	Mean	S.D.	F	p value
Digitalisation	Food & Grocery	110	25.88	6.96	1.094	0.336
	Apparel	110	25.30	8.15		
	Consumer Electronics	110	26.75	6.84		

Source: Primary Data

The results of the ANOVA test depicted in Table 5.45 reveals that the statistical value of p is greater than 0.05, which means that we accept H_0 and reject H_1. There is no significant difference in the Level of Digitalisation between the different type of retail units.

5.3.4 Comparison of Digitalisation of Retail Outlets and Internal Factors

The digitalisation in retail sector may vary according to the internal factors. The influence of internal factors like age of the outlet, type of outlet, number of employees, size of outlet and digital department on digitalisation was tested using one way ANOVA or Independent sample z test.

5.3.4.1 Digitalisation of Retail Outlets and Age of the Outlet

Here age of outlet was considered to be the independent variable, which includes four groups viz. Up to 10 years, 11-20 years, 20-30 years and Above 30 years. One sample analysis of variance is used to test hypothesis about means when there are three or more groups of one independent variable.

H_0: There is no significant difference in the digitalisation of retail outlets with respect to the age of outlets

H_1: There is a significant difference in the digitalisation of retail outlets with respect to the age of outlets

Table 5.46

Digitalisation and Age of the Outlet

Variable	Age of Outlet	N	Mean	S.D.	F	p value
Digitalisation	Up to 10 years	184	25.74	7.51	3.220	0.023
	11-20 years	94	27.64	6.24		
	20-30 years	37	23.78	8.86		
	Above 30 years	15	23.93	5.69		

Source: Primary Data

The results of the ANOVA test depicted in Table 5.46 reveals that the statistical value of p is less than 0.05, which implies that the digitalisation differs with age of outlets. Hence, we reject the hypothesis H_0.

Since the ANOVA test indicate that the significant difference exists among the age of outlets and Level of digitalisation, post hoc test or multiple comparison test is conducted to identify which among the age of outlets differs significantly and the result is exhibited in the Table 5.47.

Table 5.47

Multiple Comparison Tests- Digitalisation of Retail Outlets and Age of Outlet

Dependent Variable	Age of Outlet		Mean Difference (I-J)	Std. Error	Sig.
Digitalisation	Up to 10 years	11-20 years	-1.89917*	0.922	0.040
		20-30 years	1.955	1.310	0.136
		Above 30 years	1.806	1.952	0.356
	11-20 years	Up to 10 years	1.89917*	0.922	0.040
		20-30 years	3.85451*	1.411	0.007
		Above 30 years	3.705	2.021	0.068
		Up to 10 years	-1.955	1.310	0.136

	20-30 years	11-20 years	-3.85451*	1.411	0.007
		Above 30 years	-0.150	2.225	0.946
	Above 30 years	Up to 10 years	-1.806	1.952	0.356
		11-20 years	-3.705	2.021	0.068
		20-30 years	0.150	2.225	0.946

Source: Primary Data Significant difference are indicated by (*)

The result of the analysis indicates that digitalisation of the retail outlets with an age up to 10 years significantly differ from11-20 years. Age of the outlet 11-20 years significantly differs with Up to 10 years and 20-30 years. Age of the outlet 20-30 years significantly differ with 11-20 years.

5.3.4.2 Digitalisation of Retail Outlets and Type of Outlet

Type of outlet includes three groups i.e., Sole Proprietor, Partnership and Private Ltd. Company. One way ANOVA was used to compare digitalisation of retail outlets and different types of outlets and the result is exhibited in Table 5.48.

H_0: There is no significant difference in the digitalisation of retail outlets with respect to type of outlets

H_1: There is a significant difference in the digitalisation of retail outlets with respect to type of outlets

Table 5.48

Digitalisation and Type of Outlet

Variable	Type of outlet	N	Mean	S.D.	F	p value
Digitalisation	Sole Proprietor	77	21.31	5.72	52.272	<0.001
	Partnership	143	24.87	6.75		
	Private Ltd. Co.	110	30.69	6.41		

Source: Primary Data

Table 5.48 reveals that the statistical value of p is less than 0.05 which indicates that there is significant difference in the digitalisation of different type of outlets.

Therefore, accepted H_1 and rejected H_0. Post hoc test or multiple comparison test have been conducted to know which among the different type of outlet differs in digitalisation.

Table 5.49

Multiple Comparison Tests- Digitalisation of Retail outlets and Type of Outlet

Dependent Variable	Type of Outlet		Mean Difference (I-J)	Std. Error	Sig.
Digitalisation	Sole Proprietor	Partnership	-3.55544*	0.906	0.000
		Private Ltd. Co.	-9.37922*	0.953	0.000
	Partnership	Sole Proprietor	3.55544*	0.906	0.000
		Private Ltd. Co.	-5.82378*	0.813	0.000
	Private Ltd. Co.	Sole Proprietor	9.37922*	0.953	0.000
		Partnership	5.82378*	0.813	0.000

Source: Primary Data Significant difference are indicated by (*)

Post hoc results in the Table 5.49 depict that the different type of outlets sole proprietor, partnership and private limited company significantly (p-value is less than 0.05) differs from each other.

5.3.4.3 Digitalisation and Number of Employees

To measure the digitalisation significantly changes with number of employees in the retail outlet, the following hypothesis was formulated.

H_0: There is no significant difference in the digitalisation of retail outlets with respect to number of employees.

H_1: There is a significant difference in the digitalisation of retail outlets with respect to number of employees.

A one sample analysis of variance is used to test hypotheses. In this case, number of employees in the outlet was considered to be the independent variable, which included four groups (a) Less than 25 (b) 25-30 (c) 50-100 (d) 100 & above.

Table 5.50

Digitalisation and Number of Employees

Variable	Number of employees	N	Mean	S.D.	F	p value
Digitalisation	Less than 25	233	24.41	7.03	20.172	<0.001
	25-50	35	26.00	7.28		
	50-100	31	30.84	6.75		
	100 & above	31	32.87	3.31		

Source: Primary Data

The results of the ANOVA test depicted in Table 5.50 reveals that the statistical value of p is less than 0.05 which means that there is significant difference in the digitalisation of retail outlets with different number of employees. Hence, we reject the hypothesis H_0 and accept H_1. As the significant difference exist in digitalisation among the number of employees in the outlet post hoc test or multiple comparison test is conducted to identify which among the number of employees in the outlet differs significantly and the result is exhibited in the Table 5.51.

Table 5.51

Multiple Comparison Tests- Digitalisation of Retail Outlets and Number of Employees.

Dependent Variable	Number of Employees		Mean Difference (I-J)	Std. Error	Sig.
Digitalisation	Less than 25	25-50	-1.588	1.228	0.197
		50-100	-6.42669*	1.295	0.000
		100 & above	-8.45895*	1.295	0.000
	25-50	Less than 25	1.588	1.228	0.197

		50-100	-4.83871*	1.671	0.004
		100 & above	-6.87097*	1.671	0.000
	50-100	Less than 25	6.42669*	1.295	0.000
		25-50	4.83871*	1.671	0.004
		100 & above	-2.032	1.721	0.238
	100 & above	Less than 25	8.45895*	1.295	0.000
		25-50	6.87097*	1.671	0.000
		50-100	2.032	1.721	0.238

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison test table 5.51 reveals that there is a significant difference (p value less than 0.05) between the number of employees less than 25 with that of 50-100 and 100 & above, the number of employees between 25-50 with that of 50-100 and 100 & above, the number of employees between 50-100 with that of less than 25 and 25-50 and the number of employees above 100 with that of less than 25 and 25-50.

5.3.4.4 Digitalisation of Retail Outlets and Size of Outlet

Size of outlet was considered to be the independent variable, which includes five groups (a) Less than 1000 (b) 1000-5000 (c) 5000-10000 (d) 10000-20000 (e) 20000 & above. One sample analysis of variance is used to test hypothesis.

H_0: There is no significant difference in the digitalisation of retail units with respect to size of outlet

H_1: There is a significant difference in the digitalisation of retail units with respect to size of outlet

Table 5.52

Digitalisation and Size of Outlet

Variable	Size of outlet	N	Mean	S.D.	F	p value
Digitalisation	Less than 1000	114	20.68	5.71	43.091	<0.001
	1000-5000	155	27.27	6.61		
	5000-10000	27	32.48	5.87		
	10000-20000	15	32.87	3.52		
	20000 & above	19	32.58	2.55		

Source: Primary Data

The results of the ANOVA test depicted in Table 5.52 reveals that the statistical value of p is less than 0.05 hence we reject the hypothesis H_0 and accept H_1. It indicates that digitalisation is the different for different size of outlet. Post hoc test or multiple comparison test is conducted to identify which among the size of outlet differs significantly and the result is exhibited in the Table 5.53.

Table 5.53

Multiple Comparison Tests- Digitalisation of Retail Outlets and Size of Outlet

Dependent Variable	Size of Outlet (sq. ft.)		Mean Difference (I-J)	Std. Error	Sig.
Digitalisation	Less than 1000	1000-5000	-6.59553*	0.737	0.000
		5000-10000	-11.80604*	1.278	0.000
		10000-20000	-12.19123*	1.640	0.000
		20000 & above	-11.90351*	1.480	0.000
	1000-5000	Less than 1000	6.59553*	0.737	0.000
		5000-10000	-5.21051*	1.245	0.000
		10000-20000	-5.59570*	1.615	0.001
		20000 & above	-5.30798*	1.451	0.000
	5000-10000	Less than 1000	11.80604*	1.278	0.000
		1000-5000	5.21051*	1.245	0.000

		10000-20000	-0.385	1.923	0.841
		20000 & above	-0.097	1.788	0.957
	10000-20000	Less than 1000	12.19123*	1.640	0.000
		1000-5000	5.59570*	1.615	0.001
		5000-10000	0.385	1.923	0.841
		20000 & above	0.288	2.062	0.889
	20000 & above	Less than 1000	11.90351*	1.480	0.000
		1000-5000	5.30798*	1.451	0.000
		5000-10000	0.097	1.788	0.957
		10000-20000	-0.288	2.062	0.889

Source: Primary Data Significant difference are indicated by (*)

The post hoc test result shows that there is a significant difference between the size of outlet less than 1000 square feet and 1000-5000 square feet with that of all other groups as the p value is less than 0.05. Size of the outlet 5000-10000 sq. ft., 10000-20000 sq. ft. and 20000 & above sq. ft. is significantly different from less than 1000 sq. ft. and 1000-5000 sq. ft.

5.3.4.5 Comparison of Digitalisation and Digital Department

In order to identify the presence of separate dedicated digital department in the retail outlet influence the digitalisation the following hypothesis was formulated.

H_0: There is no significant difference in the digitalisation with regard to the presence and absence of a separate dedicated digital department in the unit.

H_1: There is a significant difference in the digitalisation with regard to the presence and absence of a separate dedicated digital department in the unit.

Table 5.54

Digitalisation of Retail outlets and Digital Department

Variable	Digital department	N	Mean	S.D.	Z	p value
Digitalisation	Yes	155	31.85	5.00	20.732	<0.001
	No	175	20.78	4.69		

Source: Primary Data

An independent sample Z test are often used to compare the mean scores of variables of two different groups, that is, for presence and absence of a separate dedicated digital department in the unit. Hence a Z test was conducted, and the results are shown in Table 5.54. The result shows that significant difference exists between presence and absence of a separate dedicated digital department in the unit as the p value in this case is less than 0.05. So, we reject the hypothesis *H0.*

5.3.5 Comparison of Digitalisation and External Factors leads to Digitalisation

To determine the relation of digitalisation of different constructs like payment, sales, purchase, marketing, maintenance of books of account, inventory management, customer service and recruitment of employees with that of the external factors that lead to digitalisation and correlation technique was used.

Table 5.55

Correlation between External Factors and Digitalisation of Retail Outlets

External Factor leads to Digitalisation	Digitalisation	Pearson Correlation	Sig. (2-tailed)	N
	Payment	.448**	.000	330
	Sales	.475**	.000	330
	Purchase	.643**	.000	330
	Marketing	.544**	.000	330
	Maintenance of books of records	.348**	.000	330
	Inventory management	.412**	.000	330
	Customer service	.511**	.000	330
	Recruitment of employees	.370**	.000	330

Source: Primary Data

Table 5.55 reveals the relation between external factors and digitalisation. Pearson correlation statistics results a correlation value of 0.643 for the construct purchase, 0.544 for marketing and 0.511 for customer service, it implies that there is a positive correlation between external factors that lead to digitalisation and digitalisation in purchase, marketing and customer service. But Pearson correlation statistics results a correlation value of 0.448 for payment, 0.475 for sales. 0.348 for maintenance of books of record, 0.412 for inventory management and 0.370 for recruitment of employees, it indicates that there is no correlation between external factors leads to digitalisation and digitalisation in payment, sales, maintenance of books of records, inventory management and recruitment of employees.

5.4 Chapter Summary

This chapter deals with factors that lead to digitalisation and level of digitalisation in the selected organised retail units. All the external factors customers, suppliers, government, financial institution and competitors have an individual influence on digitalisation. Level of influence of external factors lead to digitalisation are above

average and while comparing different type of retail units i.e., Food & grocery, Apparel and Consumer electronics external factor lead to digitalisation are different. Likewise, the influence of internal and external factors towards digitalisation is different. The overall level of digitalisation of retail sector is above average and level of digitalisation of inventory management and maintaining business records are high. Influence of all the internal factors on the level of digitalisation is different. There is a correlation with external factors and level of digitalisation of purchase, marketing and customer service.

CHAPTER 6

BOONS OF DIGITALISATION

BOONS OF DIGITALISATION

6.1 Introduction

This chapter intends to measure the second objective of the study i.e., the boons of digitalisation in the organised retail sectors in Kerala. It also tried to identify the commonly used digital marketing tools, social media platforms used for digital marketing and also about the commonly used digital payment tools. For analyzing the data both simple and advanced statistical tools are used. Statistical tools like Mean, Standard deviation, Coefficient of variation reliability analysis, one sample z test, one sample ANOVA, independent sample z test and correlation was used.

6.2 Boons of Digitalisation

The boons of digitalisation were measured on a five-point Likert scale with three main constructs i.e., economic boons, technological boons and social boons. Economic boons were measured using two constructs namely operational performance and increase in market share. Technological boons were measured using three constructs namely new market opportunities, inventory management and digital marketing. Social boons were measured using three constructs namely better customer support, digital payment and employment opportunities.

6.2.1 Exploratory Factor Analysis on Boons of Digitalisation

To study the boons of digitalisation, 32 items were considered after content and face validity through expert opinion. Exploratory Factor Analysis has been used to examine the construct's dimensions. The Principal Component Analysis (PCA) method from SPSS was used to analyze the items of all the variables. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of variables with coefficients of 0.3 and above.

Table 6.1

KMO and Bartlett's Test - Boons of Digitalisation

Variable	No. of Variables	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity –Chi Square	df	Sig.
Boons of Digitalisation	32	0.842	11349.839	496	<0.001

Source: Primary Data

KMO represents the ratio of squared correlation between 32 variables to its partial correlation. KMO values varies between 0 and 1, as per rule of thumb. If the values are close to 1, it indicates that correlation are comparatively good (Field 2013). Result of Chi Square showed a higher value (11349.839), it shows the appropriateness to conduct factor analysis (Field, 2009). As per the above table Chi Square value is 11349.839 at degrees of freedom 496 with significance (P<0.001). According to (Kaiser, 1974) KMO value less than 0.5, will not be accepted. KMO value between 0.5 and 0.7 are average, between 0.7 and 0.8 are good, between 0.8 and 0.9 are great and value above 0.9 are superb (Hutcheson & Sofroniou, 1999). As per the table, KMO value is 0.842, it implies that sample adequacy is great. Table 6.2 describes the result of Principal component analysis after which eight components of boons are identified with eigen value greater than one.

Table 6.2

Total Variance Explained of Boons of Digitalisation

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	14.598	45.619	45.619
2	2.670	8.342	53.961
3	2.146	6.706	60.667
4	1.536	4.799	65.466
5	1.463	4.573	70.039
6	1.207	3.772	73.811
7	1.158	3.618	77.428
8	1.025	2.910	80.339

Source: Primary Data

Through Principal Component Analysis, the components of boons of digitalisation are identified with eigen value greater than 1 and it is shown in above table. Boons of digitalisation construct yielded eight components from thirty-two items. The first component explains 45.619% of variance with an eigen value of 14.598.

Table 6.3

Factors underlying Boons of Digitalisation

Factor		**Codes**	**Statements**	**Factor loading**
Economic Boons	Factor 1 Operational Performance	OP1	Digitalisation improves the operational performance of the retail outlets	0.776
		OP2	Operational performance of the traditional period was much better	0.663
	Factor 2 Increased Market Share	IMS1	Digitalisation enables the business to access new (geographical) markets	0.763
		IMS2	Digitalisation increases customer awareness of our product/services (broader customer access)	0.531
		IMS3	Digitalisation permits differentiating our products/services from those of our competitors.	0.619
		IMS4	Digitalisation provides customers with better information about our product/services.	0.696
		IMS5	Digitalisation opens an avenue for customers to make his/her purchase easiness.	0.712
Technological	Factor 3 New Market Opportunities	NMO1	Digitalisation helps to identify new market opportunities	0.666
		NMO2	Digitalisation helps to expand the business	0.602
		IM1	Recording of stock is fully digitalised	0.717

	Factor 4 Inventory Management	IM2	As the inventory management is fully digitalised it is easy to assess the stock level.	0.756
		IM3	Improves purchase efficiency	0.575
	Factor 5 Digital Marketing	DM1	Digital marketing is much better than traditional marketing	0.583
		DM2	Digital marketing reduces the cost of marketing	0.642
		DM3	Digital marketing allows you to target your needed audience.	0.606
		DM4	Most commonly used digital marketing platforms are social media	0.795
		DM5	TV ads are much better than social media ad	0.739
		DM6	We share the offers and discounts to the customers through WhatsApp/ Facebook/Instagram.	0.835
Social Boons	Factor 6 Better Customer Support	BCS1	Digitalisation enables us to offer wide variety of products/services to the customers.	0.777
		BCS2	Digitalisation enables us to offer goods at reduced price to the customers.	0.556
		BCS3	Digitalisation helps to provide better customer service	0.735
		BCS4	Going digital has helped to better understand the customer preference.	0.715
		BCS5	Digitalisation enables production of need oriented products/services.	0.601
		DP1	We are accepting payment through POS machines.	0.484
		DP2	We prefer to make payment in cash	0.550

	Factor 7 Digital Payment	DP3	We are accepting payment through e-wallet/UPI.	0.496
		DP4	Digitalisation reduced the risk of handling cash	0.571
		DP5	Digital mode of payment is preferred by the customer.	0.401
	Factor 8 Employment opportunities	EO1	Digitalisation led to increase in employment opportunities	0.803
		EO2	Employment opportunities increased only for technically qualified person.	0.720
		EO3	More employment opportunity raised in social media marketing	0.631
		EO4	Improved recruitment process	0.529

Source: Primary Data

Extraction method: Principal Component Analysis.

The above table discloses eight factors with its assigned names. Analysis identified eight factors that underlying the boons of digitalisation. It means thirty-two predictive variables were classified into eight factors namely operational performance (OP1 & OP2), Increased market share (IMS1 to IMS5), new market opportunities (NMO1 &NMO2), Inventory management (IM1 To IM5), digital marketing (DM1 to DM6), Better customer support (BCS1 to BCS%), digital payment (DP1 to DP5) and employment opportunities (EO1 to EO4). Researcher again grouped these eight factors into three groups namely economic boons, technological boons and social boons. First two factors; operational performance and Increased market share measures economic boons. Third, fourth and fifth factors i.e., new market opportunities, Inventory management and digital marketing measures technological boons. Sixth, seventh and eighth factors measures social boons.

6.2.2 Reliability Statistics

In order to check the internal consistency of the scaled statement reliability analysis utilizing Cronbach's Alpha Reliability test was executed and result is shown in table 6.4.

Table 6.4

Reliability Statistics: Boons of Digitalisation

Sl. No.	Constructs with its code name	Cronbach's Alpha	Number of Items	Code name given to the variables
A	**Economic Boons**			
1	Operational performance (OP)	0.812	2	OP1 &OP2
2	Increase in market share (IMS)	0.875	5	IMS1, IMS2, IMS3, IMS4 & IMS5
B	**Technological Boons**			
3	New market opportunities (NMO)	0.900	2	NMO1 & NMO2
4	Inventory management (IM)	0.842	3	IM1, IM2 & IM3
5	Digital Marketing (DM)	0.869	6	DM1, DM2, DM3, DM4, DM5 &DM6
C	**Social Boons**			
6	Better customer support (BCS)	0.898	5	BCS1, BCS2, BCS3, BCS4 & BCS5
7	Digital payment (DP)	0.807	5	DP1, DP2, DP3, DP4 & DP5
8	Employment opportunities (EO)	0.723	4	EO1, EO2, EO3 &EO4
			32	

Source: Primary Data

Table 6.4 demonstrates that all the constructs relating to boons of digitalisation have an Alpha value greater than 0.7, which shows that all statements are reliable.

6.2.3 Confirmatory Factor Analysis of Boons of Digitalisation

Here the Confirmatory Factor Analysis is used to validate the measurement models for the latent constructs namely economic boons, technological benefit and social boons.

6.2.3.1 Economic Boons

To measure the economic boons of adopting digital methods constructs operational performance and increase in market share was used.

6.2.3.1.1 Confirmatory Factor Analysis for Operational Performance

Confirmatory factor analysis was carried out for the construct operational performance with two items OP1 & OP2. The result of model fit indices for CFA is shown in table 6.5.

Table 6.5

Model fit Indices for CFA – Operational Performance

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Operational performance	.733	.116	1.000	.999	1.000	1.000	1.000	0	.073

Source: Primary Data

Model fit indices table 6.5 shows that the calculated P-value is 0.733 which is greater than 0.05 and Normed $\chi 2$ (0.116) which is less than 5, these indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (1.000) and Adjusted Goodness of Fit Index (AGFI) value (.999) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (1.000), Tucker - Lewis Index (TLI) value (1.000) and Comparative Fit Index (CFI) value (1.000) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as 0 and .073 respectively, which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 6.6

The Regression Coefficients – Operational Performance

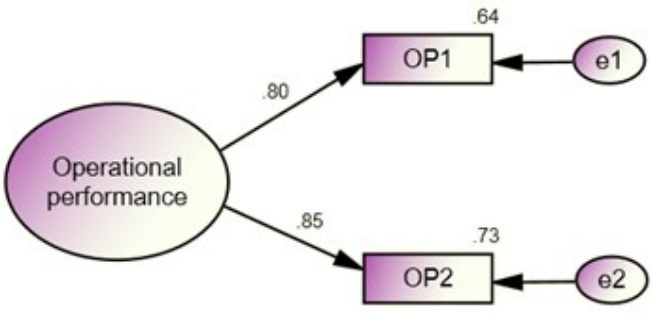
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Operational performance	OP1	0.803	20.018	<0.001	64.5
	OP2	0.853	22.913	<0.001	72.8

Source: Primary Data

Confirmatory Factor Analysis showed in Table 6.6 says that both the variables, OP1 & OP2, have an influence on operational performance. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The variance explained of the construct OP1 is 64.5% and OP2 is 72.8%. The result of CFA is shown in Figure 6.1.

Figure 6.1

CFA model for Operational Performance



6.2.3.1.2 Confirmatory Factor Analysis of Increase in Market Share

The variables contributing to 'Increase in market share' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 6.7 and in Table 6.8 respectively.

Table 6.7

Model fit Indices for CFA – Increase in Market Share

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Increase in market share	.169	1.896	.998	.966	.998	.991	.999	.008	.052

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 6.8 shows the regression coefficients

Table 6.8

The Regression Coefficients – Increase in Market Share

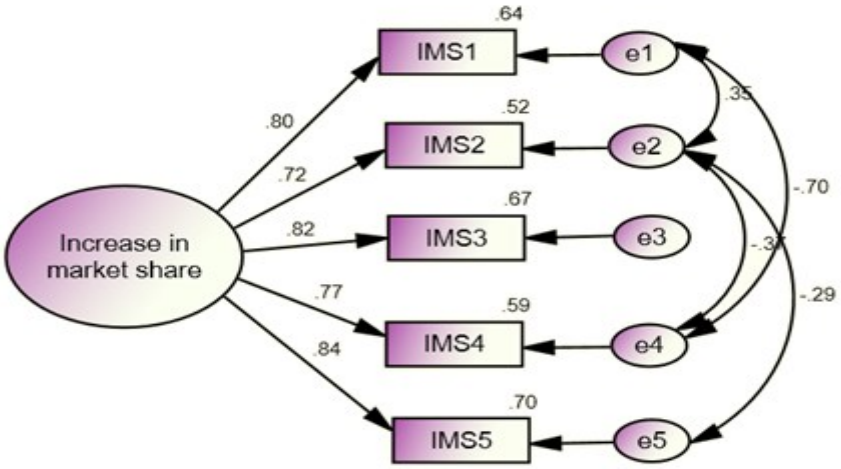
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Increase in market share	IMS1	0.800	19.866	<0.001	64.0
	IMS2	0.723	16.526	<0.001	52.3
	IMS3	0.818	20.809	<0.001	66.9
	IMS4	0.771	18.495	<0.001	59.4
	IMS5	0.838	21.961	<0.001	70.2

Source: Primary Data

Increase in market share (IMS) has a significant influence on the economic boons of adopting digital methods. As the p-value is less than 0.05 and the standardised direct effect of all the variables (IMS1 to IMS5) are above 0.4, it has been concluded that five variables have a significant influence on Increase in Market share. The variance explained of the construct IMS5 is the highest (70.2%), IMS3 is 66.9%, IMS1 is 64%. IMS4 is 59.4% and IMS2 is 52.3%. The result of CFA is shown in the following figure.

Figure 6.2

CFA model for Increase in Market Share



6.2.3.2Technological Boons

Technological boons of adopting digital methods were measured using the constructs new market opportunities (NMO), Inventory management (IM) and Digital marketing (DM).

6.2.3.2.1 Confirmatory Factor Analysis of New Market Opportunities

The variables contributing to 'New market opportunities' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 6.9 and in Table 6.10 respectively.

Table 6.9

Model Fit Indices for CFA – New Market Opportunities

	P	Normed $\chi 2$	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
New market opportunities	.180	1.180	1.000	.960	1.000	.960	1.000	0	.057

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Regression coefficients are presented in table 6.10.

Table 6.10

The Regression Coefficients – New Market Opportunities

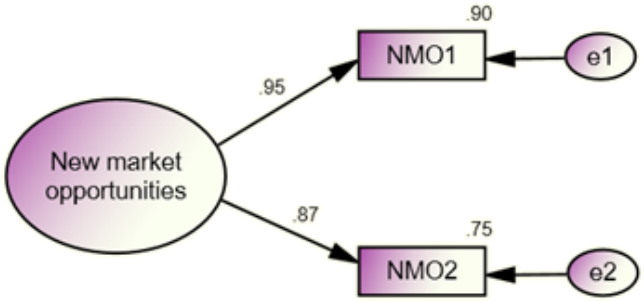
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
New market opportunities	NMO1	0.948	32.760	<0.001	89.9
	NMO2	0.866	23.813	<0.001	75.0

Source: Primary Data

Here both the constructs (NMO1 & NMO2) have regression coefficient values more than 0.4 and p value is less than 0.05, it can be concluded that both the constructs have significant influence on new market opportunities. The variance explained of the construct NMO1 is 89.9% and NMO2 is 75%.

Figure 6.3

CFA model for New Market Opportunities



6.2.3.2.2 Confirmatory Factor Analysis of Inventory management

Confirmatory factor analysis was carried out for the construct Inventory management with three items IM1 to IM3.The model fit indices for CFA- inventory management is shown below.

Table 6.11

Model Fit Indices for CFA – Inventory management

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Inventory management	.052	4.863	.931	.985	.985	.995	.984	.034	.071

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. The table 6.12 present the regression coefficients

Table 6.12

The Regression Coefficients – Inventory Management

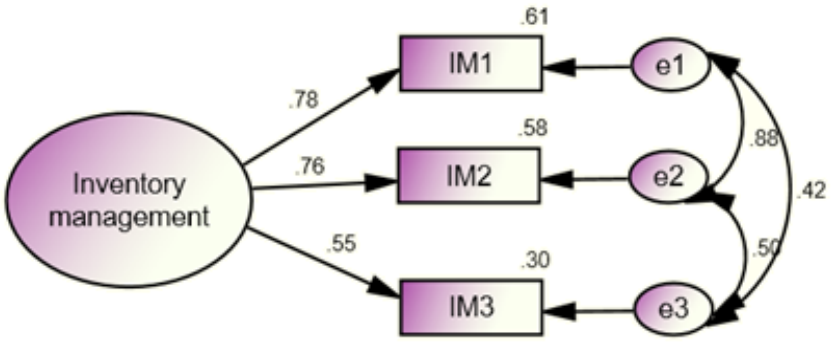
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Inventory management	IM1	0.781	18.950	<0.001	61.0
	IM2	0.760	18.015	<0.001	57.8
	IM3	0.552	11.234	<0.001	30.5

Source: Primary Data

Regression coefficient of all the constructs IM1, IM2 & IM3 are greater than 0.4 and p value is less than 0.05. Hence, it can be concluded that all the construct has significant influence on inventory management. The highest variance explained is for the construct IM1 (61%) and lowest is for IM3 (30.5%) which means that influence of IM3 is less on inventory management.

Figure 6.4

CFA model for Inventory Management



6.2.3.2.3 Confirmatory Factor Analysis of Digital Marketing

Confirmatory factor analysis was carried out for the construct Digital Marketing with five items DM1 to DM5.The model fit indices for CFA- Digital marketing is shown below.

Table 6.13

Model fit Indices for CFA – Digital Marketing

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Digital Marketing	.099	2.093	.994	.955	.995	.986	.997	.012	.058

Source: Primary Data

Model fit indices table 6.13 shows that the calculated P-value is 0.099 which is greater than 0.05 and Normed $\chi 2$ (2.093) which is less than 5, these indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (.994) and Adjusted Goodness of Fit Index (AGFI) value (.955) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.995), Tucker - Lewis Index (TLI) value (.986) and Comparative Fit Index (CFI) value (.997) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .012 and .058 respectively, which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 6.14

The Regression Coefficients – Digital Marketing

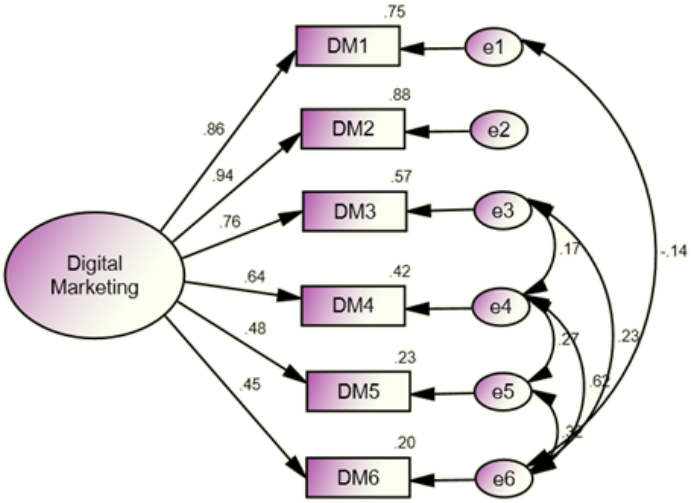
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Digital Marketing	DM1	0.864	23.669	<0.001	74.6
	DM2	0.938	31.124	<0.001	88.0
	DM3	0.757	17.887	<0.001	57.3
	DM4	0.645	13.864	<0.001	41.6
	DM5	0.484	9.551	<0.001	23.4
	DM6	0.452	8.810	<0.001	20.4

Source: Primary Data

Confirmatory Factor Analysis showed in Table 6.14 says that all the variables, DM1 to DM6, have an influence on digital marketing. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. So, the alternative hypothesis has been accepted and rejected H0. The construct DM1 (74.6%) & DM2 (88%) have the highest variance explained which means that it has highest influence on digital marketing and the construct DM5 (23.4% & DM6 (20.4%) have the least variance explained, it indicates its influence on digital marketing is less. The result of CFA is shown in Figure 6.5.

Figure 6.5

CFA model for Digital Marketing



6.2.3.3 Social Boons

To measure the social boons of adopting digital methods the constructs better customer support, digital payment and employment opportunities are used

6.2.3.3.1 Confirmatory Factor Analysis of Better Customer Support

Confirmatory factor analysis was carried out for the construct 'Better customer support' with five items BCS1 to BCS5.

Table 6.15

Model Fit Indices for CFA – Better Customer Support

Variable	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Better customer support	.103	1.927	.991	.965	.994	.992	.997	.012	.053

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 6.16 presents the regression coefficients.

Table 6.16

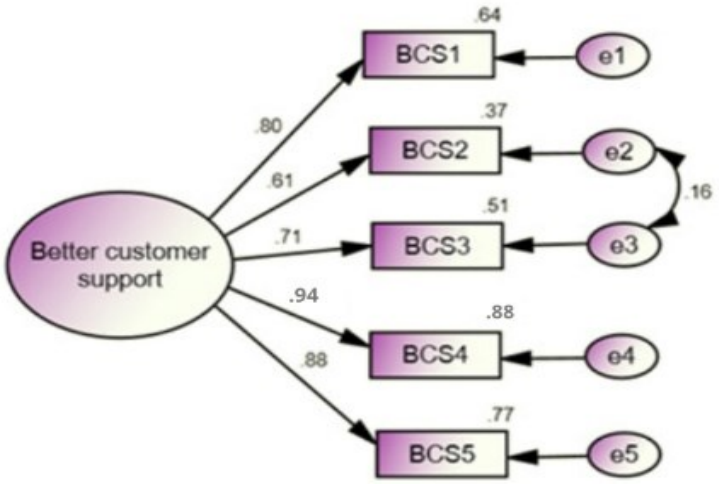
The Regression Coefficients – Better Customer Support

Factors/ Latent Variables (Dependent Variable	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Better customer support	BCS1	0.800	19.866	<0.001	64.0
	BCS2	0.607	12.733	<0.001	36.8
	BCS3	0.713	16.153	<0.001	50.8
	BCS4	0.938	31.124	<0.001	88.0
	BCS5	0.876	24.562	<0.001	76.7

Source: Primary Data

Here all the constructs BCS1 to BCS5 have regression coefficient values more than 0.4 and p value is less than 0.05. Hence all the constructs have significant influence on better customer support. The construct BCS4 have the highest variance explained (88%), which indicates that it has the highest influence on better customer support. The construct BCS2 (36.8%) has the lowest variance explained, which means that its influence on better customer support is least. The result of CFA is shown in Figure 6.6.

Figure 6.6
CFA model for Better Customer Support



6.2.3.3.2 Confirmatory Factor Analysis of Digital Payment

The variables contributing to 'Digital Payment' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 6.17 and in Table 6.18 respectively.

Table 6.17
Model Fit Indices for CFA – Digital Payment

	P	Normed $\chi 2$	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Digital payment	.245	1.408	.997	.974	.988	.982	.996	.015	.035

Source: Primary Data

Model fit indices table 6.17 shows that the calculated P-value is 0.245 which is greater than 0.05 and Normed $\chi 2$ (1.408) which is less than 5, these indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (.997) and Adjusted Goodness of Fit Index (AGFI) value (.974) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.988), Tucker - Lewis Index (TLI) value (.982) and Comparative Fit Index (CFI) value (.996) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .015 and .035 respectively, which are also less

than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 6.18

The Regression Coefficients – Digital Payment

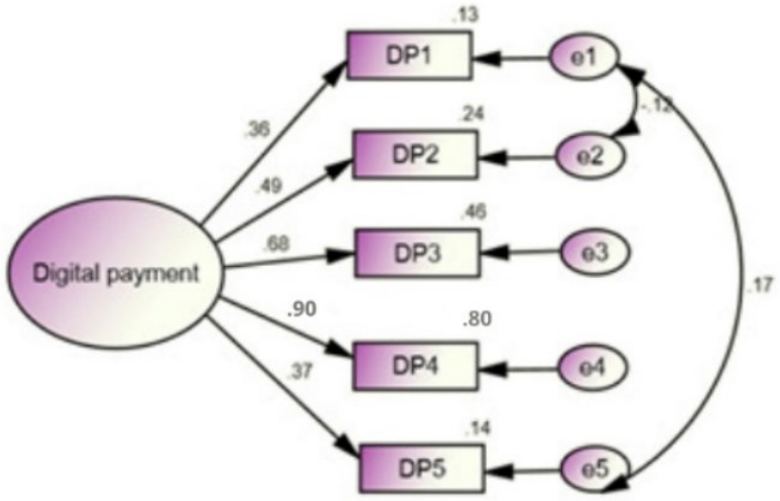
Factors/ Latent Variables (Dependent Variable	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Digital payment	DP1	0.358	6.774	<0.001	12.8
	DP2	0.487	9.622	<0.001	23.7
	DP3	0.681	15.027	<0.001	46.4
	DP4	0.896	26.249	<0.001	80.3
	DP5	0.375	7.129	<0.001	14.1

Source: Primary Data

Here the constructs DP1(We are accepting payment through POS machines) and DP5 (Digital mode of payment is preferred by the customer) has regression coefficient values less than 0.4. Hence these two constructs have no significant influence on Digital payment and these items deleted from further analysis. The construct DP2, DP3 & DP4 have significant influence on Digital Payment. The variance explained of the construct DP4 (digitalisation reduces the risk in handling cash) is the highest (80.3%), which indicates that it has the highest influence on digital payment. The result of CFA is shown in figure 6.7.

Figure 6.7

CFA model for Digital Payment



6.2.3.3.3 Confirmatory Factor Analysis of Employment Opportunities

Confirmatory factor analysis was carried out for the construct Employment opportunities with four items EO1 to EO4.

Table 6.19

Model fit Indices for CFA – Employment Opportunities

Variable	P	Normed $\chi 2$	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Employment opportunities	.080	3.300	1.000	.910	1.000	.910	1.000	0	.035

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 6.20 present the regression coefficients.

Table 6.20

The Regression Coefficients – Employment Opportunities

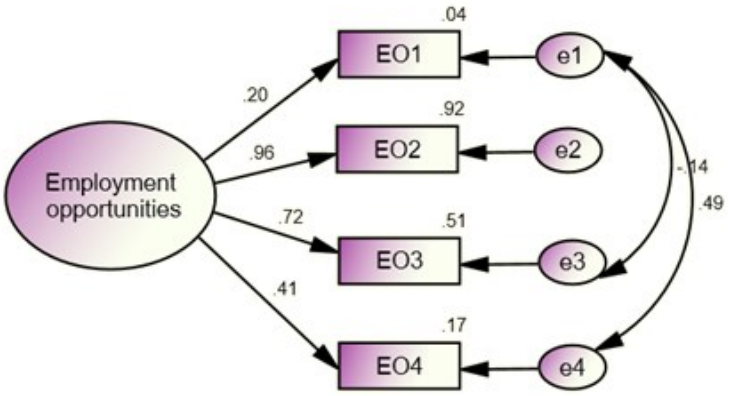
Factors/ Latent Variables (Dependent Variable	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Employment opportunities	EO1	0.204	3.741	<0.001	4.2
	EO2	0.958	34.738	<0.001	91.8
	EO3	0.716	16.264	<0.001	51.3
	EO4	0.414	7.964	<0.001	17.1

Source: Primary Data

As per the above table the construct EO1 (Digitalisation led to increase in employment opportunities) has regression coefficient values less than 0.4 and hence it does not have influence on employment opportunities. Rest of the constructs EO2, EO3 & EO4 has significant influence on Employment opportunities. The construct EO2 has the highest variance explained (91.8%), which means that it has the highest influence on employment opportunities and the construct EO4 has the least variance explained (17.1%), which indicates that its influence is low. The result of CFA is shown below.

Figure 6.8

CFA model for Employment Opportunities



6.2.4 Comparison of Boons of Digitalisation among Different Types of Retail units

In order to identify whether there is any difference in the boons of digitalisation among the different types of retail unit i.e., food & grocery, apparel and consumer electronics the following hypothesis was formulated.

H_o: There is no significant difference in the boons of digitalisation among the different types of retail units.

H_o: There is a significant difference in the boons of digitalisation among the different types of retail units.

A one sample analysis of variance is used to test hypothesis about means when there are three or more groups of one independent variable. In this case, type of retail unit was considered to be the independent variable, which included three groups (a) Food & Grocery (b) Apparel (c) Consumer Electronics.

Table 6.21

Boons of Digitalisation and Type of Retail Unit

Variable	Type of retail unit	N	Mean	S.D.	F	p value
Boons of digitalisation	Food & Grocery	110	106.93	15.48	0.088	0.916
	Apparel	110	106.25	18.96		
	Consumer Electronics	110	107.20	17.02		

Source: Primary Data

Table 6.21 shows that there is no significant difference in the boons of digitalisation among different type of retail units i.e., food & grocery, apparel and consumer electronics. The mean of boons of digitalisation of food & grocery retail sector is 106.93, Apparel is 106.25 and consumer electronic is 107.20. As the p-value is greater than 0.05, accepted Ho (null hypothesis) and rejected H_1 in this context. So, it has been concluded that the boons of digitalisation are same for different type of retail units.

The variables used to measure the boons of digitalisation are operational performance, increase in market share, new market opportunities, inventory management, digital marketing, better customer support, digital payment and employment opportunity.

Table 6.22 shows whether these boons change according to the type of retail outlet. The result of one sample Analysis of Variance is given below:

Table 6.22

Component wise Boons of Digitalisation and Type of Retail Unit

Boons of Digitalisation		Type of retail unit	N	Mean	S.D.	F	p value
Economic Boons	Operational performance	Food & Grocery	110	7.35	1.66	2.783	0.063
		Apparel	110	7.71	1.45		
		Consumer Electronics	110	7.77	1.19		
	Increase in market share	Food & Grocery	110	18.82	3.01	0.647	0.524
		Apparel	110	18.70	3.98		
		Consumer Electronics	110	19.23	3.77		
Technological Boons	New market opportunities	Food & Grocery	110	7.44	1.50	1.712	0.182
		Apparel	110	7.79	1.64		
		Consumer Electronics	110	7.42	1.89		
	Inventory management	Food & Grocery	110	12.06	2.19	0.464	0.629
		Apparel	110	12.24	1.61		
		Consumer Electronics	110	12.00	1.81		
	Digital Marketing	Food & Grocery	110	23.15	3.36	6.583	0.002
		Apparel	110	21.47	4.89		

		Consumer Electronics	110	21.24	4.44		
Social Boons	Better customer support	Food & Grocery	110	17.30	3.16	1.987	0.139
		Apparel	110	16.58	3.89		
		Consumer Electronics	110	17.53	3.92		
	Digital payment	Food & Grocery	110	12.07	1.42	0.359	0.698
		Apparel	110	11.94	1.63		
		Consumer Electronics	110	11.90	1.72		
	Employment opportunities	Food & Grocery	110	8.74	2.10	15.192	<0.001
		Apparel	110	9.83	2.04		
		Consumer Electronics	110	10.12	1.72		

Source: Primary Data

As per the table 6.22, the p value obtained for the variable operational performance, increase in market share, new market opportunities, inventory management, better customer support and digital payment are greater than 0.05. It indicates that boons of adopting digital methods of these variables is same for the different type of retail units. But in case of the variable digital marketing and employment opportunities, p value is less than 0.05 which means that boons of these variables are different for different type of retail units.

Since the ANOVA test indicate that the significant difference exists among the type of retail units for the boons of adopting digital method post hoc test or multiple comparison test was conducted to identify which among the type of retail units differs significantly and the result is exhibited in the Table 6.23.

Table 6.23

Multiple Comparison Tests- Component wise of Boons of Digitalisation and Type of Retail Unit

Boons of Digitalisation	Type of Retail unit		Mean Difference (I-J)	Std. Error	Sig.
Digital Marketing	Food & Grocery	Apparel	1.68182*	0.577	0.004
		Consumer Electronics	1.91818*	0.577	0.001
	Apparel	Food & Grocery	-1.68182*	0.577	0.004
		Consumer Electronics	0.236	0.577	0.682
	Consumer Electronics	Food & Grocery	-1.91818*	0.577	0.001
		Apparel	-0.236	0.577	0.682
Employment opportunities	Food & Grocery	Apparel	-1.09091*	0.264	0.000
		Consumer Electronics	-1.38182*	0.264	0.000
	Apparel	Food & Grocery	1.09091*	0.264	0.000
		Consumer Electronics	-0.291	0.264	0.272
	Consumer Electronics	Food & Grocery	1.38182*	0.264	0.000
		Apparel	0.291	0.264	0.272

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison result reveals that there exists a significant difference among food & grocery and apparel and food & grocery and consumer electronics for both the variable digital marketing and employment opportunity. But in case of consumer electronics and apparel retail outlets the boons derived from using digital modes in marketing and employment opportunities are same (P value > 0.05).

6.2.5 Boons of Digitalisation and Internal Factors

Boons of digitalisation may vary in association with internal factors. The researcher is interested to know whether there is any difference in the boons of adopting digital methods with regard to the internal factor. A comparison between internal factors and boons was done using one way ANOVA and independent sample z test.

6.2.5.1 Boons of Digitalisation and Age of Outlet

Table 6.24 state the result of one sample analysis of variance which is used to compare the boons of digitalisation and age group like up to 10 years, 11-20 years, 20-30 years and above 30 years and hypotheses are set as follows:

Ho: There is no significant difference in the boons of digitalisation with respect to age of outlet.

H_1: There is a significant difference in the boons of digitalisation with respect to age of outlet.

Table 6.24

Boons of Digitalisation and Age of Outlet

Variable	Age of Outlet	N	Mean	S.D.	F	p value
Boons of adopting digital methods	Up to 10 years	184	106.42	17.55	1.955	0.121
	11-20 years	94	109.74	15.01		
	20-30 years	37	102.27	19.63		
	Above 30 years	15	104.07	16.88		

Source: Primary Data

The results of the one sample analysis of variance shows that, there is no significant difference in the boons of adopting digital method with regard to the age of outlet. The mean score of age of retail outlet up to 10 years is 106.42, between 11 to 20 is 109.74, between 20 and 30 years is 102.27 and above 30 years is 104.07. As the p-value is greater than 0.05, accepted H_0(null hypothesis) and rejected the alternate hypothesis in this context. So, it has been concluded that the Boons of adopting digital methods is the same for different age of outlets.

Table 6.25

Component wise Boons of Digitalisation and Age of Outlet

Boons of Digitalisation	Age of Outlet	N	Mean	S.D.	F	p value
Operational performance	Up to 10 years	184	7.51	1.50	1.363	0.254
	11-20 years	94	7.82	1.32		
	20-30 years	37	7.43	1.74		
	Above 30 years	15	7.93	0.70		
Increase in market share	Up to 10 years	184	18.81	3.65	1.371	0.252
	11-20 years	94	19.47	3.38		
	20-30 years	37	18.16	3.91		
	Above 30 years	15	18.60	3.48		
New market opportunities	Up to 10 years	184	7.42	1.75	2.001	0.114
	11-20 years	94	7.90	1.54		
	20-30 years	37	7.41	1.71		
	Above 30 years	15	7.27	1.62		
Inventory management	Up to 10 years	184	11.97	2.05	2.616	0.051
	11-20 years	94	12.54	1.44		
	20-30 years	37	11.76	1.98		
	Above 30 years	15	11.80	1.61		
Digital Marketing	Up to 10 years	184	22.20	4.23	1.829	0.142
	11-20 years	94	22.19	4.20		
	20-30 years	37	20.78	5.02		
	Above 30 years	15	20.40	4.66		
Better customer support	Up to 10 years	184	17.02	3.70	2.437	0.065
	11-20 years	94	17.86	3.18		
	20-30 years	37	16.05	4.56		
	Above 30 years	15	16.73	3.39		
Digital payment	Up to 10 years	184	12.05	1.73	2.189	0.089
	11-20 years	94	12.10	1.42		

	20-30 years	37	11.51	1.28		
	Above 30 years	15	11.33	1.23		
Employment opportunities	Up to 10 years	184	9.45	2.20	1.565	0.198
	11-20 years	94	9.86	1.77		
	20-30 years	37	9.16	1.85		
	Above 30 years	15	10.00	1.96		

Source: Primary Data

The variables used to measure the boons of digitalisation are operational performance, increase in market share, new market opportunities, inventory management, digital marketing, better customer support, digital payment and employment opportunities. The highest mean score of the operational performance is for the age group above 30 years (7.93) with a standard deviation of 0.7 and lowest is for the age group 20-30 years (7.43) with a standard deviation of 1.74. The highest mean score of increase in market share, new market opportunity, inventory management, better customer support, digital payment and employment opportunities is for the age group 11-20 years with a mean score of 19.47, 7.90, 12.54, 11.86, 12.10 and 9.86 respectively. The highest mean score of digital marketing is for the age group up to 10 years (22.20) followed by the age group 11-20 years with a mean score of 22.19. The table 6.25 reveals the result of one sample analysis of variance of boons and age of outlets. The p value obtained for all the constructs are greater than 0.05, which indicates that boons derived does not vary with age of outlet.

6.2.5.2 Boons of Digitalisation and Type of Outlet

Here the type of outlet was considered to be the independent variable, which included three groups (a) Sole Proprietor (b) Partnership (c) Private Ltd. Co. A one sample analysis of variance is used to compare the mean scores of different types of outlets and the result is exhibited in Table 6.26

Ho: There is no significant difference in the boons of digitalisation with respect to type of outlet.

H_1: There is a significant difference in the boons of digitalisation with respect to type of outlet

Table 6.26

Boons of Digitalisation and Type of Outlet

Variable	Type of outlet	N	Mean	S.D.	F	p value
Boons of Digitalisation	Sole Proprietor	77	96.53	15.65	35.549	<0.001
	Partnership	143	105.39	15.91		
	Private Ltd. Co.	110	115.80	15.17		

Source: Primary Data

The results of the ANOVA test depicted in Table 6.26 reveals that the statistical value of p is less than 0.05 for boons of adopting digital methods, therefore the null hypothesis (H_o) is rejected and alternate hypothesis (H_1) is accepted. This indicates that boons of adopting digital method is different for different type of outlets. The highest mean of boons (115.80) is for private limited company followed by partnership with a mean of 105.39 and least is for sole proprietor 96.53. Since the ANOVA test indicate that the significant difference exist among the type of outlets, post hoc test or multiple comparison test is conducted to identify which among the type of outlets differs significantly and the result is exhibited in the Table 6.27.

Table 6.27

Multiple Comparison Tests- Boons of Digitalisation and Types of outlets

Dependent Variable	Types of Outlets		Mean Difference (I-J)	Std. Error	Sig.
Boons of Digitalisation	Sole Proprietor	Partnership	-8.85914*	2.206	0.000
		Private Ltd. Co.	-19.26753*	2.319	0.000
	Partnership	Sole Proprietor	8.85914*	2.206	0.000
		Private Ltd. Co.	-10.40839*	1.979	0.000
	Private Ltd. Co.	Sole Proprietor	19.26753*	2.319	0.000
		Partnership	10.40839*	1.979	0.000

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison test result shown in table 6.27 indicates that there is a significant difference between all the type of outlets.

Table 6.28

Component wise Boons of Digitalisation and Types of Outlets

Boons of Digitalisation	Types of outlets	N	Mean	S.D.	F	p value
Operational performance	Sole Proprietor	77	6.62	1.73	37.957	<0.001
	Partnership	143	7.59	1.44		
	Private Ltd. Co.	110	8.33	0.65		
Increase in market share	Sole Proprietor	77	17.08	3.22	34.220	<0.001
	Partnership	143	18.37	3.41		
	Private Ltd. Co.	110	20.91	3.18		
New market opportunities	Sole Proprietor	77	6.47	1.79	34.055	<0.001
	Partnership	143	7.51	1.42		
	Private Ltd. Co.	110	8.35	1.50		
Inventory management	Sole Proprietor	77	10.95	1.96	27.019	<0.001
	Partnership	143	12.14	1.90		
	Private Ltd. Co.	110	12.85	1.33		
Digital Marketing	Sole Proprietor	77	20.04	3.53	16.494	<0.001
	Partnership	143	21.76	4.29		
	Private Ltd. Co.	110	23.55	4.38		
Better customer support	Sole Proprietor	77	15.31	3.66	22.309	<0.001
	Partnership	143	16.91	3.21		
	Private Ltd. Co.	110	18.71	3.64		
Digital payment	Sole Proprietor	77	11.39	1.66	11.218	<0.001
	Partnership	143	11.90	1.44		
	Private Ltd. Co.	110	12.46	1.58		
Employment opportunities	Sole Proprietor	77	8.68	2.01	28.264	<0.001
	Partnership	143	9.22	2.00		
	Private Ltd. Co.	110	10.63	1.65		

Source: Primary Data

As per the above table, the highest mean score of all the variables of boons of adopting digital mode is for private limited company, second is for partnership firms and lowest is for sole proprietor firms. The result of one-way analysis of variance shows that there is a significant difference in the boons with respect to type of retail outlets. The p value of all the variables is less than 0.05, which confirms that the result is significant too. Post hoc tests or multiple comparison tests have been conducted to identify which among the type of outlets differs significantly and the result is exhibited in the Table 6.29.

Table 6.29

Multiple Comparison Tests- Component wise Boons of Digitalisation and Types of Outlets

Boons of Digitalisation	Types of outlets		Mean Difference (I-J)	Std. Error	Sig.
Operational performance	Sole Proprietor	Partnership	-.96404*	0.186	0.000
		Private Ltd. Co.	-1.70390*	0.196	0.000
	Partnership	Sole Proprietor	.96404*	0.186	0.000
		Private Ltd. Co.	-.73986*	0.167	0.000
	Private Ltd. Co.	Sole Proprietor	1.70390*	0.196	0.000
		Partnership	.73986*	0.167	0.000
Increase in market share	Sole Proprietor	Partnership	-1.29271*	0.465	0.006
		Private Ltd. Co.	-3.83117*	0.488	0.000
	Partnership	Sole Proprietor	1.29271*	0.465	0.006
		Private Ltd. Co.	-2.53846*	0.417	0.000
	Private Ltd. Co.	Sole Proprietor	3.83117*	0.488	0.000
		Partnership	2.53846*	0.417	0.000
New market opportunities	Sole Proprietor	Partnership	-1.04296*	0.218	0.000
		Private Ltd. Co.	-1.88701*	0.229	0.000
	Partnership	Sole Proprietor	1.04296*	0.218	0.000
		Private Ltd. Co.	-.84406*	0.195	0.000
	Private Ltd. Co.	Sole Proprietor	1.88701*	0.229	0.000
		Partnership	.84406*	0.195	0.000
		Partnership	-1.19181*	0.247	0.000

Inventory management	Sole Proprietor	Private Ltd. Co.	-1.90649*	0.260	0.000
	Partnership	Sole Proprietor	1.19181*	0.247	0.000
		Private Ltd. Co.	-.71469*	0.222	0.001
	Private Ltd. Co.	Sole Proprietor	1.90649*	0.260	0.000
		Partnership	.71469*	0.222	0.001
Digital Marketing	Sole Proprietor	Partnership	-1.71628*	0.587	0.004
		Private Ltd. Co.	-3.51558*	0.618	0.000
	Partnership	Sole Proprietor	1.71628*	0.587	0.004
		Private Ltd. Co.	-1.79930*	0.527	0.001
	Private Ltd. Co.	Sole Proprietor	3.51558*	0.618	0.000
		Partnership	1.79930*	0.527	0.001
Better customer support	Sole Proprietor	Partnership	-1.59740*	0.490	0.001
		Private Ltd. Co.	-3.39740*	0.515	0.000
	Partnership	Sole Proprietor	1.59740*	0.490	0.001
		Private Ltd. Co.	-1.80000*	0.439	0.000
	Private Ltd. Co.	Sole Proprietor	3.39740*	0.515	0.000
		Partnership	1.80000*	0.439	0.000
Digital payment	Sole Proprietor	Partnership	-.51249*	0.218	0.019
		Private Ltd. Co.	-1.07403*	0.229	0.000
	Partnership	Sole Proprietor	.51249*	0.218	0.019
		Private Ltd. Co.	-.56154*	0.196	0.004
	Private Ltd. Co.	Sole Proprietor	1.07403*	0.229	0.000
		Partnership	.56154*	0.196	0.004
Employment opportunities	Sole Proprietor	Partnership	-.54146*	0.267	0.044
		Private Ltd. Co.	-1.95195*	0.281	0.000
	Partnership	Sole Proprietor	.54146*	0.267	0.044
		Private Ltd. Co.	-1.41049*	0.240	0.000
	Private Ltd. Co.	Sole Proprietor	1.95195*	0.281	0.000
		Partnership	1.41049*	0.240	0.000

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison results reveals that there exists a significant difference among all the types of retail outlets.

6.2.5.3 Boons of Digitalisation and Number of Employees

Number of employees in the retail outlet was divided into four groups (a) Less than 25 (b) 25-30 (c) 50-100 (d) 100 & above. A one sample analysis of variance is used to test the following hypothesis:

Ho: There is no significant difference in the boons of digitalisation with respect to number of employees.

H_1: There is a significant difference in the boons of digitalisation with respect to number of employees.

Table 6.30

Boons of Digitalisation and Number of Employees

Variable	Number of employees	N	Mean	S.D.	F	p value
Boons of Digitalisation	Less than 25	233	102.70	16.16	22.708	<0.001
	25-50	35	110.00	17.81		
	50-100	31	116.32	14.58		
	100 & above	31	124.45	9.03		

Source: Primary Data

The results of the one-way ANOVA test depicted in Table 6.30 reveals that the statistical value of p is less than 0.05 for boons of adopting digital methods which indicates that there is significant difference in the boons with respect to the number of employees in the outlet. Hence, we reject the hypothesis H_0, and accept H_1. The mean score of number of employees 100 & above is the highest (124.45) followed by the number of employees 50-100 is 116.32, between 25 and 50 is 110 and less than 25 is 102.7. Post hoc test or multiple comparison test is conducted to identify which among the number of employees in the outlet differs significantly and the result is exhibited in the Table 6.31.

Table 6.31

Multiple Comparison Tests- Boons of Digitalisation and Number of Employees

Dependent Variable	Number of Employees		Mean Difference (I-J)	Std. Error	Sig.
Boons of Digitalisation	Less than 25	25-50	-7.30472*	2.843	0.011
		50-100	-13.62730*	2.998	0.000
		100 & above	-21.75633*	2.998	0.000
	25-50	Less than 25	7.30472*	2.843	0.011
		50-100	-6.323	3.868	0.103
		100 & above	-14.45161*	3.868	0.000
	50-100	Less than 25	13.62730*	2.998	0.000
		25-50	6.323	3.868	0.103
		100 & above	-8.12903*	3.983	0.042
	100 & above	Less than 25	21.75633*	2.998	0.000
		25-50	14.45161*	3.868	0.000
		50-100	8.12903*	3.983	0.042

Source: Primary Data Significant difference are indicated by (*)

As per the above table p value of all the groups except25-50 and 50-100 is less than 0.05, which means that there is significant difference between all other groups of employees.

Table 6.32

Component wise Boons of Digitalisation and Number of Employees

Boons of digitalisation	Number of employees	N	Mean	S.D.	F	p value
Operational performance	Less than 25	233	7.30	1.57	14.021	<0.001
	25-50	35	8.26	0.56		
	50-100	31	8.26	0.44		
	100 & above	31	8.58	0.96		

Increase in market share	Less than 25	233	18.06	3.35	20.617	<0.001
	25-50	35	19.80	3.97		
	50-100	31	20.97	3.22		
	100 & above	31	22.29	2.21		
New market opportunities	Less than 25	233	7.18	1.63	18.747	<0.001
	25-50	35	7.91	1.74		
	50-100	31	8.29	1.32		
	100 & above	31	9.19	0.95		
Inventory management	Less than 25	233	11.73	1.93	12.409	<0.001
	25-50	35	12.94	1.47		
	50-100	31	12.68	1.45		
	100 & above	31	13.39	1.15		
Digital Marketing	Less than 25	233	21.08	4.01	17.377	<0.001
	25-50	35	22.37	5.06		
	50-100	31	23.81	4.35		
	100 & above	31	26.23	2.53		
Better customer support	Less than 25	233	16.38	3.61	17.910	<0.001
	25-50	35	17.20	3.83		
	50-100	31	19.65	2.70		
	100 & above	31	20.26	1.81		
Digital payment	Less than 25	233	11.86	1.60	5.337	0.001
	25-50	35	11.80	1.71		
	50-100	31	11.94	1.55		
	100 & above	31	13.03	0.98		
Employment opportunities	Less than 25	233	9.12	1.99	18.858	<0.001
	25-50	35	9.71	2.09		
	50-100	31	10.74	1.53		
	100 & above	31	11.48	1.03		

Source: Primary Data

The highest mean score of operational performance, increase in market share, new market opportunity, inventory management, digital marketing, better customer support, digital payment and employment opportunities are for the retail units with number of employees more than 100. The result of one-way ANOVA depicted in table 6.32 reveals that the boons of digitalisation significantly differ with the number of employees in the outlet. The p value of all the variables is less than 0.05, it indicates that the result is significant too. Post hoc test or multiple comparison test is conducted to identify which among the number of employees in the outlet differs significantly and the result is exhibited in the Table 6.33.

Table 6.33

Multiple comparison tests- Component wise Boons of Digitalisation and Number of Employees

Boons of Digitalisation	**Number of Employees**		Mean Difference (I-J)	Std. Error	Sig.
Operational performance	Less than 25	25-50	-.96101*	0.250	0.000
		50-100	-.96193*	0.263	0.000
		100 & above	-1.28451*	0.263	0.000
	25-50	Less than 25	.96101*	0.250	0.000
		50-100	-0.001	0.340	0.998
		100 & above	-0.324	0.340	0.342
	50-100	Less than 25	.96193*	0.263	0.000
		25-50	0.001	0.340	0.998
		100 & above	-0.323	0.350	0.357
	100 & above	Less than 25	1.28451*	0.263	0.000
		25-50	0.324	0.340	0.342
		50-100	0.323	0.350	0.357
Increase in market share	Less than 25	25-50	-1.73991*	0.602	0.004
		50-100	-2.90766*	0.635	0.000
		100 & above	-4.23024*	0.635	0.000

	25-50	Less than 25	1.73991*	0.602	0.004
		50-100	-1.168	0.819	0.155
		100 & above	-2.49032*	0.819	0.003
	50-100	Less than 25	2.90766*	0.635	0.000
		25-50	1.168	0.819	0.155
		100 & above	-1.323	0.843	0.118
	100 & above	Less than 25	4.23024*	0.635	0.000
		25-50	2.49032*	0.819	0.003
		50-100	1.323	0.843	0.118
New market opportunities	Less than 25	25-50	-.73832*	0.284	0.010
		50-100	-1.11436*	0.299	0.000
		100 & above	-2.01758*	0.299	0.000
	25-50	Less than 25	.73832*	0.284	0.010
		50-100	-0.376	0.386	0.331
		100 & above	-1.27926*	0.386	0.001
	50-100	Less than 25	1.11436*	0.299	0.000
		25-50	0.376	0.386	0.331
		100 & above	-.90323*	0.398	0.024
	100 & above	Less than 25	2.01758*	0.299	0.000
		25-50	1.27926*	0.386	0.001
		50-100	.90323*	0.398	0.024
Inventory management	Less than 25	25-50	-1.21754*	0.324	0.000
		50-100	-.95210*	0.342	0.006
		100 & above	-1.66177*	0.342	0.000
	25-50	Less than 25	1.21754*	0.324	0.000
		50-100	0.265	0.441	0.548
		100 & above	-0.444	0.441	0.315
	50-100	Less than 25	.95210*	0.342	0.006
		25-50	-0.265	0.441	0.548
		100 & above	-0.710	0.455	0.120

	100 & above	Less than 25	1.66177*	0.342	0.000
		25-50	0.444	0.441	0.315
		50-100	0.710	0.455	0.120
Digital Marketing	Less than 25	25-50	-1.294	0.735	0.079
		50-100	-2.72920*	0.775	0.000
		100 & above	-5.14855*	0.775	0.000
	25-50	Less than 25	1.294	0.735	0.079
		50-100	-1.435	1.000	0.152
		100 & above	-3.85438*	1.000	0.000
	50-100	Less than 25	2.72920*	0.775	0.000
		25-50	1.435	1.000	0.152
		100 & above	-2.41935*	1.030	0.019
	100 & above	Less than 25	5.14855*	0.775	0.000
		25-50	3.85438*	1.000	0.000
		50-100	2.41935*	1.030	0.019
Better customer support	Less than 25	25-50	-0.822	0.621	0.187
		50-100	-3.26748*	0.655	0.000
		100 & above	-3.88038*	0.655	0.000
	25-50	Less than 25	0.822	0.621	0.187
		50-100	-2.44516*	0.846	0.004
		100 & above	-3.05806*	0.846	0.000
	50-100	Less than 25	3.26748*	0.655	0.000
		25-50	2.44516*	0.846	0.004
		100 & above	-0.613	0.871	0.482
	100 & above	Less than 25	3.88038*	0.655	0.000
		25-50	3.05806*	0.846	0.000
		50-100	0.613	0.871	0.482
Digital payment	Less than 25	25-50	0.058	0.283	0.837
		50-100	-0.077	0.298	0.796
		100 & above	-1.17389*	0.298	0.000

	25-50	Less than 25	-0.058	0.283	0.837
		50-100	-0.135	0.385	0.725
		100 & above	-1.23226*	0.385	0.001
	50-100	Less than 25	0.077	0.298	0.796
		25-50	0.135	0.385	0.725
		100 & above	-1.09677*	0.396	0.006
	100 & above	Less than 25	1.17389*	0.298	0.000
		25-50	1.23226*	0.385	0.001
		50-100	1.09677*	0.396	0.006
Employment opportunities	Less than 25	25-50	-0.590	0.343	0.087
		50-100	-1.61747*	0.362	0.000
		100 & above	-2.35941*	0.362	0.000
	25-50	Less than 25	0.590	0.343	0.087
		50-100	-1.02765*	0.467	0.029
		100 & above	-1.76959*	0.467	0.000
	50-100	Less than 25	1.61747*	0.362	0.000
		25-50	1.02765*	0.467	0.029
		100 & above	-0.742	0.481	0.124
	100 & above	Less than 25	2.35941*	0.362	0.000
		25-50	1.76959*	0.467	0.000
		50-100	0.742	0.481	0.124

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison result shows that in case of operational performance & inventory management there is significant difference between the retail outlets with number of employees less than 25 with that of all other groups. In case of increase in market share there is significant difference between the retail outlets with number of employees less than 25 with that of all other groups and 25-50 with 100 & above. In case of new market opportunities there is significant difference between the retail outlets with number of employees less than 25 and 100 & above with that of all other groups. In case of digital marketing there is significant difference between the retail outlets with

number of employees 100 & above with that of all other groups and 50-100 with that of less than 25. In case of better customer support there is significant difference between the retail outlets with number of employees 100 & above and 50-100 with that of less than 25 and 25-50. In case of digital payment there is significant difference between the retail outlets with number of employees 100 & above with that of all other groups. In case of employment opportunities there is significant difference between the retail outlets with number of employees less than 25 and 25-50 with that of 50-100 and 100 & above.

6.2.5.4 Boons of Digitalisation and Size of Outlet

Size of the outlet and boons of adopting digital methods are examined to determine whether the mean score of boons of adopting digital methods is the same for size of outlet. Table 6.34 represents the result of one-way ANOVA conducted in this regard and the hypothesis are set as follows:

Ho: There is no significant difference in the boons of digitalisation with respect to size of outlet.

H_1: There is a significant difference in the boons of digitalisation with respect to size of outlet.

Table 6.34

Boons of Digitalisation and Size of Outlet

Variable	Size of outlet	N	Mean	S.D.	F	p value
Boons of Digitalisation	Less than 1000	114	94.83	14.20	42.068	<0.001
	1000-5000	155	109.26	14.95		
	5000-10000	27	122.67	12.20		
	10000-20000	15	122.20	9.62		
	20000 & above	19	123.74	9.12		

Source: Primary Data

The result of one-way ANOVA shows that the boons of digitalisation is different for different size of outlet. The mean score of the retail outlets of the size 20000 & above

square feet is 123.74, which is highest among all others. The mean score of 5000-10000 sq. ft is 122.67 and 10000-20000 sq. ft. are 122.20 which is very closer to 5000-10000 sq. ft. The p value is less than 0.05, hence the null hypothesis H_0 is rejected and H_1 is accepted.

Since the ANOVA test indicate that the significant difference exists among the size of outlet, post hoc test or multiple comparison test is conducted to determine which among the size of outlet differs significantly and the result is exhibited in the Table 6.35.

Table 6.35

Multiple Comparison Tests- Boons of Digitalisation and Size of Outlet

Dependent Variable	Size of the Outlet		Mean Difference (I-J)	Std. Error	Sig.
Boons of Digitalisation	Less than 1000	1000-5000	-14.42473*	1.730	0.000
		5000-10000	-27.83333*	3.000	0.000
		10000-20000	-27.36667*	3.850	0.000
		20000 & above	-28.90351*	3.474	0.000
	1000-5000	Less than 1000	14.42473*	1.730	0.000
		5000-10000	-13.40860*	2.923	0.000
		10000-20000	-12.94194*	3.791	0.001
		20000 & above	-14.47878*	3.407	0.000
	5000-10000	Less than 1000	27.83333*	3.000	0.000
		1000-5000	13.40860*	2.923	0.000
		10000-20000	0.467	4.514	0.918
		20000 & above	-1.070	4.198	0.799
	10000-20000	Less than 1000	27.36667*	3.850	0.000
		1000-5000	12.94194*	3.791	0.001
		5000-10000	-0.467	4.514	0.918

		20000 & above	-1.537	4.842	0.751
	20000 & above	Less than 1000	28.90351*	3.474	0.000
		1000-5000	14.47878*	3.407	0.000
		5000-10000	1.070	4.198	0.799
		10000-20000	1.537	4.842	0.751

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison results in the table 6.35 reveals that there is significant difference in the boons of adopting digital modes between the size of retail outlets less 1000 sq. ft. and 1000-5000 sq. ft with that of all other groups. In case of the retail outlets with the sq. ft.5000-10000 and 10000-20000, significant difference is there only between the outlets having the sq. ft less than 1000 and 1000-5000. In case of the outlets having the sq. ft. of 20000 & above, significant difference is there only with the outlets having sq. ft. less than 1000.

Table 6.36

Component wise Boons of Digitalisation and Size of Outlet

Boons of Digitalisation	Size of the outlet	N	Mean	S.D.	F	p value
Operational performance	Less than 1000	114	6.72	1.71	23.149	<0.001
	1000-5000	155	7.90	1.07		
	5000-10000	27	8.52	0.51		
	10000-20000	15	8.47	0.74		
	20000 & above	19	8.58	1.07		
Increase in market share	Less than 1000	114	16.36	3.00	39.151	<0.001
	1000-5000	155	19.59	3.17		
	5000-10000	27	21.89	2.52		
	10000-20000	15	21.93	2.28		
	20000 & above	19	22.16	2.09		
New market opportunities	Less than 1000	114	6.55	1.65	25.634	<0.001
	1000-5000	155	7.77	1.48		
	5000-10000	27	8.81	1.24		

	10000-20000	15	8.73	0.96		
	20000 & above	19	9.00	0.94		
Inventory management	Less than 1000	114	10.93	1.96	23.690	<0.001
	1000-5000	155	12.51	1.53		
	5000-10000	27	13.22	1.40		
	10000-20000	15	13.13	1.30		
	20000 & above	19	13.37	1.30		
Digital Marketing	Less than 1000	114	19.49	3.04	28.421	<0.001
	1000-5000	155	22.26	4.42		
	5000-10000	27	25.70	3.67		
	10000-20000	15	25.27	2.25		
	20000 & above	19	26.32	2.77		
Better customer support	Less than 1000	114	14.70	3.44	36.570	<0.001
	1000-5000	155	17.63	3.10		
	5000-10000	27	20.33	2.63		
	10000-20000	15	21.13	1.92		
	20000 & above	19	20.00	1.29		
Digital payment	Less than 1000	114	11.52	1.78	5.856	<0.001
	1000-5000	155	12.02	1.44		
	5000-10000	27	12.59	1.65		
	10000-20000	15	12.67	1.05		
	20000 & above	19	12.84	0.83		
Employment opportunities	Less than 1000	114	8.56	1.96	24.734	<0.001
	1000-5000	155	9.58	1.90		
	5000-10000	27	11.59	0.80		
	10000-20000	15	10.87	1.30		
	20000 & above	19	11.47	1.17		

Source: Primary Data

The highest mean score of operational performance, increase in market share, new market opportunities, inventory management, digital Marketing and digital payment

are 8.58, 22.16, 9.00, 13.37, 26.32 and 12.84 respectively for the size of outlet 20000 & above. Better customer support has highest mean score 21.13 for the outlet with square feet 10000-20000 and for employment opportunities highest mean score 11.59 is for the outlet with the size 5000-10000 sq. ft. Table 6.36 shows the result of one sample analysis of variance. The p value obtained for all the variable are less than 0.05, which implies that the boons of using digital modes are different for size of outlets.

Table 6.37

Multiple Comparison Tests- Component wise Boons of Digitalisation and Size of Outlet

Boons of Digitalisation	Size of outlet		Mean Difference (I-J)	Std. Error	Sig.
Operational performance	Less than 1000	1000-5000	-1.18393*	0.160	0.000
		5000-10000	-1.79922*	0.277	0.000
		10000-20000	-1.74737*	0.355	0.000
		20000 & above	-1.85965*	0.320	0.000
	1000-5000	Less than 1000	1.18393*	0.160	0.000
		5000-10000	-.61529*	0.270	0.023
		10000-20000	-0.563	0.350	0.108
		20000 & above	-.67572*	0.314	0.032
	5000-10000	Less than 1000	1.79922*	0.277	0.000
		1000-5000	.61529*	0.270	0.023
		10000-20000	0.052	0.417	0.901
		20000 & above	-0.060	0.387	0.876
	10000-20000	Less than 1000	1.74737*	0.355	0.000
		1000-5000	0.563	0.350	0.108
		5000-10000	-0.052	0.417	0.901
		20000 & above	-0.112	0.447	0.802
	20000 & above	Less than 1000	1.85965*	0.320	0.000
		1000-5000	.67572*	0.314	0.032
		5000-10000	0.060	0.387	0.876
		10000-20000	0.112	0.447	0.802
Increase in market share	Less than 1000	1000-5000	-3.22745*	0.368	0.000
		5000-10000	-5.52924*	0.638	0.000

		10000-20000	-5.57368*	0.818	0.000
		20000 & above	-5.79825*	0.738	0.000
	1000-5000	Less than 1000	3.22745*	0.368	0.000
		5000-10000	-2.30179*	0.621	0.000
		10000-20000	-2.34624*	0.805	0.004
		20000 & above	-2.57080*	0.724	0.000
	5000-10000	Less than 1000	5.52924*	0.638	0.000
		1000-5000	2.30179*	0.621	0.000
		10000-20000	-0.044	0.959	0.963
		20000 & above	-0.269	0.892	0.763
	10000-20000	Less than 1000	5.57368*	0.818	0.000
		1000-5000	2.34624*	0.805	0.004
		5000-10000	0.044	0.959	0.963
		20000 & above	-0.225	1.029	0.827
	20000 & above	Less than 1000	5.79825*	0.738	0.000
		1000-5000	2.57080*	0.724	0.000
		5000-10000	0.269	0.892	0.763
		10000-20000	0.225	1.029	0.827
New market opportunities	Less than 1000	1000-5000	-1.21511*	0.183	0.000
		5000-10000	-2.26218*	0.317	0.000
		10000-20000	-2.18070*	0.407	0.000
		20000 & above	-2.44737*	0.367	0.000
	1000-5000	Less than 1000	1.21511*	0.183	0.000
		5000-10000	-1.04707*	0.309	0.001
		10000-20000	-.96559*	0.400	0.016
		20000 & above	-1.23226*	0.360	0.001
	5000-10000	Less than 1000	2.26218*	0.317	0.000
		1000-5000	1.04707*	0.309	0.001
		10000-20000	0.081	0.477	0.864
		20000 & above	-0.185	0.443	0.677
	10000-20000	Less than 1000	2.18070*	0.407	0.000
		1000-5000	.96559*	0.400	0.016
		5000-10000	-0.081	0.477	0.864
		20000 & above	-0.267	0.512	0.603
		Less than 1000	2.44737*	0.367	0.000

	20000 & above	1000-5000	1.23226*	0.360	0.001
		5000-10000	0.185	0.443	0.677
		10000-20000	0.267	0.512	0.603
Inventory management	Less than 1000	1000-5000	-1.57985*	0.205	0.000
		5000-10000	-2.29240*	0.356	0.000
		10000-20000	-2.20351*	0.457	0.000
		20000 & above	-2.43860*	0.413	0.000
	1000-5000	Less than 1000	1.57985*	0.205	0.000
		5000-10000	-.71254*	0.347	0.041
		10000-20000	-0.624	0.450	0.167
		20000 & above	-.85874*	0.405	0.035
	5000-10000	Less than 1000	2.29240*	0.356	0.000
		1000-5000	.71254*	0.347	0.041
		10000-20000	0.089	0.536	0.868
		20000 & above	-0.146	0.499	0.770
	10000-20000	Less than 1000	2.20351*	0.457	0.000
		1000-5000	0.624	0.450	0.167
		5000-10000	-0.089	0.536	0.868
		20000 & above	-0.235	0.575	0.683
	20000 & above	Less than 1000	2.43860*	0.413	0.000
		1000-5000	.85874*	0.405	0.035
		5000-10000	0.146	0.499	0.770
		10000-20000	0.235	0.575	0.683
Digital Marketing	Less than 1000	1000-5000	-2.76684*	0.465	0.000
		5000-10000	-6.21248*	0.806	0.000
		10000-20000	-5.77544*	1.034	0.000
		20000 & above	-6.82456*	0.933	0.000
	1000-5000	Less than 1000	2.76684*	0.465	0.000
		5000-10000	-3.44564*	0.785	0.000
		10000-20000	-3.00860*	1.018	0.003
		20000 & above	-4.05772*	0.915	0.000
	5000-10000	Less than 1000	6.21248*	0.806	0.000
		1000-5000	3.44564*	0.785	0.000
		10000-20000	0.437	1.212	0.719
		20000 & above	-0.612	1.127	0.588
		Less than 1000	5.77544*	1.034	0.000

	10000-20000	1000-5000	3.00860*	1.018	0.003
		5000-10000	-0.437	1.212	0.719
		20000 & above	-1.049	1.300	0.420
	20000 & above	Less than 1000	6.82456*	0.933	0.000
		1000-5000	4.05772*	0.915	0.000
		5000-10000	0.612	1.127	0.588
		10000-20000	1.049	1.300	0.420
Better customer support	Less than 1000	1000-5000	-2.93050*	0.380	0.000
		5000-10000	-5.63158*	0.659	0.000
		10000-20000	-6.43158*	0.845	0.000
		20000 & above	-5.29825*	0.763	0.000
	1000-5000	Less than 1000	2.93050*	0.380	0.000
		5000-10000	-2.70108*	0.642	0.000
		10000-20000	-3.50108*	0.832	0.000
		20000 & above	-2.36774*	0.748	0.002
	5000-10000	Less than 1000	5.63158*	0.659	0.000
		1000-5000	2.70108*	0.642	0.000
		10000-20000	-0.800	0.991	0.420
		20000 & above	0.333	0.921	0.718
	10000-20000	Less than 1000	6.43158*	0.845	0.000
		1000-5000	3.50108*	0.832	0.000
		5000-10000	0.800	0.991	0.420
		20000 & above	1.133	1.063	0.287
	20000 & above	Less than 1000	5.29825*	0.763	0.000
		1000-5000	2.36774*	0.748	0.002
		5000-10000	-0.333	0.921	0.718
		10000-20000	-1.133	1.063	0.287
Digital payment	Less than 1000	1000-5000	-.50181*	0.191	0.009
		5000-10000	-1.07505*	0.331	0.001
		10000-20000	-1.14912*	0.424	0.007
		20000 & above	-1.32456*	0.383	0.001
	1000-5000	Less than 1000	.50181*	0.191	0.009
		5000-10000	-0.573	0.322	0.076
		10000-20000	-0.647	0.418	0.122
		20000 & above	-.82275*	0.376	0.029
	5000-10000	Less than 1000	1.07505*	0.331	0.001

		1000-5000	0.573	0.322	0.076
		10000-20000	-0.074	0.498	0.882
		20000 & above	-0.250	0.463	0.590
	10000-20000	Less than 1000	1.14912*	0.424	0.007
		1000-5000	0.647	0.418	0.122
		5000-10000	0.074	0.498	0.882
		20000 & above	-0.175	0.534	0.743
	20000 & above	Less than 1000	1.32456*	0.383	0.001
		1000-5000	.82275*	0.376	0.029
		5000-10000	0.250	0.463	0.590
		10000-20000	0.175	0.534	0.743
Employment opportunities	Less than 1000	1000-5000	-1.01924*	0.222	0.000
		5000-10000	-3.03119*	0.385	0.000
		10000-20000	-2.30526*	0.494	0.000
		20000 & above	-2.91228*	0.446	0.000
	1000-5000	Less than 1000	1.01924*	0.222	0.000
		5000-10000	-2.01195*	0.375	0.000
		10000-20000	-1.28602*	0.487	0.009
		20000 & above	-1.89304*	0.437	0.000
	5000-10000	Less than 1000	3.03119*	0.385	0.000
		1000-5000	2.01195*	0.375	0.000
		10000-20000	0.726	0.580	0.211
		20000 & above	0.119	0.539	0.826
	10000-20000	Less than 1000	2.30526*	0.494	0.000
		1000-5000	1.28602*	0.487	0.009
		5000-10000	-0.726	0.580	0.211
		20000 & above	-0.607	0.622	0.330
	20000 & above	Less than 1000	2.91228*	0.446	0.000
		1000-5000	1.89304*	0.437	0.000
		5000-10000	-0.119	0.539	0.826
		10000-20000	0.607	0.622	0.330

Source: Primary Data Significant difference are indicated by (*)

The result of multiple comparison test depicted in the above table shows that there exists a significant difference between the size of outlet of the construct operational performance except with the size 10000-20000 sq. ft. with that of 1000-5000,5000-

10000 and 20000 & above and 20000 & above with that of 5000-10000 and 10000-20000. In case of increase in market share, new market opportunities, digital marketing, better customer support and employment opportunities there is significant difference between the size of outlet less than 1000 sq. ft and 1000-5000 sq. ft. with that of all other groups. In case of inventory management there is significant difference between the size of outlet less than 1000 sq. ft with that of all other groups and 1000-5000 sq. ft. with that of all other groups except 10000-20000. In case of digital payment there is significant difference between the size of outlet less than 1000 sq. ft with that of all other groups and 1000-5000 sq. ft. with 20000 & above.

6.2.5.5 Boons of Digitalisation and Digital Department

In order to test the influence of separate digital departments in the retail unit on the boons of adopting digital methods, the following hypothesis is formulated.

Ho: There is no significant difference in the boons of digitalisation with respect to presence and absence of a separate dedicated digital department in the unit

H_1: There is a significant difference in the boons of digitalisation with respect to presence and absence of a separate dedicated digital department in the unit

An independent sample Z test are often used to compare the mean scores of variables of two different groups, that is, for presence and absence of a separate dedicated digital department in the unit. Hence a Z test was conducted, and the results are shown in Table 6.38. The result shows that significant difference exists between presence and absence of a separate dedicated digital department in the unit as the p value in this case is less than 0.05. So, the null hypothesis is rejected.

Table 6.38

Boons of Digitalisation and Digital Department

Variable	Separate digital department in the retail unit	N	Mean	S.D.	Z	p value
Boons of Digitalisation	Yes	155	120.01	11.18	19.094	<0.001
	No	175	95.09	12.38		

Source: Primary Data

Table 6.39

Component wise Boons of Digitalisation and Digital Department

Boons of Digitalisation	Digital department	N	Mean	S.D.	Z	p value
Operational performance	Yes	155	8.29	1.03	8.890	<0.001
	No	175	7.01	1.51		
Increase in market share	Yes	155	21.64	2.45	18.378	<0.001
	No	175	16.50	2.61		
New market opportunities	Yes	155	8.68	0.95	14.843	<0.001
	No	175	6.54	1.56		
Inventory management	Yes	155	13.23	1.15	12.377	<0.001
	No	175	11.10	1.84		
Digital Marketing	Yes	155	24.94	3.09	15.395	<0.001
	No	175	19.31	3.51		
Better customer support	Yes	155	19.80	2.44	16.873	<0.001
	No	175	14.78	2.91		
Digital payment	Yes	155	12.52	1.34	6.283	<0.001
	No	175	11.48	1.64		
Employment opportunities	Yes	155	10.90	1.57	14.289	<0.001
	No	175	8.37	1.63		

Source: Primary Data

Table 6.38 & 6.39 shows the result of the independent sample z test. Here the p value of all the variables is less than 0.05, it indicates that boons of digitalisation is different for presence and absence of a separate dedicated digital department in the unit.

6.2.6 Digitalisation and Boons of Digitalisation

To determine the relation of digitalisation of different constructs like payment, sales, purchase, marketing, maintenance of books of account, inventory management, customer service and recruitment of employees with that of the boons of digitalisation correlation technique was used.

Table 6.40

Correlation between Boons of Digitalisation and Level of Digitalisation

	Level of Digitalisation	Pearson Correlation	Sig. (2-tailed)	N
Boons of Digitalisation	Payment	.770**	.000	330
	Sales	.763**	.000	330
	Purchase	.787**	.000	330
	Marketing	.830**	.000	330
	Maintenance of books of records	.663**	.000	330
	Inventory management	.670**	.000	330
	Customer service	.683**	.000	330
	Recruitment of employees	.603**	.000	330

Source: Primary Data **Correlation is significant at the 0.01 level (2-tailed).

The above table shows the correlation between boons derived from adopting digital methods and level of digitalisation. Pearson correlation coefficient of boons and level of digitalisation in payment is 0.770, sales are 0.763, purchase is 0.787, marketing is 0.830, maintenance of books of records is 0.663, inventory management is 0.670, customer service is 0.683 and recruitment of employees is 0.603. It indicates that there exists a positive correlation between boons of adopting digital methods and level of digitalisation.

6.3 Digital marketing tools

The table 6.41 reveals the result of digital marketing tools commonly used by the organised retail outlets.

Table 6.41

Commonly used digital marketing tools

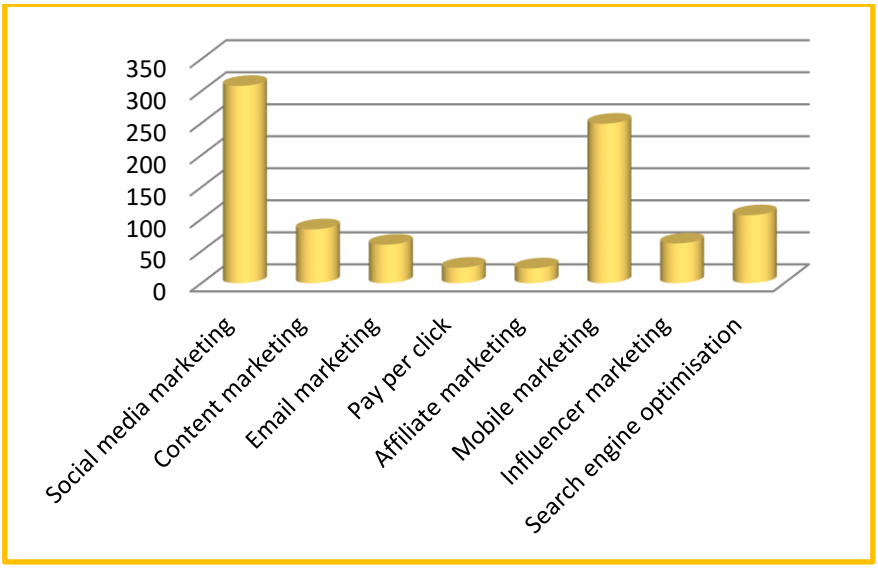
Commonly used digital marketing tools	Frequency	Percent
Social media marketing	308	93.3
Content marketing	84	25.5
Email marketing	60	18.2
Pay per click	24	7.3
Affiliate marketing	23	7.0
Mobile marketing	249	75.5
Influencer marketing	62	18.8
Search engine optimisation	106	32.1

Source: Primary Data

As per the above table it is clear that majority (93.3%) of the retail outlets are using social media marketing as a digital marketing tool. 75.5% of the retail outlets use mobile marketing, 32.1% uses search engine optimisation, 25.5% uses content marketing, 18.8% uses influencer marketing, 18.2% uses email marketing, 7.3% uses pay per click and 7% uses affiliate marketing as a digital marketing tool.

Figure 6.9

Commonly used Digital Marketing Tool



6.4 Social Media platforms used for Digital Marketing

Table 6.42 shows the response of the retail outlets regarding the commonly used social media platforms for digital marketing.

Table 6.42

Social media platforms used for digital marketing

Social media platforms used for digital marketing	Frequency	Percent
Instagram	185	56.1
Facebook	211	63.9
LinkedIn	63	19.1
Twitter	73	22.1
WhatsApp	298	90.3
YouTube	94	28.5
Pinterest	38	11.5

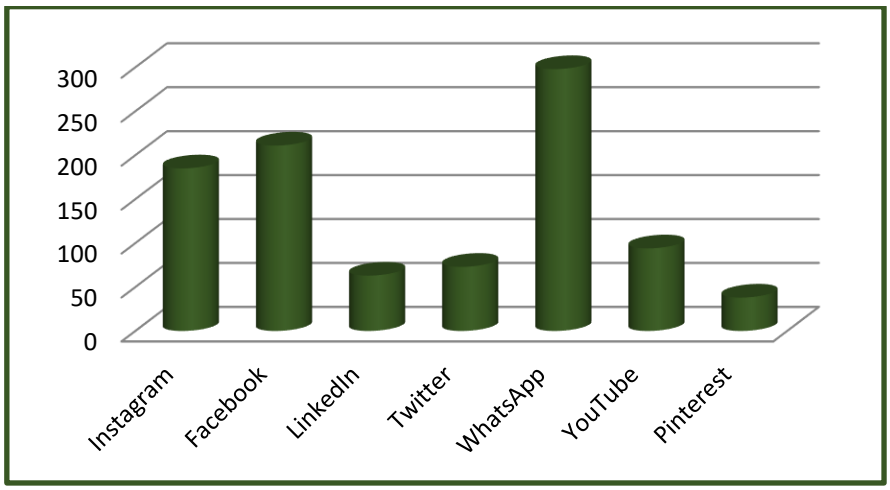
Source: Primary Data

Social media platform used by the most of the retail outlets (90.3%) for digital marketing is WhatsApp. 63.9% of the retail outlets uses Facebook, 56.1% uses

Instagram, 28.5 uses You tube, 22.1% uses Twitter, 19.1% uses LinkedIn and 11.5% uses Pinterest as a social media platform for digital marketing.

Figure 6.10

Social Media Platform used for Digital Marketing



6.5 Digital Payment Tools

Most of the retail outlets have digital payment tools. The following table shows which among the digital payment tools are commonly used by the retail outlets.

Table 6.43

Commonly used Digital Payment Tools

Commonly used digital payment tools	Frequency	Percent
Google Pay	226	68.5
Phone Pay	230	69.7
Paytm	243	73.6
Banking cards	208	63.0
Account transfer	155	47.0
POS	282	85.5
UPI	303	91.8

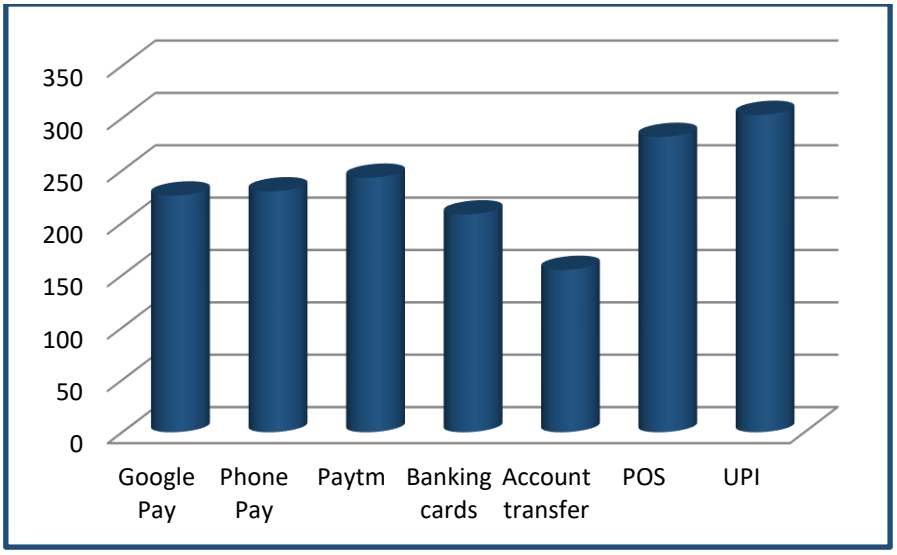
Source: Primary Data

Digital payment tool used by majority (91.8%) of the retail outlets are UPI and 85.5% uses POS. 73.6% of the retail outlet uses Paytm, 69.7% uses Phone Pay, 68.5% uses

Google pay, 63% uses Banking card and 47% uses account transfer as a digital payment tool.

Figure 6.11

Commonly used Digital Payment Tools



6.6 Chapter Summary

This chapter discussed about the boons of digitalisation. Thirty-two items were considered for the study after content and face validity but 3 items (DP1, DP5 & EO1) which had regression coefficient less than 0.4 was rejected in confirmatory factor analysis. All other factors had an influence on the boons of digitalisation. Boons of digitalisation is same for all the three types of retail outlets i.e., food & grocery, apparel and consumer electronics. While comparing the boons with internal factors, boons derived is same for the outlets of different age but it is different for all other internal factors i.e., type of outlet, number of employees, size of outlet and digital department. There exists a positive correlation between boons and level of digitalisation in sales, purchase, marketing, maintenance of books of records, inventory management, customer services and recruitment of employees. Commonly used digital marketing tools are social media marketing and mobile marketing and platform used for social media marketing are WhatsApp, Facebook and Instagram. Commonly used digital payment tools are UPI and POS.

CHAPTER 7

CHALLENGES OF DIGITALISATION

CHALLENGES OF DIGITALISATION

7.1 Introduction

This chapter intends to measure third and fifth objectives of the research. The entire chapter is divided into two sections. First section discussed the challenges faced by the retailers during digitalisation, second part discussed the impact of Covid-19 pandemic and lockdown on digitalisation. The challenges faced during digitalisation was measured using three constructs namely awareness, formulation and implementation. Challenges on awareness was measured using two constructs namely awareness of employees and awareness of customers. Challenges faced by the retailers at the time of formulation was measured using two constructs namely infrastructure and technical issues and challenges related to implementation was measured using three constructs namely cost, skilled laborer and training to existing staff. The second part of the chapter discusses the impact of Covid-19 pandemic and lockdown on digitalisation. Impact was measured using seven constructs namely marketing, sales, mode of payment, customer service, inventory management, vendor management and customer relationship management. A pre-post comparison of these construct was done for a period prior to 2020 and after. It also evaluated the impact of Covid-19 pandemic and lockdown on digitalisation of different types of retail units i.e., Food & Grocery, Apparel and Consumer Electronics.

SECTION A

7.2 Challenges of Digitalisation

Challenges faced by the organised retail outlets in Kerala during the Digitalisation process was measured on a Five-point Likert's scale. Thirty indicators were used to evaluate the challenges. Exploratory factor analysis was done to determine the relationship between the variables, identify and group the variables having strongest relations. To measure the internal consistency of the scaled statement reliability

analysis utilizing Cronbach's Alpha Reliability test was executed and validity was measured using confirmatory factor analysis. This section measures the influence of internal factors i.e., age of the outlets, type of outlet, number of employees, size of the outlet and digital department on the challenges using one-way ANOVA and independent sample z test and compare the challenges of digitalisation in food & grocery, apparel and consumer electronic retail sector using one-way ANOVA. It also studied the relationship between challenges of digitalisation and level of digitalisation in the retail outlets.

7.2.1 Exploratory Factor Analysis of Challenges of Digitalisation

To study the challenges faced by the retailer during the digitalisation process, 30 items were considered after content and face validity through expert opinion. Exploratory Factor Analysis has been used to examine the construct's dimensions. The Principal Component Analysis (PCA) method from SPSS was used to analyze the items of all the variables. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of variables with coefficients of 0.3 and above.

Table 7.1

KMO and Bartlett's Test of Challenges of Digitalisation

Variable	No. of Variables	Kaiser-Meyer-Oklin Measure of Sampling Adequacy	Bartlett's Test of Sphericity – Chi Square	df	Sig.
Challenges of digitalisation	30	0.739	9128.263	435	<0.001

Source: Primary Data

Result of Chi Square showed a higher value (9128.263), it shows the appropriateness to conduct factor analysis (Field, 2009). As per the above table Chi Square value is 9128.262 at degrees of freedom 435 with significance (P<0.001). According to (Kaiser, 1974) KMO value less than 0.05, will not be accepted. KMO value between 0.5 and 0.7 are average, between 0.7 and 0.8 are good, between 0.8 and 0.9 are great and value above 0.9 are superb (Hutcheson & Sofroniou, 1999). As per the table, KMO value is 0.739, it implies that sample adequacy is good. Table 7.2 describes the result

of Principal component analysis after which seven components of challenges are identified with eigenvalue greater than one.

Table 7.2

Total Variance Explained on Challenges of Digitalisation

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	10.403	34.677	34.677
2	4.081	13.604	48.281
3	1.937	6.457	54.738
4	1.753	5.843	60.580
5	1.660	5.534	66.114
6	1.366	4.552	70.666
7	1.184	3.946	74.611

Source: Primary Data

Through Principal Component Analysis, the components of challenges of digitalisation are identified with eigen value greater than 1 and it is shown in above table. Challenges of digitalisation construct yielded seven components from thirty items. The first component explains 34.677% of variance with an eigen value of 10.403. The cumulative percentage of variance from first factor to seventh factor is 74.611. The analysis explains that extracted seven components are sufficient to explain the variables.

Table 7.3 specifies the details of each factor along with component loadings. The exploratory maximum likelihood factor analysis identified seven components with an Eigen value greater than one. The factors identified are named as Employees Awareness, Customers Awareness, Infrastructure, Technical issue, Cost, Skilled labourer and Training to existing staff.

Table 7.3

Challenges of Digitalisation with Factor Name

Factor		Codes	Statements	Factor loading
Awareness	Factor 1 Employees Awareness	Em1	Employees were not aware about digitalisation process.	0.691
		Em2	Employees were not aware to do digital marketing	0.595
		Em3	When a new software was installed for accounting or inventory management, employees were not confident to use it	0.539
		Em4	Insufficient technical knowledge was a major challenge of employees during digitalisation	0.507
		Em5	In the initial stage only card payment was accepted, we were not aware about e-wallets	0.694
		Em6	Employees find difficult to maintain the records digitally	0.461
	Factor 2 Customer awareness	C1	Customers were not aware about digitalisation process.	0.477
		C2	Customers were not confident to do digital payment, they used to do cash payment.	0.506
		C3	Customers were ready to do card payment through POS	0.743

		C4	It was difficult to make the customers aware about digital marketing measures taken by retailers	0.412
		C5	Social media marketing only attracts youth.	0.401
Formulation	Factor 3 Infrastructure	I1	We don't have a website	0.772
		I2	We were not having any mobile application for sale	0.783
		I3	We didn't have an IT wing	0.871
		I4	We didn't have a proper network connection	0.736
	Factor 4 Technical Issue	TI1	Lot of technical issues were there in the initial stage	0.758
		TI2	We didn't have any technology partners	0.883
		TI3	During the rush period, sometimes the payment site goes down	0.528
		TI4	Sometime the software/ system gets hang and couldn't enter the transactions digitally	0.628
	Factor 5 Cost	Ct1	Organisations are not ready to do the investment as the initial cost of setup is quite high	0.823
		Ct2	Cost of recruiting technically skilled labourers is high	0.654
		Ct3	High cost is required for developing website, mobile application, SEO etc.	0.576

Implementation		Ct4	Investing in digitalisation set up is a waste of money.	0.756
		Ct5	A separate wing is needed for digital marketing	0.529
		Ct6	High cost is required for training the existing employees	0.672
	Factor 6 Skilled labourer	SL1	Lack of digitally skilled work force	0.645
		SL2	High remuneration to existing technically qualified staff	0.658
	Factor 7 Training to Existing Staff	T1	When a new software or application is introduced, employees have to be trained	0.539
		T2	An expert trainer has to be selected for training	0.775
		T3	Remuneration to the trainer is high	0.661

Source: Primary Data

The first factor 'Employees Awareness' have six variables. They were: Employees were not aware about digitalisation process (0.691), Employees were not aware to do digital marketing (0.595), When a new software was installed for accounting or inventory management, employees were not confident to use it (0.539), Insufficient technical knowledge was a major challenge of employees during digitalisation (0.507), In the initial stage only card payment was accepted and were not aware about e-wallets (0.694) and Employees find difficult to maintain the records digitally (0.461). These variables are related to the employees' awareness about digitalisation, therefore, first factor named as 'Employees Awareness'. Even if the employees' awareness has six variables, two variables have highest factor loadings. Therefore, highest impact variables on employee awareness are they were not aware about digitalisation process

and in the initial stage only card payment was accepted and employees were not aware about e-wallets and this was the major challenges of digitalisation related to the awareness of employees.

The second factor named 'Customer Awareness' have five variables. They were: Customers were not aware about digitalisation process (0.477), Customers were not confident to do digital payment, they used to do cash payment (0.506), Customers were ready to do card payment through POS (0.743), It was difficult to make the customers aware about digital marketing measures taken by retailers (0.412) and social media marketing only attracts youth (0.401). These variables were related to customers awareness about digitalisation measures taken by the retailers, therefore, the second factor is named as 'Customer Awareness'. The analysis found that Customers were ready to do card payment through POS has the highest factor loading.

The name 'Infrastructure' was formed with four variables in third factor. Variables in this factor were; Outlets don't have a website (0.772), outlets were not having any mobile application for sale (0.783), outlets didn't have an IT wing (0.871) and didn't have a proper network connection (0.736). These four variables were explaining about infrastructure needed for digitalisation; therefore, the third variable is named as 'Infrastructure'. The factor loadings of all the variables are high, it indicates that one of the main challenges of digitalisation is lack of infrastructure.

The fourth factor was grouped with four variables and named as 'Technical Issue'. The variables in this factor were; Lot of technical issues were there in the initial stage (0.758), Retailers didn't have any technology partners (0.883), During the rush period, sometimes the payment site goes down (0.528) and sometime the software/ system gets hang and couldn't enter the transactions digitally (0.628). All these variables were related to technical issues faced during digitalisation process and hence named as 'Technical Issue'. Among the four variables, two variables have highest factor loadings. It means that main challenges were retailers didn't have any technology partners and lot of technical issues was there in the initial stage.

The fifth factor was named as 'Cost' with six variables i.e., Organisations are not ready to do the investment as the initial cost of setup is quite high (0.823), Cost of recruiting technically skilled labourers is high (0.654), High cost is required for developing website, mobile application, SEO etc. (0.576), Investing in digitalisation set up is a

waste of money (0.756), A separate wing is needed for digital marketing (0.529) and High cost is required for training the existing employees (0.672). All these variables were related to cost incurred for digitalisation and hence named as 'Cost'. The highest factor loading is for two variables, which indicates that main challenges related to cost was retailers were not ready to do the investment as the initial cost of setup is quite high and they feel that investing in digitalisation is a waste of money.

The sixth factor was named as skilled labourer with two variables namely Lack of digitally skilled work force (0.645) and High remuneration to existing technically qualified staff (0.658). Both the variables were related to qualified staff and therefore named as 'Skilled Labourer'.

Last factor was named as 'Training to Existing Staff' with three variables namely When a new software or application is introduced, employees have to be trained (0.539), An expert trainer has to be selected for training (0.775) and Remuneration to the trainer is high (0.661). All the three variables mentioned above was related to training and hence named as 'Training to Existing Staff'. An expert trainer has to be selected for training has the highest factor loading, which indicate that this is most important challenge related to training to existing staff.

7.2.2 Reliability Statistics

In order to check the internal consistency of the scaled statement reliability analysis utilizing Cronbach's Alpha Reliability test was executed and result is shown in table 7.4.

Table no. 7.4

Reliability Statistics - Challenges of Digitalisation

Constructs with its code name	Cronbach's Alpha	Number of Items	Code name given to the variables
General Awareness			
Employees Awareness (Em)	0.839	6	Em1, Em2, Em3, Em4, Em5 & Em6
Customers Awareness (C)	0.887	5	C1, C2, C3, C4 & C5
Formulation			
Infrastructure (I)	0.901	4	I1, I2, I3 & I4
Technical Issues (TI)	0.790	4	TI1, TI2, TI3 & TI4
Implementation			
Cost (Ct)	0.721	6	Ct1, Ct2, Ct3, Ct4, Ct5 & Ct6
Skilled Labourers (SL)	0.866	2	Sl1 & Sl2
Training to existing staff (T)	0.842	3	T1, T2 & T3

Source: Primary Data

Table 7.4 demonstrates that all the constructs relating to challenges of digitalisation have an Alpha value greater than 0.7, which shows that all statements are reliable.

7.2.3 Confirmatory Factor Analysis of Challenges of Digitalisation

The objective of conducting CFA is to determine the ability of a predefined factor model to fit an observed set of data. It provides estimates for each of the parameter mentioned in the model. CFA for challenges of digitalisation construct is done with the help of Amos which help in checking the convergent of the scaled items used.

7.2.3.1 General Awareness

To measure the challenges related to general awareness of digitalisation; constructs employees and customers was used.

7.2.3.1.1 Confirmatory Factor Analysis of Awareness of Employees

Confirmatory factor analysis was carried forward for the construct employees with six items (Em1 to Em6). The following table shows the model fit indices of the challenges of digitalisation related to the awareness of employees on digitalisation.

Table 7.5

Model fit Indices of Employees Awareness on Digitalisation

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Employees	.198	1.464	.993	.969	.992	.993	.998	.015	.038

Source: Primary Data

As per the above table Normed χ^2 value (1.464) which is less than 5, indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (.993) and Adjusted Goodness of Fit Index (AGFI) value (.969) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.992), Tucker - Lewis Index (TLI) value (.993) and Comparative Fit Index (CFI) value (.998) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) values as .015 and Root Mean Square Error of Approximation (RMSEA) values as .038 which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 7.6

The Regression Coefficients on Employees Awareness of Digitalisation

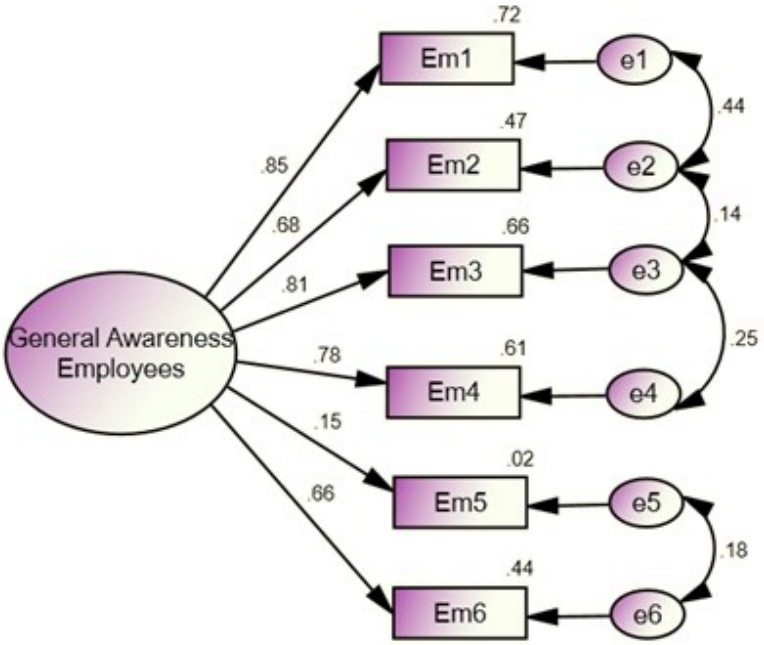
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
General Awareness - Employees	Em1	0.850	22.715	<0.001	72.3
	Em2	0.683	15.094	<0.001	46.6
	Em3	0.814	20.593	<0.001	66.3
	Em4	0.782	18.996	<0.001	61.2
	Em5	0.150	2.733	0.007	2.3
	Em6	0.662	14.401	<0.001	43.8

Source: Primary Data

Here the construct Em5 has regression coefficient values less than 0.4. Hence, this construct has no significant influence on General Awareness of Employees and it is excluded from the further analysis. The result of the constructs Em1, Em2, Em3, Em4 & Em6 have regression coefficient greater than 0.4 and p value less than 0.05, these constructs have significant influence on general awareness of employees. The construct Em1 (Employees were not aware about digitalisation Process) have highest variance explained (72.3%) followed by the construct Em3 (When a new software was installed for accounting or inventory management, employees were not confident to use it) with variance explained (66.3%). These two constructs have high influence on challenges of digitalisation related to the awareness of employees. The result of CFA is shown in the figure 7.1.

Figure 7.1

CFA model for General Awareness of Employees



7.2.3.1.2 General Awareness of Customers

The variables contributing to 'Customers' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 7.7 and in Table 7.8 respectively.

Table 7.7

Model fit Indices of Customers Awareness on Digitalisation

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Customers	.302	1.216	.996	.978	.991	.995	.998	.011	.026

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 7.8 present the regression coefficients

Table 7.8

The Regression Coefficients on General Awareness of Customers

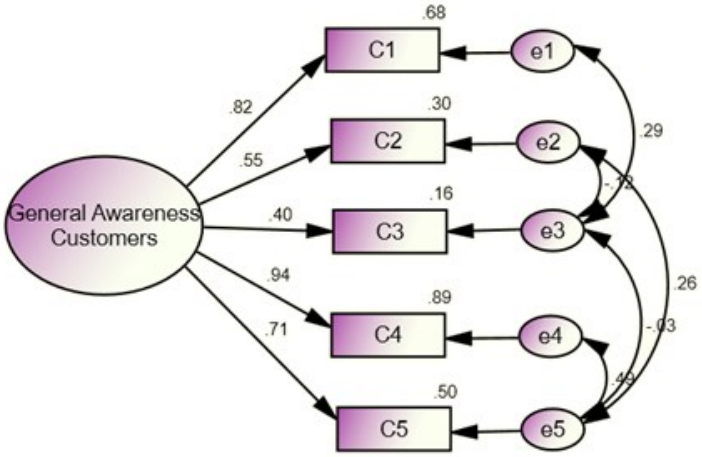
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Customers	C1	0.823	21.086	<0.001	67.7
	C2	0.551	11.208	<0.001	30.4
	C3	0.401	7.682	<0.001	16.1
	C4	0.944	32.072	<0.001	89.1
	C5	0.710	16.043	<0.001	50.4

Source: Primary Data

Here the constructs C1 to C5 have regression coefficient values more than 0.4 and p value less than 0.05. Hence, all the constructs have significant influence on General Awareness of customers. The construct C4 has the highest variance explained (89.1%), it implies that it has highest influence on customers. The most important challenges related to awareness of customers about digitalisation measures was that it was difficult to make the customers aware about digital marketing measures taken by retailers. The construct C3 (Customers were ready to do card payment through POS) has the least variance explained, which means that its influence on awareness of customers about digitalisation is low.

Figure 7.2

CFA model for General Awareness of Customers



7.2.3.2 Formulation

To measure the challenges faced by the retailers during the stage of digitalisation process the construct infrastructure and technical issues was used.

7.2.3.2.1 Confirmatory Factor Analysis of Infrastructure

Confirmatory factor analysis was carried forward for the construct infrastructure with four items I1 to I4. The model fit indices are shown in table 7.9.

Table 7.9

Model fit Indices of Infrastructure

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Infrastructure	.222	1.503	.996	.978	.997	.997	.999	.024	.039

Source: Primary Data

Model fit indices table 7.9 shows that Normed $\chi 2$ (1.503) which is less than 5, Goodness of Fit Index (GFI) value (.996), Adjusted Goodness of Fit Index (AGFI) value (.978) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.997), Tucker -Lewis Index (TLI) value (.997) and Comparative

Fit Index (CFI) value (.999) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .024 and .039 respectively, which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 7.10

The Regression Coefficients on Infrastructure

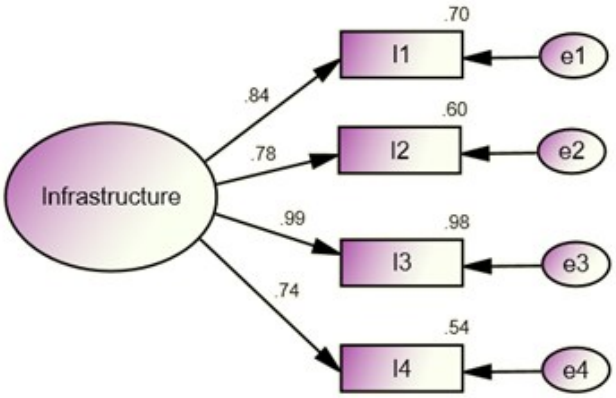
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Infrastructure	I1	0.838	21.961	<0.001	70.2
	I2	0.777	18.766	<0.001	60.4
	I3	0.992	49.886	<0.001	98.4
	I4	0.737	17.068	<0.001	54.3

Source: Primary Data

Confirmatory Factor Analysis showed in Table 7.10 says that all the variables, I1 to I4, have an influence on Infrastructure. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The construct I3 (We didn't have an IT wing) has the highest variance (98.4%) and I1 (we don't have website) with a variance explained 70.2%. It implies that main challenges of digitalisation related to infrastructure was retail outlets don't have an IT wing and a website. The result of CFA is shown in Figure 7.3.

Figure 7.3

CFA model for Infrastructure



7.2.3.2.2Confirmatory Factor Analysis of Technical Issues

Confirmatory factor analysis was carried out for the construct 'Technical issue' with four items TI1 to TI4.

Table 7.11

Model fit Indices of Technical Issues

	P	Normed χ2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Technical Issues	.051	3.864	.994	.942	.993	.970	.995	.019	.073

Source: Primary Data

Model fit indices table 7.11 shows that Normed χ2 (3.864) which is less than 5, Goodness of Fit Index (GFI) value (.994), Adjusted Goodness of Fit Index (AGFI) value (.994) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.993), Tucker -Lewis Index (TLI) value (.970) and Comparative Fit Index (CFI) value (.995) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .019 and .073 respectively, which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a

reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 7.12

The Regression Coefficients on Technical Issues

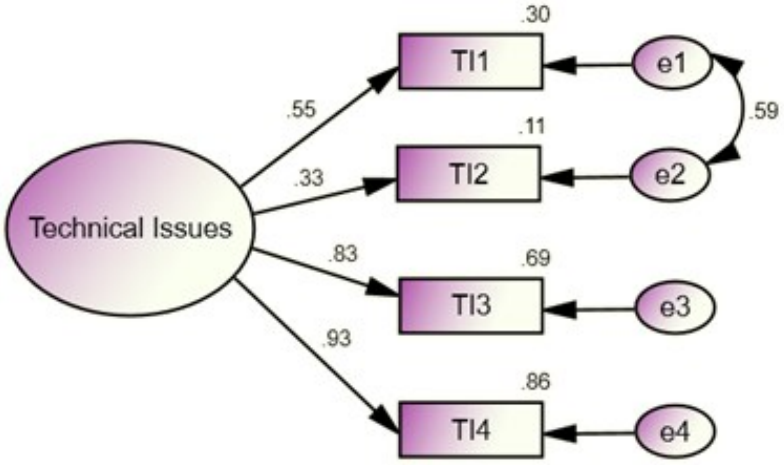
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Technical Issues	TI1	0.547	11.105	<0.001	29.9
	TI2	0.331	6.220	<0.001	11.0
	TI3	0.830	21.485	<0.001	68.9
	TI4	0.926	29.468	<0.001	85.7

Source: Primary Data

Here the construct TI2 (we didn't have any technology partner) has regression coefficient values less than 0.4, hence this construct has no significant influence on Technical Issues and is excluded from further analysis. The construct TI1, TI3 & TI4 have regression coefficient values more than 0.4, hence it has significant influence on technical issues. The highest variance explained is for the construct TI4 (85.7%) and TI3 (68.9%) which implies that it has highest influence on technical issues. Sometime the software/ system gets hang and couldn't enter the transactions digitally was the major challenge of technical issue and during the rush period, sometimes the payment site goes down was another major challenge. The lowest variance explained (29.9%) is for the construct TI1 (lot of technical issue was there in the initial stage), which implies it has lowest influence on technical issue

Figure 7.4

CFA model for Technical Issues



7.2.3.3 Implementation

To measure the challenges faced by the retailers during the implementation stage the constructs cost, skilled labourer and training to existing staff was used.

7.2.3.3.1 Confirmatory Factor Analysis of Cost

The variables contributing to 'Cost' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 7.13 and in Table 7.14 respectively.

Table 7.13

Model fit Indices of Cost

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Cost	.416	.661	.999	.986	.999	1.006	1.000	.009	.025

Source: Primary Data

Model fit indices table 7.13 shows that Normed $\chi 2$ (0.661) which is less than 5, Goodness of Fit Index (GFI) value (.999), Adjusted Goodness of Fit Index (AGFI) value (.986) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (.999), Tucker -Lewis Index (TLI) value (1.006) and Comparative Fit Index (CFI) value (1.000) indicates that it is a perfect fit and also it is found that Root Mean square Residuals (RMR) and Root Mean Square Error of Approximation (RMSEA) values as .009 and .025 respectively, which are also less than .08. Thus, it indicates the perfectness of the model.

Table 7.14

The Regression Coefficients on Cost

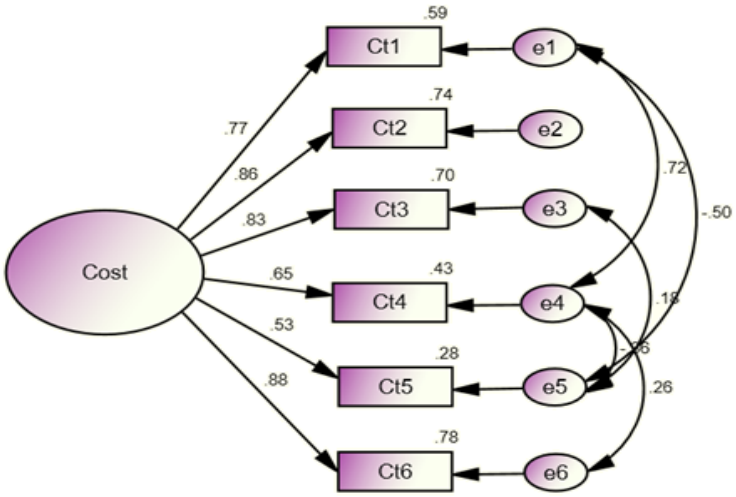
Factors/ Latent Variables (Dependent Variable	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Cost	Ct1	0.767	18.318	<0.001	58.8
	Ct2	0.863	23.598	<0.001	74.5
	Ct3	0.834	21.720	<0.001	69.6
	Ct4	0.652	14.083	<0.001	42.5
	Ct5	0.526	10.571	<0.001	27.7
	Ct6	0.885	25.287	<0.001	78.3

Source: Primary Data

Confirmatory Factor Analysis showed in Table 7.14 says that all the variables, Ct1 to Ct6, have an influence on Cost. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The constructs Ct6 and Ct2 have the highest variance explained 78.5% and 74.5% respectively, which means that it has highest influence on cost. High cost is required for training the existing employees and cost of recruiting technically skilled labourers are high was the major challenges related to cost of digitalisation.

Figure 7.5

CFA model for Cost



7.2.3.3.2 Confirmatory Factor Analysis of Skilled Labourers

The variables contributing to 'Skilled Labourers' are confirmed using CFA. Model fit indices and regression coefficient values are given in Table 7.15 and in Table 7.16 respectively.

Table 7.15

Model fit Indices of Skilled Labourers

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Skilled Labourers	.733	.116	1.000	.999	1.000	1.000	1.000	0	.024

Source: Primary Data

As per the above table Normed χ^2 value (0.116) which is less than 5, indicates the model is perfectly fit. Here Goodness of Fit Index (GFI) value (1.000) and Adjusted Goodness of Fit Index (AGFI) value (.999) is greater than 0.9 which represents it is a good fit. The calculated Normed Fit Index (NFI) value (1.000), Tucker - Lewis Index (TLI) value (1.000) and Comparative Fit Index (CFI) value (1.000) indicates that it is

a perfect fit and also it is found that Root Mean square Residuals (RMR) values as 0 and Root Mean Square Error of Approximation (RMSEA) values as .024 which are also less than .08. Thus, it indicates the perfectness of the model. The value of the fit indices indicates a reasonable fit of the measurement model with data. The regression coefficient values obtained are given below:

Table 7.16

The Regression Coefficients on Skilled Labourers

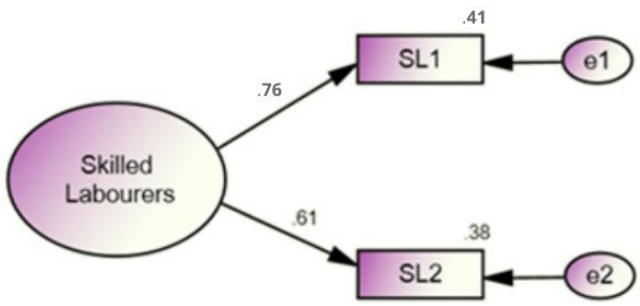
Factors/ Latent Variables (Dependent Variable)	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Skilled Labourers	SL1	0.761	13.016	<0.001	41.3
	SL2	0.614	12.935	<0.001	37.7

Source: Primary Data

As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant.

Figure 7.6

CFA model for Skilled Labourers



7.2.3.3.3 Confirmatory Factor Analysis of Training to Existing Staff

Confirmatory factor analysis was carried forward for the construct 'Training to existing staff' with three items T1 to T3.

Table 7.17

Model fit Indices of Training to Existing Staff

	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Training to existing staff	.110	3.120	1.000	.990	1.000	.900	1.000	0	.069

Source: Primary Data

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. Table 7.18 present the regression coefficients

Table 7.18

The Regression Coefficients on Training to Existing Staff

Factors/ Latent Variables (Dependent Variable	Construct (Independent Variable)	Regression Coefficient	C.R.	P	Variance explained (%)
Training to existing staff	T1	0.665	14.498	<0.001	44.2
	T2	0.927	29.595	<0.001	85.9
	T3	0.817	20.755	<0.001	66.7

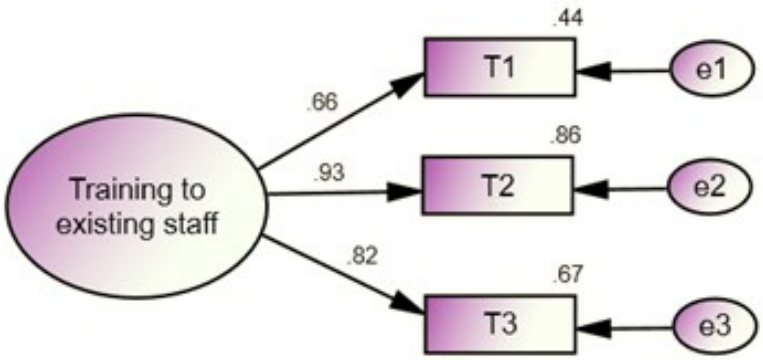
Source: Primary Data

Confirmatory Factor Analysis showed in Table 7.18 says that all the variables, T1, T2 & T3, have an influence on Training to existing staff. As the p-value is less than 0.05 and standardised direct effects of these variables are above 0.4, it has been concluded that the influences of these variables on the construct are significant. The construct T2 (An expert trainer has to be selected for training) has the highest variance (85.9%), T3

(66.7%) and T1 (44.2%). An expert trainer has to be selected for training and remuneration to the trainer is high are the main challenges of digitalisation related to training the employees. The result of CFA is shown in Figure 7.7.

Figure 7.7

CFA model for Training to Existing Staff



7.2.4 Level of Challenges faced during Digitalisation

In order to find the level of Challenges faced by the retailers during digitalisation, the respondents are asked questions under various heads like General Awareness - Employees, General Awareness -Customers, Infrastructure, Technical Issues, Cost, Skilled Labourers and Training to existing staff on five-point Likert scale. The responses are scored as 1 for 'Strongly disagree', 2 for 'Disagree', 3 for 'Neither agree nor disagree', 4 for 'Agree' and 5 for 'Strongly agree'. The total score of the 28 questions (2 questions were removed after carrying the convergent validity test) for all 330 respondents is found out, based on which the mean % score of level of Challenges faced during digitalisation$\left[MPS = \frac{MeanScore \times 100}{Maximumpossiblescore}\right]$ is calculated. This score is classified into one of the four groups as low if the mean % score is less than 35%, average if the mean % score is between 35 to 50 per cent, above average if the mean % score lies in the interval 50 to 75% and high if the mean % score is above 75%. A

one sample Z test is carried out to test the significance (Loyd & Abidin, 1985). The following table gives the Mean, SD, Mean % Score and Z value of the variable considered.

Table 7.19

Level of Challenges faced during Digitalisation Period

Variables	N	Mean	S.D.	Mean % score	CV	z	p value
Challenges faced during digitalisation	330	89.30	15.89	63.78	17.79	22.068	<0.001

Source: Primary Data

The mean percentage score of level of challenges faced during digitalisation is 63.78% which indicate that level of challenges faced during digitalisation is above average. The CV indicates that this score is stable as the value is less than 20%. P value is less than 0.05 and Z value is positive, which indicates that the test is significant.

7.2.5 Comparison of Challenges of Digitalisation and Type of Retail Unit

In this case, type of retail unit was considered to be the independent variable, which included three groups (a) Food & Grocery (b) Apparel (c) Consumer Electronics. In order to determine whether there is any significant difference in the challenges faced by the retailers of different type of retail units, the following hypotheses was formulated.

H_1: There is significant difference in the challenges faced by Food & Grocery, Apparel and Consumer Electronics Retail Outlets.

A one sample analysis of variance is used to compare the challenges of digitalisation of different type of retail unit and the result is exhibited in Table below.

Table 7.20

Comparison of Challenges of Digitalisation and Type of Retail Unit

Variable	Type of retail unit	N	Mean	S.D.	F	p value
Challenges of Digitalisation	Food & Grocery	110	94.72	14.33	10.741	<0.001
	Apparel	110	87.69	16.55		
	Consumer Electronics	110	85.48	15.35		

Source: Primary Data

The results of the ANOVA test depicted in Table 7.20 reveals that the statistical value of p is less than 0.05, So it can be concluded that the challenges faced by the retailers during digitalisation process is different for Food & Grocery, Apparel and Consumer Electronics Retail Outlets. Hence the null hypothesis H_0 is rejected and alternate hypothesis, H_1 is accepted. Food and grocery retail unit have the highest mean score 94.72, followed by Apparel retail unit with a mean score 87.69 and consumer electronics have the lowest mean score 85.48.

Since the ANOVA test indicate that the significant difference exists among the type of retail units post hoc test or multiple comparison test is conducted to identify which among the type of retail units differs significantly.

Table 7.21

Multiple Comparison Tests- Challenges of Digitalisation and Type of Retail Units

Dependent Variable	Type of Retail Unit		Mean Difference (I-J)	Std. Error	Sig.
Challenges of digitalisation	Food & Grocery	Apparel	7.02727*	2.081	0.001
		Consumer Electronics	9.23636*	2.081	0.000
	Apparel	Food & Grocery	-7.02727*	2.081	0.001
		Consumer Electronics	2.209	2.081	0.289
	Consumer Electronics	Food & Grocery	-9.23636*	2.081	0.000
		Apparel	-2.209	2.081	0.289

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison test result shows that there is significant difference between the challenges faced by retailers of food & grocery with that of apparel and consumer electronics retail unit. But there is no significant difference between apparel and consumer electronics retail units with regard to the challenges faced by them during digitalisation.

In order to identify whether the challenges faced by the retailers of different type of retail units like food & grocery, apparel and consumer electronics varies with the construct like employees' awareness, customers awareness, infrastructure, technical issues, cost, skilled labourer and training to existing staff, the analysis was done using one-way ANOVA. The result of the test was is shown in table 7.22.

Table 7.22

Component wise Challenges of Digitalisation and Type of Retail Unit

Variable		Type of retail unit	N	Mean	S.D.	F	p value
Awareness	Employees	Food & Grocery	110	17.09	4.08	10.869	<0.001
		Apparel	110	14.85	3.89		
		Consumer Electronics	110	15.06	3.85		
	Customers	Food & Grocery	110	16.59	2.57	17.846	<0.001
		Apparel	110	15.50	2.80		
		Consumer Electronics	110	14.51	2.37		
Formulation	Infrastructure	Food & Grocery	110	13.56	4.29	3.149	0.044
		Apparel	110	12.60	5.89		
		Consumer Electronics	110	11.79	5.43		
	Technical Issues	Food & Grocery	110	8.88	2.41	4.121	0.017
		Apparel	110	8.33	2.95		

		Consumer Electronics	110	7.82	2.85		
Implementation	Cost	Food & Grocery	110	20.88	3.72	3.307	0.038
		Apparel	110	19.58	3.02		
		Consumer Electronics	110	20.15	4.40		
	Skilled Labourers	Food & Grocery	110	6.34	1.38	15.158	<0.001
		Apparel	110	6.05	0.82		
		Consumer Electronics	110	5.42	1.49		
	Training to existing staff	Food & Grocery	110	11.37	1.57	5.999	0.003
		Apparel	110	10.78	1.34		
		Consumer Electronics	110	10.73	1.68		

Source: Primary Data

The results of the ANOVA test depicted in Table 7.22 indicates that the statistical value of p is less than 0.05, So it can be concluded that the challenges faced by the retailers with respect to the awareness of employees, customers awareness, infrastructure, technical issues, cost, skilled labourer and training to existing staff during digitalisation process is different for Food & Grocery, Apparel and Consumer Electronics Retail Outlets. The mean score of Food & Grocery retail outlets on employees' awareness (17.09) and customer awareness (16.59) is the highest, it indicates that the main challenges related to the employees and customers awareness about digitalisation was faced by the Food & Grocery retail sector. The mean score of Food & Grocery retail outlets on infrastructure (13.56) and technical issues (8.88) is the highest which implies that the challenges of digitalisation during the formulation stage was more effected by Food & Grocery retail sector. The mean score of Food & Grocery retail outlets on Cost (20.88), Skilled Labourer (6.34) and Training to existing staff (11.37) is the highest which implies that the challenges of digitalisation during the implementation stage was also more effected by Food & Grocery retail sector. As

per the result depicted in table 7.22, the major challenges of digitalisation are faced by Food & Grocery Retail Sector.

Since the ANOVA test indicate that the significant difference exists among the type of retail units post hoc test or multiple comparison test is conducted to identify which among the type of retail units differs significantly and the result is shown in table 7.23.

Table 7.23

Multiple Comparison Tests- Component wise Challenges of Digitalisation and Type of Retail Units

Challenges of Digitalisation		Type of Retail Units		Mean Difference (I-J)	Std. Error	Sig.
Awareness	Employees Awareness	Food & Grocery	Apparel	2.24545*	0.531	0.000
			Consumer Electronics	2.02727*	0.531	0.000
		Apparel	Food & Grocery	-2.24545*	0.531	0.000
			Consumer Electronics	-0.218	0.531	0.682
		Consumer Electronics	Food & Grocery	-2.02727*	0.531	0.000
			Apparel	0.218	0.531	0.682
	Customers Awareness	Food & Grocery	Apparel	1.09091*	0.349	0.002
			Consumer Electronics	2.08182*	0.349	0.000
		Apparel	Food & Grocery	-1.09091*	0.349	0.002
			Consumer Electronics	.99091*	0.349	0.005

		Consumer Electronics	Food & Grocery	-2.08182*	0.349	0.000
			Apparel	-.99091*	0.349	0.005
Formulation	Infrastructure	Food & Grocery	Apparel	0.964	0.707	0.174
			Consumer Electronics	1.77273*	0.707	0.013
		Apparel	Food & Grocery	-0.964	0.707	0.174
			Consumer Electronics	0.809	0.707	0.254
		Consumer Electronics	Food & Grocery	-1.77273*	0.707	0.013
			Apparel	-0.809	0.707	0.254
	Technical Issues		Apparel	0.555	0.371	0.136
		Food & Grocery	Consumer Electronics	1.06364*	0.371	0.004
		Apparel	Food & Grocery	-0.555	0.371	0.136
			Consumer Electronics	0.509	0.371	0.170
		Consumer Electronics	Food & Grocery	-1.06364*	0.371	0.004
			Apparel	-0.509	0.371	0.170
Implementation	Cost	Food & Grocery	Apparel	1.30000*	0.507	0.011
			Consumer Electronics	0.727	0.507	0.152
		Apparel	Food & Grocery	-1.30000*	0.507	0.011
			Consumer Electronics	-0.573	0.507	0.259

		Consumer Electronics	Food & Grocery	-0.727	0.507	0.152
			Apparel	0.573	0.507	0.259
	Skilled Labourers	Food & Grocery	Apparel	0.282	0.171	0.100
			Consumer Electronics	.91818*	0.171	0.000
		Apparel	Food & Grocery	-0.282	0.171	0.100
			Consumer Electronics	.63636*	0.171	0.000
		Consumer Electronics	Food & Grocery	-.91818*	0.171	0.000
			Apparel	-.63636*	0.171	0.000
	Training to existing staff	Food & Grocery	Apparel	.59091*	0.207	0.005
			Consumer Electronics	.64545*	0.207	0.002
		Apparel	Food & Grocery	-.59091*	0.207	0.005
			Consumer Electronics	0.055	0.207	0.792
		Consumer Electronics	Food & Grocery	-.64545*	0.207	0.002
			Apparel	-0.055	0.207	0.792

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison test result shows that there is similarity in the challenges faced by the Apparel and Consumer Electronic retail outlets with respect to the constructs awareness of employees on digitalisation, infrastructure, technical issue, cost and training to existing employees. There is similarity between Food & Grocery and Apparel retail outlets with respect to the challenges related to infrastructure, technical issues and skilled labourer and similarity between Food & Grocery and Consumer Electronics with respect to cost.

7.2.6 Comparison of Challenges and Internal Factors

Challenges faced by the retailers during the process of digitalisation may vary according to the internal factors. To test the influence of internal factors like age of the outlet, type of outlet, number of employees, size of the outlet and digital department on challenges of digitalisation, the following hypothesis was formulated.

H_0: There is no significant difference in the challenges of digitalisation with respect to internal factors (like age of the outlet, type of outlet, number of employees, size of the outlet and digital department).

H_1: There is significant difference in the challenges of digitalisation with respect to internal factors (like age of the outlet, type of outlet, number of employees, size of the outlet and digital department).

7.2.6.1 Comparison of Challenges and Age of the Outlet

In order to verify the challenges of digitalisation varies with respect to the age of retail units, one-way ANOVA was used and result is shown in table 7.24.

Table 7.24

Challenges of Digitalisation and Age of the Outlet

Variable	Age of Outlet	N	Mean	S.D.	F	p value
Challenges of Digitalisation	Up to 10 years	184	89.42	15.34	1.350	0.258
	11-20 years	94	87.43	17.26		
	20-30 years	37	90.86	15.11		
	Above 30 years	15	95.60	14.60		

Source: Primary Data

The results of the ANOVA test reveal that challenges faced by the retailers during the period of digitalisation was same for different age of outlets. As p value is greater than 0.05, reject H_1 (alternate hypothesis) and accept H_0 (null hypothesis). The retail outlets with an age above 30 years have the highest mean 95.60 and lowest standard deviation 14.60. It indicates that the retail outlets with an age above 30 years faced more challenges during digitalisation process.

Table 7.25

Component wise Challenges of Digitalisation and Age of the Outlet

Challenges of Digitalisation	Age of the outlet	N	Mean	Standard Deviation	F	p value
Employees Awareness	Up to 10 years	184	15.68	4.11	0.895	0.444
	11-20 years	94	15.47	4.24		
	20-30 years	37	15.43	3.35		
	Above 30 years	15	17.27	3.81		
Customers Awareness	Up to 10 years	184	15.47	2.66	0.781	0.505
	11-20 years	94	15.38	3.02		
	20-30 years	37	15.95	1.88		
	Above 30 years	15	16.27	3.15		
Infrastructure	Up to 10 years	184	12.65	5.30	1.625	0.183
	11-20 years	94	11.95	5.33		
	20-30 years	37	14.11	5.13		
	Above 30 years	15	13.47	4.72		
Technical Issues	Up to 10 years	184	8.34	2.94	1.780	0.510
	11-20 years	94	8.05	2.66		
	20-30 years	37	8.51	1.97		
	Above 30 years	15	9.80	2.81		
Cost	Up to 10 years	184	20.47	3.29	1.266	0.286
	11-20 years	94	19.62	4.33		
	20-30 years	37	20.08	4.65		
	Above 30 years	15	20.93	3.37		
Skilled Labourers	Up to 10 years	184	5.92	1.33	1.366	0.252
	11-20 years	94	5.90	1.35		
	20-30 years	37	5.84	1.24		
	Above 30 years	15	6.60	1.06		
Training to existing staff	Up to 10 years	184	10.89	1.50	0.425	0.735
	11-20 years	94	11.05	1.64		
	20-30 years	37	10.95	1.65		
	Above 30 years	15	11.27	1.53		

Source: Primary Data

The results of the ANOVA test reveal that challenges related to awareness of employees, customers, infrastructure, technical issue, cost, skilled labourer and training to existing staff is same for the retail outlets with different age. The major

challenges of digitalisation were faced by the retail outlets above 30 years. They have highest mean for awareness of employees, customers, technical issue, cost, skilled labourer and training to existing staff except infrastructure. In case of infrastructure, the highest mean was for the retail outlets with an age of 20-30 years.

7.2.6.2 Challenges of Digitalisation and Type of Outlet

Here the type of outlet was considered to be the independent variable, which included three groups (a) Sole Proprietor (b) Partnership (c) Private Ltd. Co. One-way ANOVA was used to compare the mean score of different types of outlets and the result is exhibited in Table 7.26.

Table 7.26

Challenges of Digitalisation and Type of Outlet

Variable	Type of outlet	N	Mean	Standard Deviation	F	p value
Challenges of digitalisation	Sole Proprietor	77	97.45	11.69	48.757	<0.001
	Partnership	143	92.95	14.19		
	Private Ltd. Co.	110	78.84	15.14		

Source: Primary Data

The results of the ANOVA test depicted in Table 7.26 reveals that the statistical value of p is less than 0.05, which indicate that the difference is significant. It means that the challenges of digitalisation are different for different type of outlets. The highest mean is for the retail outlets registered as Sole Proprietor (97.45) with standard deviation 11.69 followed by retail outlets registered as partnership with a mean of 92.95 and standard deviation 14.19. This means that retail outlets registered as sole proprietors/ partnerships faced major challenges of digitalisation.

Scheffe's Post hoc test or multiple comparison test was conducted to identify which among the type of outlets differs significantly and the result is exhibited in the Table 7.28. The result of the analysis indicates that significant difference is seen between the different types of outlets. The Difference between the groups is indicated by (*).

Table 7.27

Multiple Comparison Tests- Challenges of Digitalisation and Type of Outlet

Dependent Variable	Type of Outlet		Mean Difference (I-J)	Std. Error	Sig.
Challenges of digitalisation	Sole Proprietor	Partnership	4.50350*	1.977	0.023
		Private Ltd. Co.	18.61818*	2.078	0.000
	Partnership	Sole Proprietor	-4.50350*	1.977	0.023
		Private Ltd. Co.	14.11469*	1.774	0.000
	Private Ltd. Co.	Sole Proprietor	-18.61818*	2.078	0.000
		Partnership	-14.11469*	1.774	0.000

Source: Primary Data Significant difference are indicated by (*)

Table 7.28

Component wise Challenges of Digitalisation and Type of Outlet

Challenges	Type of outlet	N	Mean	Standard Deviation	F	p value
Employees Awareness	Sole Proprietor	77	17.53	3.14	38.193	<0.001
	Partnership	143	16.53	3.85		
	Private Ltd. Co.	110	13.24	3.75		
Customers Awareness	Sole Proprietor	77	16.40	2.34	23.947	<0.001
	Partnership	143	16.11	2.76		
	Private Ltd. Co.	110	14.17	2.39		
Infrastructure	Sole Proprietor	77	15.97	3.92	53.438	<0.001
	Partnership	143	13.51	4.90		
	Private Ltd. Co.	110	9.21	4.63		
Technical Issues	Sole Proprietor	77	8.82	1.94	15.009	<0.001
	Partnership	143	8.96	2.51		
	Private Ltd. Co.	110	7.21	3.24		
Cost	Sole Proprietor	77	22.13	2.90	34.008	<0.001
	Partnership	143	20.78	4.09		

	Private Ltd. Co.	110	18.12	2.85		
Skilled Labourers	Sole Proprietor	77	6.04	1.35	3.126	0.045
	Partnership	143	6.08	1.36		
	Private Ltd. Co.	110	5.68	1.21		
Training to existing staff	Sole Proprietor	77	10.56	1.78	4.068	0.018
	Partnership	143	10.99	1.64		
	Private Ltd. Co.	110	11.21	1.20		

Source: Primary Data

The results of the ANOVA test reveal that challenges related to awareness of employees, customers, infrastructure, technical issue, cost, skilled labourer and training to existing staff is different for different type of outlets.

Table 7.29

Multiple Comparison Tests- Component wise Challenges of Digitalisation and Type of Outlet

Challenges	Type of Outlets		Mean Difference (I-J)	Std. Error	Sig.
Employees Awareness	Sole Proprietor	Partnership	1.001	0.518	0.054
		Private Ltd. Co.	4.29610*	0.544	0.000
	Partnership	Sole Proprietor	-1.001	0.518	0.054
		Private Ltd. Co.	3.29510*	0.465	0.000
	Private Ltd. Co.	Sole Proprietor	-4.29610*	0.544	0.000
		Partnership	-3.29510*	0.465	0.000
Customers Awareness	Sole Proprietor	Partnership	0.291	0.359	0.419
		Private Ltd. Co.	2.22987*	0.378	0.000
	Partnership	Sole Proprietor	-0.291	0.359	0.419
		Private Ltd. Co.	1.93916*	0.322	0.000

	Private Ltd. Co.	Sole Proprietor	-2.22987*	0.378	0.000
		Partnership	-1.93916*	0.322	0.000
Infrastructure	Sole Proprietor	Partnership	2.46354*	0.650	0.000
		Private Ltd. Co.	6.76494*	0.683	0.000
	Partnership	Sole Proprietor	-2.46354*	0.650	0.000
		Private Ltd. Co.	4.30140*	0.583	0.000
	Private Ltd. Co.	Sole Proprietor	-6.76494*	0.683	0.000
		Partnership	-4.30140*	0.583	0.000
Technical Issues	Sole Proprietor	Partnership	-0.140	0.376	0.710
		Private Ltd. Co.	1.60909*	0.396	0.000
	Partnership	Sole Proprietor	0.140	0.376	0.710
		Private Ltd. Co.	1.74895*	0.338	0.000
	Private Ltd. Co.	Sole Proprietor	-1.60909*	0.396	0.000
		Partnership	-1.74895*	0.338	0.000
Cost	Sole Proprietor	Partnership	1.35365*	0.488	0.006
		Private Ltd. Co.	4.01169*	0.513	0.000
	Partnership	Sole Proprietor	-1.35365*	0.488	0.006
		Private Ltd. Co.	2.65804*	0.438	0.000
	Private Ltd. Co.	Sole Proprietor	-4.01169*	0.513	0.000
		Partnership	-2.65804*	0.438	0.000
Skilled Labourers	Sole Proprietor	Partnership	-0.038	0.185	0.838
		Private Ltd. Co.	0.357	0.195	0.068
	Partnership	Sole Proprietor	0.038	0.185	0.838
		Private Ltd. Co.	.39510*	0.166	0.018
	Private Ltd. Co.	Sole Proprietor	-0.357	0.195	0.068
		Partnership	-.39510*	0.166	0.018
Training to existing staff	Sole Proprietor	Partnership	-0.428	0.218	0.051
		Private Ltd. Co.	-.65065*	0.229	0.005
	Partnership	Sole Proprietor	0.428	0.218	0.051
		Private Ltd. Co.	-0.223	0.196	0.255

	Private Ltd. Co.	Sole Proprietor	.65065*	0.229	0.005
		Partnership	0.223	0.196	0.255

Source: Primary Data Significant difference are indicated by (*)

The result of multiple comparison test reveals that the challenges related to awareness of employees and customers on digitalisation, technical issues and training to existing staff are same in case of sole proprietors and partnerships and the challenges related to skilled labourer are same in case of sole proprietors with partnerships and private limited company.

7.2.6.3 Challenges of Digitalisation and Number of Employees

The number of employees in the outlet was considered to be the independent variable, which included four groups viz. less than 25, 25-50, 50-100 and 100 & above. One way ANOVA was used to compare the mean of different numbers of employees in the outlet and the result is exhibited in Table 7.30.

Table 7.30

Challenges of Digitalisation and Number of Employees

Variable	Number of employees	N	Mean	Standard Deviation	F	p value
Challenges of digitalisation	Less than 25	233	91.65	15.44	7.123	<0.001
	25-50	35	87.11	16.91		
	50-100	31	82.74	16.02		
	100 & above	31	80.65	13.17		

Source: Primary Data

The results of one- way analysis of variance shows that the statistical value of p is less than 0.05 for the challenges of digitalisation, hence, we reject the hypothesis H_0 and accept H_1. This indicates that there is significant difference in the challenges faced by the retail outlets with different number of employees. The retail outlets with less 25

employees have the highest mean 91.65. It implies that retail outlets with number of employees less than 25 faced more challenges during digitalisation process.

Since the ANOVA test indicate that the significant difference exists among the number of employees in the outlet post hoc test or multiple comparison test is conducted to identify which among the number of employees in the outlet differs significantly and the result is exhibited in the Table 7.31.

Table 7.31

Multiple Comparison Tests- Challenges of Digitalisation and Number of Employees

Dependent Variable	Number of Employees		Mean Difference (I-J)	Std. Error	Sig.
Challenges of Digitalisation	Less than 25	25-50	4.534	2.803	0.107
		50-100	8.90613*	2.956	0.003
		100 & above	11.00291*	2.956	0.000
	25-50	Less than 25	-4.534	2.803	0.107
		50-100	4.372	3.813	0.252
		100 & above	6.469	3.813	0.091
	50-100	Less than 25	-8.90613*	2.956	0.003
		25-50	-4.372	3.813	0.252
		100 & above	2.097	3.927	0.594
	100 & above	Less than 25	-11.00291*	2.956	0.000
		25-50	-6.469	3.813	0.091
		50-100	-2.097	3.927	0.594

Source: Primary Data Significant difference are indicated by (*)

Post hoc test result reveals that there is significant difference in the challenges faced by the retailers during digitalisation between the retail outlets having number of employees less than 25 with that of the outlets having number of employees in the range of 50-100 and 100 & above.

Table 7.32

Component wise Challenges of Digitalisation and Number of Employees

Variable	Number of employees	N	Mean	S.D.	F	p value
Employees Awareness	Less than 25	233	16.09	3.96	3.032	0.029
	25-50	35	14.57	4.07		
	50-100	31	14.84	3.71		
	100 & above	31	14.52	4.65		
Customers Awareness	Less than 25	233	15.94	2.70	6.308	<0.001
	25-50	35	14.74	2.58		
	50-100	31	14.48	2.54		
	100 & above	31	14.42	2.41		
Infrastructure	Less than 25	233	13.79	5.01	19.647	<0.001
	25-50	35	12.29	5.23		
	50-100	31	9.65	5.38		
	100 & above	31	7.52	2.26		
Technical Issues	Less than 25	233	8.51	2.68	0.971	0.407
	25-50	35	7.91	3.16		
	50-100	31	8.10	3.12		
	100 & above	31	7.84	2.66		
Cost	Less than 25	233	20.65	3.74	4.376	0.005
	25-50	35	19.80	3.68		
	50-100	31	18.71	3.36		
	100 & above	31	18.81	4.04		
Skilled Labourers	Less than 25	233	5.95	1.37	1.277	0.282
	25-50	35	6.17	1.36		
	50-100	31	5.55	1.39		
	100 & above	31	5.94	0.57		
Training to existing staff	Less than 25	233	10.71	1.54	7.229	<0.001
	25-50	35	11.63	1.33		

	50-100	31	11.42	1.34		
	100 & above	31	11.61	1.63		

Source: Primary Data

The result of one-way ANOVA reveals that there is significant difference in the challenges related to employee awareness, customers awareness, infrastructure, cost and training to existing staff with respect to the number of employees. In case of challenges related to technical issues and skilled labourer is same for the retail outlets with different number of employees.

Table 7.33

Multiple Comparison Tests- Component wise Challenges of Digitalisation and Number of Employees

Challenges	Number of Employees		Mean Difference (I-J)	Std. Error	Sig.
Employees Awareness	Less than 25	25-50	1.52299*	0.728	0.037
		50-100	1.256	0.768	0.103
		100 & above	1.57829*	0.768	0.041
	25-50	Less than 25	-1.52299*	0.728	0.037
		50-100	-0.267	0.991	0.788
		100 & above	0.055	0.991	0.956
	50-100	Less than 25	-1.256	0.768	0.103
		25-50	0.267	0.991	0.788
		100 & above	0.323	1.021	0.752
	100 & above	Less than 25	-1.57829*	0.768	0.041
		25-50	-0.055	0.991	0.956
		50-100	-0.323	1.021	0.752
Customers Awareness	Less than 25	25-50	1.19706*	0.481	0.013
		50-100	1.45604*	0.507	0.004

		100 & above	1.52056*	0.507	0.003
	25-50	Less than 25	-1.19706*	0.481	0.013
		50-100	0.259	0.654	0.692
		100 & above	0.324	0.654	0.621
	50-100	Less than 25	-1.45604*	0.507	0.004
		25-50	-0.259	0.654	0.692
		100 & above	0.065	0.673	0.924
	100 & above	Less than 25	-1.52056*	0.507	0.003
		25-50	-0.324	0.654	0.621
		50-100	-0.065	0.673	0.924
Infrastructure	Less than 25	25-50	1.504	0.885	0.090
		50-100	4.14454*	0.933	0.000
		100 & above	6.27357*	0.933	0.000
	25-50	Less than 25	-1.504	0.885	0.090
		50-100	2.64055*	1.204	0.029
		100 & above	4.76959*	1.204	0.000
	50-100	Less than 25	-4.14454*	0.933	0.000
		25-50	-2.64055*	1.204	0.029
		100 & above	2.129	1.240	0.087
	100 & above	Less than 25	-6.27357*	0.933	0.000
		25-50	-4.76959*	1.204	0.000
		50-100	-2.129	1.240	0.087
Cost	Less than 25	25-50	0.852	0.676	0.208
		50-100	1.94268*	0.712	0.007
		100 & above	1.84591*	0.712	0.010
	25-50	Less than 25	-0.852	0.676	0.208
		50-100	1.090	0.919	0.236
		100 & above	0.994	0.919	0.281
	50-100	Less than 25	-1.94268*	0.712	0.007
		25-50	-1.090	0.919	0.236

		100 & above	-0.097	0.947	0.919
	100 & above	Less than 25	-1.84591*	0.712	0.010
		25-50	-0.994	0.919	0.281
		50-100	0.097	0.947	0.919
Training to existing staff	Less than 25	25-50	-.91613*	0.274	0.001
		50-100	-.70691*	0.289	0.015
		100 & above	-.90046*	0.289	0.002
	25-50	Less than 25	.91613*	0.274	0.001
		50-100	0.209	0.373	0.576
		100 & above	0.016	0.373	0.967
	50-100	Less than 25	.70691*	0.289	0.015
		25-50	-0.209	0.373	0.576
		100 & above	-0.194	0.384	0.615
	100 & above	Less than 25	.90046*	0.289	0.002
		25-50	-0.016	0.373	0.967
		50-100	0.194	0.384	0.615

Source: Primary Data Significant difference are indicated by (*)

The result of multiple comparison test depicted in table 7.33 reveals that challenges related to awareness of customers on digitalisation and training to existing staff of the retail outlets with less than 25 employees are significantly different from the retail outlets with the number of employees between 25-50,50-100 and 100 & above. In case of the challenges related to employee awareness, infrastructure and cost varies with respect to the retail outlets with number of employees less than 25 with that of retail outlets with number of employees between 50-100 and 100 & above.

7.2.6.4 Challenges of Digitalisation and Size of Outlet

The size of the outlet was considered to be the independent variable, which included five groups viz. Less than 1000 sq. ft., 1000-5000 sq. ft., 5000-10000 sq. ft., 10000-20000 sq. ft. and 20000 & above sq. ft. One way ANOVA was used to compare the mean of size of outlet and result is depicted in the table 7.34.

Table 7.34

Challenges of Digitalisation and Size of Outlet

Variable	Size of outlet	N	Mean	Standard Deviation	F	p value
Challenges of Digitalisation	Less than 1000	114	95.89	14.19	11.425	<0.001
	1000-5000	155	87.76	15.78		
	5000-10000	27	80.81	16.10		
	10000-20000	15	76.20	12.18		
	20000 & above	19	84.68	12.62		

Source: Primary Data

The result of ANOVA test depicted in table 7.34 reveals that the statistical value of p is less than 0.05 for the challenges faced by the retail outlets during the digitalisation process, which indicates that there is significant difference between the different size of outlet. Hence, the null hypothesis H_0 is rejected and alternate hypothesis H_1 is accepted in this context. The highest mean score is for the retail outlet having the size less than 1000 sq. ft. and the lowest is for the retail outlet with sq. ft between 10000 and 20000. Post hoc test or multiple comparison test is conducted to identify which among the size of outlet differs significantly and the result is exhibited in the Table 7.35

Table 7.35

Multiple Comparison Tests-Challenges of Digitalisation and Size of Outlet

Dependent Variable	Size of outlet		Mean Difference (I-J)	Std. Error	Sig.
Challenges of Digitalisation	Less than 1000	1000-5000	8.12467*	1.846	0.000
		5000-10000	15.07115*	3.203	0.000
		10000-20000	19.68596*	4.110	0.000
		20000 & above	11.20175*	3.708	0.003
	1000-5000	Less than 1000	-8.12467*	1.846	0.000

		5000-10000	6.94648*	3.121	0.027
		10000-20000	11.56129*	4.047	0.005
		20000 & above	3.077	3.638	0.398
	5000-10000	Less than 1000	-15.07115*	3.203	0.000
		1000-5000	-6.94648*	3.121	0.027
		10000-20000	4.615	4.819	0.339
		20000 & above	-3.869	4.481	0.389
	10000-20000	Less than 1000	-19.68596*	4.110	0.000
		1000-5000	-11.56129*	4.047	0.005
		5000-10000	-4.615	4.819	0.339
		20000 & above	-8.484	5.169	0.102
	20000 & above	Less than 1000	-11.20175*	3.708	0.003
		1000-5000	-3.077	3.638	0.398
		5000-10000	3.869	4.481	0.389
		10000-20000	8.484	5.169	0.102

Source: Primary Data Significant difference are indicated by (*)

Multiple comparison test result shown in table 7.35 reveals that, the challenges faced by the retail outlets with a sq. ft. less than 1000 is significantly different from that of all other groups. In case of retail outlets with a sq. ft. of 1000-5000 is significantly different from all other groups except the retail outlet with a sq. ft. of 20000& above.

Table 7.36

Component wise Challenges of Digitalisation and Size of Outlet

Variable	Size of the outlet	N	Mean	Standard Deviation	F	p value
Employees Awareness	Less than 1000	114	16.12	3.53	2.610	0.036
	1000-5000	155	15.72	4.23		
	5000-10000	27	14.15	4.26		
	10000-20000	15	13.47	4.09		
	20000 & above	19	16.37	4.57		

Customers Awareness	Less than 1000	114	16.23	2.69	5.902	<0.001
	1000-5000	155	15.49	2.67		
	5000-10000	27	13.67	2.51		
	10000-20000	15	15.00	2.20		
	20000 & above	19	14.79	2.49		
Infrastructure	Less than 1000	114	16.26	3.98	38.049	<0.001
	1000-5000	155	11.83	4.96		
	5000-10000	27	8.22	4.43		
	10000-20000	15	8.07	2.74		
	20000 & above	19	7.58	1.74		
Technical Issues	Less than 1000	114	8.88	2.48	2.419	0.048
	1000-5000	155	8.16	2.92		
	5000-10000	27	8.04	3.16		
	10000-20000	15	6.87	2.50		
	20000 & above	19	8.21	2.39		
Cost	Less than 1000	114	22.04	3.82	13.532	<0.001
	1000-5000	155	19.36	3.04		
	5000-10000	27	19.19	3.87		
	10000-20000	15	17.07	3.75		
	20000 & above	19	20.00	4.63		
Skilled Labourers	Less than 1000	114	5.90	1.49	2.447	0.046
	1000-5000	155	6.08	1.29		
	5000-10000	27	5.67	1.14		
	10000-20000	15	5.07	0.96		
	20000 & above	19	6.05	0.52		
Training to existing staff	Less than 1000	114	10.45	1.56	7.619	<0.001
	1000-5000	155	11.12	1.41		
	5000-10000	27	11.89	1.12		
	10000-20000	15	10.67	1.88		
	20000 & above	19	11.68	1.89		

Source: Primary Data

The result of ANOVA test depicted in table 7.36 reveals that the statistical value of p is less than 0.05 for the challenges faced by the retail outlets during the digitalisation process, which indicates that there is significant difference between the different size of outlet. Post hoc test or multiple comparison test is conducted to identify which among the size of outlet differs significantly and the result is exhibited in the Table 7.37.

Table 7.37

Multiple Comparison Tests- Component wise Challenges of Digitalisation and Size of Outlet

Challenges	Size of Outlets (in sq. ft.)		Mean Difference (I-J)	Std. Error	Sig.
Employees Awareness	Less than 1000	1000-5000	0.400	0.496	0.420
		5000-10000	1.97466*	0.860	0.022
		10000-20000	2.65614*	1.103	0.017
		20000 & above	-0.246	0.995	0.805
	1000-5000	Less than 1000	-0.400	0.496	0.420
		5000-10000	1.574	0.838	0.061
		10000-20000	2.25591*	1.086	0.039
		20000 & above	-0.646	0.976	0.509
	5000-10000	Less than 1000	-1.97466*	0.860	0.022
		1000-5000	-1.574	0.838	0.061
		10000-20000	0.681	1.293	0.599
		20000 & above	-2.220	1.203	0.066
	10000-20000	Less than 1000	-2.65614*	1.103	0.017
		1000-5000	-2.25591*	1.086	0.039
		5000-10000	-0.681	1.293	0.599
		20000 & above	-2.90175*	1.387	0.037
	20000 & above	Less than 1000	0.246	0.995	0.805
		1000-5000	0.646	0.976	0.509
		5000-10000	2.220	1.203	0.066
		10000-20000	2.90175*	1.387	0.037
Customers Awareness	Less than 1000	1000-5000	.73775*	0.325	0.024
		5000-10000	2.56140*	0.564	0.000

		10000-20000	1.228	0.724	0.091
		20000 & above	1.43860*	0.653	0.028
	1000-5000	Less than 1000	-.73775*	0.325	0.024
		5000-10000	1.82366*	0.550	0.001
		10000-20000	0.490	0.713	0.492
		20000 & above	0.701	0.641	0.275
	5000-10000	Less than 1000	-2.56140*	0.564	0.000
		1000-5000	-1.82366*	0.550	0.001
		10000-20000	-1.333	0.849	0.117
		20000 & above	-1.123	0.790	0.156
	10000-20000	Less than 1000	-1.228	0.724	0.091
		1000-5000	-0.490	0.713	0.492
		5000-10000	1.333	0.849	0.117
		20000 & above	0.211	0.911	0.817
	20000 & above	Less than 1000	-1.43860*	0.653	0.028
		1000-5000	-0.701	0.641	0.275
		5000-10000	1.123	0.790	0.156
		10000-20000	-0.211	0.911	0.817
Infrastructure	Less than 1000	1000-5000	4.43090*	0.541	0.000
		5000-10000	8.04094*	0.938	0.000
		10000-20000	8.19649*	1.204	0.000
		20000 & above	8.68421*	1.086	0.000
	1000-5000	Less than 1000	-4.43090*	0.541	0.000
		5000-10000	3.61004*	0.914	0.000
		10000-20000	3.76559*	1.185	0.002
		20000 & above	4.25331*	1.066	0.000
	5000-10000	Less than 1000	-8.04094*	0.938	0.000
		1000-5000	-3.61004*	0.914	0.000
		10000-20000	0.156	1.412	0.912
		20000 & above	0.643	1.313	0.624
	10000-20000	Less than 1000	-8.19649*	1.204	0.000
		1000-5000	-3.76559*	1.185	0.002
		5000-10000	-0.156	1.412	0.912
		20000 & above	0.488	1.514	0.748
	20000 & above	Less than 1000	-8.68421*	1.086	0.000
		1000-5000	-4.25331*	1.066	0.000
		5000-10000	-0.643	1.313	0.624

		10000-20000	-0.488	1.514	0.748
Technical Issues	Less than 1000	1000-5000	.71590*	0.339	0.036
		5000-10000	0.840	0.589	0.155
		10000-20000	2.01053*	0.756	0.008
		20000 & above	0.667	0.682	0.329
	1000-5000	Less than 1000	-.71590*	0.339	0.036
		5000-10000	0.124	0.574	0.829
		10000-20000	1.295	0.744	0.083
		20000 & above	-0.049	0.669	0.941
	5000-10000	Less than 1000	-0.840	0.589	0.155
		1000-5000	-0.124	0.574	0.829
		10000-20000	1.170	0.886	0.187
		20000 & above	-0.173	0.824	0.833
	10000-20000	Less than 1000	-2.01053*	0.756	0.008
		1000-5000	-1.295	0.744	0.083
		5000-10000	-1.170	0.886	0.187
		20000 & above	-1.344	0.950	0.158
	20000 & above	Less than 1000	-0.667	0.682	0.329
		1000-5000	0.049	0.669	0.941
		5000-10000	0.173	0.824	0.833
		10000-20000	1.344	0.950	0.158
Cost	Less than 1000	1000-5000	2.68257*	0.435	0.000
		5000-10000	2.85867*	0.754	0.000
		10000-20000	4.97719*	0.968	0.000
		20000 & above	2.04386*	0.873	0.020
	1000-5000	Less than 1000	-2.68257*	0.435	0.000
		5000-10000	0.176	0.735	0.811
		10000-20000	2.29462*	0.953	0.017
		20000 & above	-0.639	0.857	0.457
	5000-10000	Less than 1000	-2.85867*	0.754	0.000
		1000-5000	-0.176	0.735	0.811
		10000-20000	2.119	1.135	0.063
		20000 & above	-0.815	1.055	0.441
	10000-20000	Less than 1000	-4.97719*	0.968	0.000
		1000-5000	-2.29462*	0.953	0.017
		5000-10000	-2.119	1.135	0.063
		20000 & above	-2.93333*	1.217	0.017
	20000 & above	Less than 1000	-2.04386*	0.873	0.020

		1000-5000	0.639	0.857	0.457
		5000-10000	0.815	1.055	0.441
		10000-20000	2.93333*	1.217	0.017
Skilled Labourers	Less than 1000	1000-5000	-0.174	0.162	0.282
		5000-10000	0.237	0.280	0.399
		10000-20000	.83684*	0.360	0.021
		20000 & above	-0.149	0.324	0.646
	1000-5000	Less than 1000	0.174	0.162	0.282
		5000-10000	0.411	0.273	0.133
		10000-20000	1.01075*	0.354	0.005
		20000 & above	0.025	0.318	0.938
	5000-10000	Less than 1000	-0.237	0.280	0.399
		1000-5000	-0.411	0.273	0.133
		10000-20000	0.600	0.422	0.156
		20000 & above	-0.386	0.392	0.326
	10000-20000	Less than 1000	-.83684*	0.360	0.021
		1000-5000	-1.01075*	0.354	0.005
		5000-10000	-0.600	0.422	0.156
		20000 & above	-.98596*	0.452	0.030
	20000 & above	Less than 1000	0.149	0.324	0.646
		1000-5000	-0.025	0.318	0.938
		5000-10000	0.386	0.392	0.326
		10000-20000	.98596*	0.452	0.030
Training to existing staff	Less than 1000	1000-5000	-.66876*	0.185	0.000
		5000-10000	-1.44152*	0.320	0.000
		10000-20000	-0.219	0.411	0.594
		20000 & above	-1.23684*	0.371	0.001
	1000-5000	Less than 1000	.66876*	0.185	0.000
		5000-10000	-.77276*	0.312	0.014
		10000-20000	0.449	0.405	0.268
		20000 & above	-0.568	0.364	0.119
	5000-10000	Less than 1000	1.44152*	0.320	0.000
		1000-5000	.77276*	0.312	0.014
		10000-20000	1.22222*	0.482	0.012
		20000 & above	0.205	0.448	0.648
	10000-20000	Less than 1000	0.219	0.411	0.594
		1000-5000	-0.449	0.405	0.268
		5000-10000	-1.22222*	0.482	0.012

		20000 & above	-1.01754*	0.517	0.050
	20000 & above	Less than 1000	1.23684*	0.371	0.001
		1000-5000	0.568	0.364	0.119
		5000-10000	-0.205	0.448	0.648
		10000-20000	1.01754*	0.517	0.050

Source: Primary Data Significant difference are indicated by (*)

The multiple comparison test result reveals that challenges related to employee awareness on digitalisation of the retail outlets with size 10000-20000 sq. ft. are significantly different from the retail outlets with size less than 1000 sq. ft., 1000-5000 sq. ft. and 20000 & above. The retail outlets with size less than 1000 sq. ft. are also different from 5000-10000 sq. ft. In case of challenges related to customers awareness, retail outlets with size less than 1000 sq. ft. are significantly different from the retail outlets with the size 1000-5000 sq. ft., 5000-10000 sq. ft. and 20000 & above. The retail outlets with size 1000-5000 sq. ft. are also different from 5000-10000 sq. ft. In case of infrastructure, retail outlet with size less than 1000 sq. ft. and 1000-5000 sq. ft. is significantly different from all other sizes. The challenges related to technical issue of the retail outlet less than 1000 sq. ft. are significantly different from the outlets with the size 1000-5000 sq. ft. and 10000-20000 sq. ft. and in case of challenges related to cost of the retail outlets less than 1000 sq. ft. are significantly different from all others. The challenges related to skilled labourer of the retail outlets with size 10000-20000 sq. ft. are significantly different from the retail outlets with the size less than 1000 sq. ft.,1000-5000 sq. ft. and 20000 & above sq. ft. The challenges related to training to existing staff of the retail outlets with the size less than 1000 sq. ft. is significantly different from 1000-5000 sq. ft., 5000-10000 sq. ft. and 20000 & above sq. ft., retail outlets with the size 5000-10000 sq. ft. are significantly different from 1000-5000 sq. ft. and 10000-20000 sq. ft. and the retail outlets with the size 10000-20000 sq. ft. are significantly different from 20000 & above sq. ft.

7.2.6.5 Comparison of Challenges of Digitalisation and Digital Department

To determine whether the challenges of digitalisation vary for the outlet that have digital department and don't have digital department, independent sample z test was used and the result is shown in the table 7.38.

Table 7.38

Challenges of Digitalisation and Digital Department

Variable	Separate digital department in the retail unit	N	Mean	S.D.	Z	p value
Challenges of Digitalisation	Yes	155	79.07	14.77	-13.825	<0.001
	No	175	98.35	10.41		

Source: Primary Data

The result of the independent sample z test shows that the challenges faced by the retail outlets during digitalisation is different (p value less than 0.05) with regard to the presence and absence of a separate dedicated digital department in the unit. The retail outlets which don't have separate digital department have the highest mean 98.35 with standard deviation 10.41. This means that the retail outlets which don't have separate digital department faced more challenges during digitalisation process.

Table 7.39

Component wise Challenges of Digitalisation and Digital Department

Challenges	Separate digital department	N	Mean	S.D.	Z	p value
Employees Awareness	Yes	155	14.32	4.61	-5.955	<0.001
	No	175	16.86	3.04		
Customers Awareness	Yes	155	14.41	2.71	-7.649	<0.001
	No	175	16.53	2.31		
Infrastructure	Yes	155	8.08	3.31	-25.513	<0.001
	No	175	16.70	2.82		
Technical Issues	Yes	155	7.38	3.00	-6.261	<0.001
	No	175	9.19	2.25		
Cost	Yes	155	18.20	3.60	-10.449	<0.001
	No	175	21.98	2.98		
Skilled Labourers	Yes	155	5.52	1.03	-5.695	<0.001
	No	175	6.31	1.43		
Training to existing staff	Yes	155	11.15	1.59	2.146	0.033
	No	175	10.79	1.51		

Source: Primary Data

The result of independent sample z test shows that the challenges faced by the retail outlets during digitalisation is different (p value less than 0.05) with regard to the presence and absence of a separate dedicated digital department in the unit. The highest mean of challenges related to employee awareness is 16.86, customer awareness (16.53), infrastructure (16.70), technical issue (9.19), cost (21.98) and skilled labourer (6.31) is for the retail outlets which don't have digital department.

7.2.7 Level of Digitalisation and Challenges of Digitalisation.

To determine whether the level of digitalisation in payment, sales, purchase, marketing, maintenance of books of account, inventory management, customer service and recruitment of employees effect the challenges faced by the retailers, correlation technique was used.

Table 7.40

Level of Digitalisation and Challenges

	Digitalisation	Pearson Correlation	Sig. (2-tailed)	N
Challenges of Digitalisation	Payment	-.322**	.000	330
	Sales	-.546**	.000	330
	Purchase	-.524**	.000	330
	Marketing	-.369**	.000	330
	Maintenance of books of records	-.444**	.000	330
	Inventory management	-.462**	.000	330
	Customer service	-.387**	.000	330
	Recruitment of employees	-.622**	.000	330

Source: Primary Data **Correlation is significant at the 0.01 level (2-tailed)

As per the result depicted in table 7.40, there exists a negative correlation between challenges of digitalisation and level of digitalisation in sales, purchase and recruitment of employees.

SECTION B

7.3 IMPACT OF COVID-19 ON DIGITALISATION

The corona virus attacked the state in the year 2020, and government declared complete lockdown till 31st March in the first stage (Anil Kumar, 2020). Due to the lockdown, retail stores and shopping malls were shuttered, which caused a significant increase in sales for online retailers as people turned to other purchasing options. (Kingson & Jennifer, 2020). In order to identify whether the Covid-19 pandemic and lockdown influenced the retail outlets to switch to digital mode, data was collected from the retail outlets on this aspect and the respondents were asked to mark their response in a five-point scale beginning with 1 for not digitalised and 5 for fully digitalised on seven constructs namely marketing, sales, mode of payment, customer service, inventory management, vendor management and customer relationship management. The respondents were asked to mark the digitalisation in the retail outlets of each construct for a period prior to covid pandemic and lockdown and present digitalisation. The results are shown in table 7.41 and 7.42.

Table 7.41

Digitalisation in the Retail Sector Prior to Covid-19 Pandemic and Lockdown

Constructs	Digitalisation (in Per cent)				
	Not Digitalised	Partly Digitalised			Fully Digitalised
	1	2	3	4	5
Marketing	53.9	16.1	27.6	0.0	2.4
Sales	67.9	21.8	7.9	0.0	2.4
Mode of Payment	14.2	47.3	38.2	0.0	0.3
Customer service	32.7	30.6	31.5	1.8	3.4
Inventory Management	6.1	16.1	26.4	12.1	39.3
Vendor management	48.8	12.4	28.2	6.1	4.5
Customer Relationship Management	28.5	34.2	29.1	5.8	2.4

Source: Primary Data

Table 7.42

Digitalisation in the Retail Sector after Covid-19 Pandemic and Lockdown

Constructs	Digitalisation (in Per cent)				
	Not Digitalised	Partly Digitalised			Fully Digitalised
	1	2	3	4	5
Marketing	3.9	38.8	24.2	10.0	23.1
Sales	38.8	22.7	25.8	2.4	10.3
Mode of Payment	0.0	0.9	30.0	35.5	33.6
Customer service	0.6	13.0	46.1	21.8	18.5
Inventory Management	0.9	2.1	25.8	27.0	44.2
Vendor management	19.7	20.6	19.4	14.2	26.1
Customer Relationship Management	2.4	6.4	49.7	21.2	20.3

Source: Primary Data

Table 7.41 shows the digitalisation in the retail sector prior to Covid-19 pandemic and lockdown. In case of marketing, majority (53.9%) of the retail outlets were not digitalised prior to Covid-19 pandemic and lockdown and only 2.4% was fully digitalised. In case of sales also majority (67.9%) of the retail outlets are not digitalised prior to Covid-19 pandemic and lockdown and only 2.4% are fully digitalised. In case of mode of payment, majority of the retail outlets are partly digitalised, 14.2% are not digitalised and only 0.3% is fully digitalised. In case of customer service, majority of the retail outlets are partly digitalised, 32.7% are not digitalised and 3.4% are fully digitalised. Inventory management is partly digitalised prior to covid-19 pandemic and lockdown, 39.3% are fully digitalised and 6.1% are not digitalised. In case of vendor management, 48.8% of the retail outlets are not digitalised and 4.5% are fully digitalised. In case of customer relationship management, majority of the retail outlets are partly digitalised prior to covid-19 pandemic and lockdown, 28.5% are not digitalised and 2.4% are fully digitalised.

Table 7.42 shows the digitalisation in the retail sector after covid-19 lockdown. In case of marketing, majority of the retail outlets are partly digitalised, 23.1% are fully digitalised and 3.9% are not digitalised. In case of sales, majority of the retail outlets are partly digitalised, 38.8% are not digitalised and 10.3% are fully digitalised. It was interesting to note that in case of mode of payment, none of the retail outlets are not digitalised, majority are partly digitalised and 33.6% are fully digitalised. Most of the retail outlets are partly digitalised in case of customer service, 18.5% are fully digitalised and only 0.6% is not digitalised. Inventory management is also partly digitalised, 44.2% are fully digitalised and only 0.9% is not digitalised. Most of the retail outlets are partly digitalised in case of vendor management, 26.1% are fully digitalised and 19.7% are not digitalised. Customer relationship management is also partly digitalised, only 2.4% is not digitalised and 20.3% of the retail outlets are fully digitalised in this aspect.

7.3.1 Level of Impact of Covid-19 Pandemic and Lockdown on Digitalisation in Retail Sector

In order to find the level of improvement in digitalisation due to the impact of Covid 19, the respondents are asked to give the range of digitalisation from 1(not digitalised) to 5 (fully digitalised) before and after covid-19 pandemic. On the basis of information provided by the respondents the score was given as 0, 1,2,3,4. The scoring pattern is, if there is no change before and after score is given 0. If there is one level of improvement then the score is given as 1 and so on. Based on this score the analysis is done to establish the objectives. The total score of the 7 questions for all 330 respondents is found out, based on which mean % score of level of level of improvement in digitalisation was calculated $\left[MPS = \frac{MeanScore \times 100}{Maximumpossiblescore}\right]$. This score is classified into one of the four groups as low if the mean % score is less than 35%, average if the mean % score is between 35 to 50 per cent, above average if the mean % score lies in the interval 50 to 75% and high if the mean % score is above 75%. A one sample Z test is carried out to test the significance (Loyd & Abidin, 1985). The following table gives the Mean, SD, Mean % Score and Z value of the variable considered.

Table 7.43

Overall Impact of Covid-19 Pandemic and Lockdown on Digitalisation

Variable	N	Mean	S.D.	Mean % score	CV	z	p value
Impact of Covid-19 pandemic	330	7.94	3.93	28.37	49.44	-8.593	<0.001

Source: Primary Data

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation is 28.37% which indicate that level of impact of Covid-19 on digitalisation is low. The CV indicates that this score is not stable as it is more than 20%. The p value is less than 0.05 and Z value is negative, which indicates that the test is significant. Hence, we conclude that the level of impact of Covid-19 on digitalisation is low.

7.3.2 Level of Impact of Covid-19 Pandemic and Lockdown on Digitalisation

Table 7.44 shows the level of impact of Covid-19 on digitalisation of all the constructs namely marketing, sales, mode of payment, customer service, inventory management, vendor management and customer relationship management.

Table 7.44

Level of Impact of Covid-19 Pandemic and Lockdown on Digitalisation

Variable	N	Mean	SD	Mean % score	CV	z	p value	Level
Marketing	330	1.28	0.73	32.12	56.47	-2.883	0.004	Low
Sales	330	0.75	0.91	18.86	121.19	-12.822	<0.001	Low
Mode of Payment	330	1.77	0.94	44.24	52.91	7.172	<0.001	Average

Customer service	330	1.32	0.90	33.03	68.05	-1.592	0.112	Low
Inventory Management	330	0.49	0.66	12.20	134.87	-25.181	<0.001	Low
Vendor management	330	1.01	1.12	25.30	110.29	-6.312	<0.001	Low
Customer Relationship Management	330	1.31	0.98	32.80	75.03	-1.622	0.106	Low

Source: Primary Data

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of marketing is 32.12% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of marketing is low. The CV indicates that this score is not stable as it is more than 20%. The p value is less than 0.05 and Z value is negative, which indicates that the test is significant.

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of sale is 18.86% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of sales is low. The CV indicates that this score is not stable as it is more than 20%. The p value is less than 0.05 and Z value is negative, which indicates that the test is significant.

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of mode of payment is 44.24% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of mode of payment is average. The CV indicates that this score is not stable as it is more than 20%. The p value is less than 0.05 and Z value is positive, which indicates that the test is significant.

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of customer service is 33.03% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of customer service is poor. The CV indicates that this score is not stable as it is more than 20%. The p value is greater than 0.05 and Z value is negative, which indicates that the test is not significant.

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of inventory management is 12.20% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of inventory management is low. The CV indicates that this score is not stable as it is more than 20%. The p value is less than 0.05 and Z value is negative, which indicates that the test is significant. Hence, we conclude that the level of impact of Covid-19 pandemic and lockdown on digitalisation of inventory management is low.

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of vendor management is 25.30% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of vendor management is low. The CV indicates that this score is not stable as it is more than 20%. The p value is less than 0.05 and Z value is negative, which indicates that the test is significant. Hence, we conclude that the level of impact of Covid-19 pandemic and lockdown on digitalisation of vendor management is low.

The mean percentage score of level of impact of Covid-19 pandemic and lockdown on digitalisation of customer relationship management is 32.80% which indicate that level of impact of Covid-19 pandemic and lockdown on digitalisation of customer relationship management is low. The CV indicates that this score is not stable as it is more than 20%. The p value is greater than 0.05 and Z value is negative, which indicates that the test is not significant. Hence, we conclude that the level of impact of Covid-19 pandemic and lockdown on digitalisation of customer relationship management is low.

7.3.4 Comparison of Level of Impact of Covid-19 Pandemic and Lockdown on Digitalisation of different Type of Retail Units

In order to determine the level of impact of Covid-19 pandemic and lockdown on digitalisation of different type of Retail units i.e., Food & Grocery, Apparel and Consumer Electronics, Mean Percentage Score (MPS) was calculated and one sample Z test is carried out to test the significance. The result is shown in table 7.47.

Table 7.45

Impact of Covid-19 Pandemic and Lockdown on Digitalisation of different Type of Retail Unit

Type of retail unit	Variables	N	Mean	S.D.	Mean % score	CV	z	p value	Impact level
Food & Grocery	Marketing	110	1.68	0.79	42.05	46.92	3.746	<0.001	Average
	Sales	110	1.31	0.75	32.73	57.37	-1.269	0.207	Low
	Mode of Payment	110	2.21	1.13	55.23	50.97	7.536	<0.001	Above Average
	Customer service	110	1.44	0.92	35.91	64.33	0.413	0.681	Average
	Inventory Management	110	0.50	0.71	12.50	142.71	-13.228	<0.001	Low
	Vendor management	110	1.29	1.40	32.27	108.21	-0.819	0.415	Low
	Customer Relationship Management	110	1.44	1.14	35.91	79.20	0.335	0.738	Average
Apparel	Marketing	110	1.19	0.57	29.77	47.58	-3.871	<0.001	Low
	Sales	110	0.40	0.67	10.00	166.59	-15.739	<0.001	Low
	Mode of Payment	110	1.49	0.62	37.27	41.38	1.545	0.125	Average
	Customer service	110	1.22	0.83	30.45	67.99	-2.303	0.023	Low
	Inventory Management	110	0.54	0.59	13.41	109.14	-15.473	<0.001	Low
	Vendor management	110	1.13	1.04	28.18	92.38	-2.747	0.007	Low
	Customer Relationship Management	110	1.10	0.80	27.50	72.80	-3.929	<0.001	Low

Consumer Electronics	Marketing	110	0.98	0.62	24.55	63.20	-7.069	<0.001	Low
	Sales	110	0.55	1.02	13.86	183.75	-8.702	<0.001	Low
	Mode of Payment	110	1.61	0.84	40.23	51.96	2.623	0.010	Average
	Customer service	110	1.31	0.94	32.73	71.50	-1.019	0.311	Low
	Inventory Management	110	0.43	0.67	10.68	156.79	-15.229	<0.001	Low
	Vendor management	110	0.62	0.69	15.45	111.69	-11.876	<0.001	Low
	Customer Relationship Management	110	1.40	0.96	35.00	68.55	0.000	1.000	Low

Source: Primary Data

As per the above table, the level of impact of covid-19 pandemic and lockdown on digitalisation in Food & Grocery sector is above average only for mode of payment, its average in case of marketing, customer service and customer relationship management and its low in sales, inventory management and vendor management. In case of Apparel and Consumer Electronic retail sector, the impact of covid-19 pandemic and lockdown on digitalisation is low for marketing, sales, customer service, inventory management, vendor management and customer relationship management and average for mode of payment.

7.4 Chapter Summary

This chapter discussed the challenges faced by the organised retail outlets during the digitalisation period. Thirty items were considered for the study after content and face validity, but two items (Em5 & TI2) which had regression coefficient less than 0.4 was rejected in the confirmatory factor analysis. All other factors had an influence on the challenges faced during digitalisation. The level of challenges faced by the retail unit during digitalisation is above average. Challenges faced by different type of retail units are different but there is a similarity between apparel and consumer electronic retail outlets. While comparing the challenges with the internal factors, it was same for

different age of retail outlet but different for the construct type of outlet, number of employees, size of outlet and digital department. There exists a negative correlation between challenges faced during digitalisation with digitalisation in sales, purchase and recruitment of employees.

The study also evaluated the impact of Covid-19 pandemic and lockdown on digitalisation. The overall impact on digitalisation was low. When individual construct was evaluated mode of payment had an average impact, rest of the construct had low impact. When compared its impact between Food & Grocery, apparel and consumer electronics, impact was average for marketing, customer service and customer relationship management and above average for mode of payment of food and grocery retail sector. In case of consumer electronics and apparel, impact was average for the mode of payment and the impact was low for the rest of the cases of all the three retail sector.

CHAPTER 8

SUMMARY OF FINDINGS AND CONCLUSIONS

SUMMARY OF FINDINGS AND CONCLUSIONS

8.1 Introduction

This chapter summarizes the entire research work and discuss the findings of data analysis presented in the previous chapters.

8.2 Summary of Research

The study titled 'Digitalisation in the select organised retail sector in Kerala' was designed as both exploratory and descriptive one based on both primary and secondary data. Primary data was collected using pretested structured questionnaire from the organised retail outlets in Kerala. The study was limited to only three organised retail outlets i.e., Food and Grocery, Apparel and Consumer Electronics retail outlets. Non probability sampling method was used to select the sample. The sample was selected from three cities (Thiruvananthapuram, Ernakulam and Kozhikode) having largest number of organised retail outlets. A sample of 330 retail outlets which consists of 110 retail outlets each from Food & grocery, Apparel and Consumer electronics was selected using convenient sampling. The main objectives of the study are as follows

1. To evaluate the factors that lead to digitalisation in the select organised retail sectors in Kerala.
2. To determine the boons of digitalisation in the retail sector.
3. To identify the challenges faced by the retailers during the digitalisation period.
4. To assess and compare the level of digitalisation in Food & Grocery, Apparel & Consumer Electronic retail sectors.
5. To examine the impact of Covid-19 pandemic and lockdown on digitalisation in the retail sector.

Based on the above objectives the following hypotheses was formulated.

1. H_0: There is no significant difference in the external factors leads to digitalisation among Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
2. Ho: There is no significant difference in the external factors leads to digitalisation with respect to internal factors.
3. Ho: There is no significant difference in digitalisation of Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
4. H_0: There is no significant difference in digitalisation of retail outlets with respect to internal factors.
5. H_o: There is no significant difference in the boons of digitalisation of Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
6. Ho: There is no significant difference in the boons of digitalisation with respect to internal factors.
7. H_0: There is no significant difference in the challenges faced by Food & Grocery, Apparel and Consumer Electronics Retail Outlets.
8. Ho: There is no significant difference in the challenges of digitalisation with respect to internal factors.

Data collected was edited, coded, tabulated and analysed using Mean, Standard Deviation, Percentage analysis, Exploratory Factor Analysis, Confirmatory Factor analysis, one way ANOVA, Post hoc test/ Multiple comparison test, One sample z test, Coefficient of variation, independent sample z test and correlation.

8.3 Finding of the study

Findings of the primary data analysis was presented on the basis of objectives.

1. **Factors of Digitalisation**
   a) **Internal Factors**
   - The age of the majority of the retail outlets (55.8%) of the study is up to 10 years, 28.5% of the retail outlet have an age between 11 & 20 years, 11.2% between 20 & 30 years and only 4.5% have age above 30 years. This indicate that most of the retail outlets have an age up to 10 years.

- Most of the retail outlets (43.3%) are registered as partnership firm, 33.3% are registered as private limited company and 23.3% as sole proprietors.
- Most of the retail outlets (70.6%) have the number of employees less than 25, 10.6% have employees between 25 & 50, 9.4% have employees between 50 & 100 and other 9.4% have number of employees above 100. This shows that most of the retail outlets have employees less than 25.
- It is observed that size of the majority (47%) of the retail outlets are between 1000 and 5000 sq. ft., 34.5% have size less than 1000 sq. ft., 8.2% have size between 5000 and 10000 sq. ft., 4.5% have size between 10000 and 20000 sq. ft. and 5.8% have size above 20000 sq. ft. It indicates that size of the majority of the retail outlets are less than 5000 sq. ft.
- It is found that 53% of the retail outlets does not have separate digital department in their unit but 47% of the retail outlet have separate digital department. Among this 47% of the retail outlets, majority (35.8%) have separate digital department for marketing, 21.5% have for accounts/finance, 13.9% have for customer care, 4.8% have for purchase, 0.3% have for internal communication and 9.7% have separate digital department for all.

b) External Factors

- Exploratory factor analysis has been carried out and five external factors leads to digitalisation were identified. They were Customers, Suppliers, Government, Financial Institutions and Competitors.
- The dimension of external factor leads to digitalisation in the organised retail sector named 'customer' include four indicators i.e., 'Customers started to prefer digital payment', 'Customers started to search websites to know about the products which influenced us to go digital', 'Social medias started to influence the buying behaviour of customers' and 'Customers started to prefer online shopping which led us too digital' with factor loading 0.696, 0.790, 0.843 and 0.699 respectively. This indicates that above four variables influence the retail outlets towards digitalisation.
- The dimension of external factor leads to digitalisation in the organised retail sector named 'supplier' include six indicators i.e., 'Suppliers prefer

digital mode for order placement', 'Suppliers prefer digital payment', 'It is easy to get price quotes from different suppliers', 'As the list of available products are shared online it is easy to place orders', 'It is easy to compare the quotation of different suppliers when it is digitally shared' and 'It is easy to identify the suppliers who supply quality products at reasonable price' with the factor loadings 0.737, 0.815, 0.807, 0.850, 0.747 and 0.633 respectively. This indicates that above six variables related to suppliers influenced the retail outlets towards digitalisation.

- The dimension of external factor leads to digitalisation in the organised retail sector named 'government' include four indicators i.e., 'Provide funding and subsidies for digital transformation', 'Promote digital technologies and tools', 'Provide digital services' and 'Encouraged digital payments' with the factor loadings 0.683, 0.821, 0.829 and 0.810 respectively. This indicate that above four variables related to government influenced the retail outlet towards digitalisation.
- The dimension of external factor leads to digitalisation in the organised retail sector named 'financial institution' include five indicators i.e., 'All documents can be shared online', 'Since the transactions are digitalised processing time is less', 'Repayment of loan can be done digitally', Financial statements are shared digitally' and 'Easiness of vendor payment settlement' with the factor loadings 0.700, 0.790, 0.834, 0.823 and 0.676 respectively. This indicates that all five variables related to financial institution influence the retail outlets towards digitalisation.
- The dimension of external factor leads to digitalisation in the organised retail sector named 'competitors' include six indicators i.e., 'Competitors started to market their product digitally', 'Competitors Launched their own website', 'Competitors developed an app for sale of products', 'Competitors started to accept digital payments', 'Competitors are maintaining the digital records' and 'Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers' with the factor loadings 0.807, 0.844, 0.651, 0.760, 0.773 and 0.852 respectively.

This indicate that the above six variables related to competitors influenced the retail outlets towards digitalisation.

- The dimensions explored through EFA are confirmed using confirmatory factor analysis. The result of CFA revealed that all the models of the constructs customers, suppliers, government, financial institutions and competitors are fitted with the adequate values of model fit indices.
- The confirmatory factor analysis confirmed that all the four indicating variables 'Customers started to prefer digital payment'(0.648), 'Customers started to search websites to know about the products which influenced us to go digital' (0.817), 'Social medias started to influence the buying behaviour of customers' (0.750) and 'Customers started to prefer online shopping which led us too digital' (0.596) have a significant influence on 'customers' as the regression coefficient are above 0.4 and p value is significant. Customers started to search websites to know about the products influenced the retailers towards digitalisation.
- The confirmatory factor analysis confirmed that all the six indicating variables 'Suppliers prefer digital mode for order placement' (0.660), 'Suppliers prefer digital payment' (0.728), 'It is easy to get price quotes from different suppliers' (0.809), 'As the list of available products are shared online it is easy to place orders' (0.912), 'It is easy to compare the quotation of different suppliers when it is digitally shared' (0.724) and 'It is easy to identify the suppliers who supply quality products at reasonable price' (0.649) have significant influence on 'suppliers' as the regression coefficient value are above 0.4 and p value is significant. The suppliers started to share the list of available products online which made easy for the retailers to place orders, this influenced them towards digitalisation.
- The confirmatory factor analysis confirmed that all the four indicating variables 'Provide funding and subsidies for digital transformation' (0.502), 'Promote digital technologies and tools' (0.758), 'Provide digital services' (0.952) and 'Encouraged digital payments' (0.709) have an influence on 'Government' as the standardised direct effects of these

variables are above 0.4 and p value is significant. Digital services provided by the government influenced the retailers towards digitalisation.

- The confirmatory factor analysis confirmed that all the five indicating variables 'All documents can be shared online' (0.528), 'Since the transactions are digitalised processing time is less' (0.641), 'Repayment of loan can be done digitally' (0.896), Financial statements are shared digitally'(0.885) and 'Easiness of vendor payment settlement'(0.520) have significant influence on ' financial institution' as the standardised direct effects of these variables are above 0.4 and p value is significant. Repayment of loan can be done digitally is an important factor that influenced retailers towards digitalisation.
- The confirmatory factor analysis confirmed that all the six indicating variables 'Competitors started to market their product digitally' (0.839), 'Competitors Launched their own website' (0.889), 'Competitors developed an app for sale of products' (0.628), 'Competitors started to accept digital payments' (0.571), 'Competitors are maintaining the digital records' (0.555) and 'Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers' (0.747) have significant influence on competitors as the regression coefficient values are above 0.4 and p value is significant. Competitors Launched their own website influenced the retail outlets towards digitalisation.
- The influence of internal factors like age of outlet, type of outlet, number of employees and size of outlets on external factors that lead to digitalisation was analysed using one-way ANOVA and digital department was analysed using independent sample z test. The result revealed that the external factor led to digitalisation is different for different age of outlet, type of outlet, number of employees, size of outlet and digital department.
- In the age-wise analysis of external factor led to digitalisation, the mean score of retail outlets who belongs to the age group 20-30 years is the highest (80.70) of all other age of outlets. The result of one-way ANOVA analysis revealed that external factor led to digitalisation is different for different age of outlet. The result of post hoc test indicates that for External

Factors lead to digitalisation of the retail outlet with the age up to 10 years is different from the retail outlet with the age of 11-20 years and 20-30 years. The influence of the factor's customers, suppliers and government towards digitalisation are same for different age of outlet but different in case of financial institution and competitors.

- The external factors that influenced the retail outlets with an experience of 11-20 years towards digitalisation was customers and government, above 30 years was suppliers and competitors and 20-30 years was financial institutions.
- To compare the external factors, with the type of outlet one-way ANOVA was used. The result reveals that mean score of external factors that leads to digitalisation is different for different type of outlets. Private Limited company have the highest mean score of 80.84, followed by Partnership by 77.84 and sole proprietor by 72.19. Post hoc test revealed that the external factors lead to digitalisation is different for all the type of outlets.
- The private limited companies were highly influenced towards digitalisation. The external factors that influenced private limited companies were customers, suppliers, government and financial institutions. The external factor that influenced sole proprietors towards digitalisation was competitors.
- The external factor led to digitalisation is different for the retail outlets with different number of employees. The retail outlets with the number of employees less than 25 is significantly different from all other groups i.e., 25-50, 50-100 and 100 & above.
- The retail outlets with number of employees above 100 are more digitalised. The external factor that influenced the retail outlets with number of employees above 100 towards digitalisation was customers, suppliers, government and financial institutions and the retail outlets with the number of employees 25-50 are influenced by competitors.
- The comparison of external factor and size of outlet was done using one-way ANOVA and result reveals that the external factor led to digitalisation differ with respect to the size of the outlet. The result of multiple

comparison test reveals that size of outlet 5000-10000 is significantly same (p value greater than 0.05) with 10000-20000. The size of the outlet 10000-20000 is significantly same (p value greater that 0.05) with 5000-10000 and 20000 & above. The size of the outlet 20000 & above is significantly same with 5000-10000 and 10000-20000. Rest of the groups differ with all other groups. It means that the external factors lead to digitalisation is same for the retail outlets above 5000 sq. ft.

- The retail outlets with the size above 20000 sq. ft. was more digitalized. The external factor that influenced them are customers, financial institution and competitors. The external factor that influenced the retail outlets with size 10000-20000 sq. ft. are suppliers and size 5000-10000 was government.
- Comparison of external factors and Digital department was done using independent sample z test. The result shows that external factors lead to digitalisation is different for the retail outlets with digital department in the unit and without digital department. The retail units with separate digital department were more digitalised.

c) **Digitalisation in Retail sector**

- Confirmatory Factor Analysis was used to validate the measurement models and the result revealed that all the construct payment, sale, purchase, marketing, maintaining business records, inventory management, customer Service and recruitment of employees are fitted with the adequate values of model fit indices. The standardised direct effects of these variables are above 0.4, which means that these constructs have significant influence on digitalisation of retail outlets.
- The level of digitalisation in maintaining business records and inventory management are high, in case of payment, customer service, marketing and purchase its medium. Level of digitalisation is only average in case of sales and recruitment of employees. The overall level of digitalisation of organised retail outlet is medium.

- The influence of internal factors like age of the outlet, type of outlet, number of employees and size of outlet on digitalisation was tested using one way ANOVA and digital department using independent sample z test. The result revealed that digitalisation in the retail outlets varies with respect to internal factors.
- Age wise analysis of digitalisation in the retail sector reveals that the digitalisation of retail outlets of different groups is different. Post hoc test result reveals that digitalisation of the retail outlet with the age group of 11-20 years is significantly different from others but in case of rest of the age group digitalisation is same. The highest mean is for the retail outlets with an age of 11-20 years, it indicates that retail outlets with an age of 11-20 years are more digitalized.
- Digitalisation of different type of outlets i.e., sole proprietor, partnership and private limited company are different. Post hoc test also revealed the same result. The retail outlets registered as private limited company are more digitalized than partnership and sole proprietor.
- Digitalisation of the retail outlet significantly differ with the number of employees in the outlet. The post hoc test revealed that the digitalisation of the retail outlets with the number of employees less than 25 and 25-50 are significantly different from that of the retail outlets having number of employees above 50. The retail outlets with number of employees above 100 are more digitalized followed by outlets with number of employees above 50.
- Digitalisation of the retail outlet significantly differ with the size of outlet. The post hoc test revealed that digitalisation of the retail outlet with the size less than 5000 sq. ft.is significantly different from the retail outlets with the size above 5000 sq. ft. The retail outlets with size 20000 & above sq. ft. are more digitalized as it has the highest mean (32.58) and lowest (SD 2.55) followed by retail outlets with size 10000-20000 sq. ft. with a mean (2.87) and SD (3.52) and outlets with size 5000-10000 sq. ft. with mean (32.48) and SD (5.87).

- Digitalisation of the retail outlet having separate digital department and not having digital department are different. The retail outlets with separate digital departments are more digitalised.
- The relation between external factors and digitalisation was measured using Pearson correlation coefficient. Pearson correlation statistics results a correlation value of 0.643 for the construct purchase, 0.544 for marketing and 0.511 for customer service, it implies that there is a positive correlation between external factors that lead to digitalisation and digitalisation in purchase, marketing and customer service. But Pearson correlation statistics results a correlation value of 0.448 for payment, 0.475 for sales. 0.348 for maintenance of books of record, 0.412 for inventory management and 0.370 for recruitment of employees, it indicates that there is no correlation between external factors leads to digitalisation and digitalisation in payment, sales, maintenance of books of records, inventory management and recruitment of employees.

2. Boons of digitalisation

- From the result of exploratory factor analysis, eight dimensions of boons of digitalisation was identified and named as Operational Performance, Increased Market Share, New Market Opportunities, Inventory Management, Digital Marketing, Better Customer Support, Digital Payment and Employment opportunities. The first two dimensions i.e., operational performance and increased market share are grouped as economic boons, new market opportunities, inventory management and digital marketing are grouped as technological boons and better customer support, digital payment and employment opportunities are grouped as social boons.
- The dimensions of boons of digitalisation named 'Operational Performance' includes two indicators i.e., 'Digitalisation improves the operational performance of the retail outlets' and 'Operational performance of the traditional period was much better' with the factor loadings 0.776 and 0.663 respectively. This indicates that above two variables related to operational performance have an influence on the boons of digitalisation.

- The dimensions of boons of digitalisation named 'increased market share' have five indicators i.e., 'Digitalisation enables the business to access new (geographical) markets', 'Digitalisation increases customer awareness of our product/services (broader customer access', 'Digitalisation permits differentiating our products/services from those of our competitors.', 'Digitalisation provides customers with better information about our product/services' and 'Digitalisation opens an avenue for customers to make his/her purchase easiness' with the factor loadings 0.763,0.531, 0.619, 0.696 and 0.712 respectively. It indicates that the above five indicators of increased market share have an influence on boons of digitalisation.
- The dimensions of boons of digitalisation named 'New Market Opportunities' have two indicators i.e., 'Digitalisation helps to identify new market opportunities' and 'Digitalisation helps to expand the businesses' with the factor loadings 0.666 and 0.602 respectively. It means that the above two indicators of new market opportunities have an influence on boons of digitalisation.
- The dimensions of boons of digitalisation named 'Inventory Management' have three indicators i.e., 'Recording of stock is fully digitalised', 'As the inventory management is fully digitalised it is easy to assess the stock level' and 'Improves purchase efficiency' with the factor loadings 0.717. 0.756 and 0.575 respectively. It implies that above three indicators of inventory management have an influence on boons of digitalisation.
- The dimensions of boons of digitalisation named 'Digital Marketing' have six indicators i.e., 'Digital marketing is much better than traditional marketing', 'Digital marketing reduces the cost of marketing', 'Digital marketing allows you to target your needed audience.', 'Most commonly used digital marketing platforms are social media', 'TV ads are much better than social media ad' and 'We share the offers and discounts to the customers through WhatsApp/ Facebook/Instagram' with the factor loadings 0.583, 0.642, 0.606, 0.795, 0.739 and 0.835 respectively. This indicates that all the six indicators of digital marketing have an influence on boons of digitalisation.

- The dimensions of boons of digitalisation named 'Better Customer Support' have five indicators i.e., 'Digitalisation enables us to offer wide variety of products/services to the customers', 'Digitalisation enables us to offer goods at reduced price to the customers', 'Digitalisation helps to provide better customer service', 'Going digital has helped to better understand the customer preference' and 'Digitalisation enables production of need oriented products/services' with the factor loadings 0.777, 0.556, 0.735, 0.715 and 0.601 respectively. This indicates that all the five indicators of better customer support have an influence on the boons of digitalisation.
- The dimensions of boons of digitalisation named 'Digital Payment' have five indicators i.e., 'We are accepting payment through POS machines', 'We prefer to make payment in cash', 'We are accepting payment through e-wallet/UPI', 'Digitalisation reduced the risk of handling cash' and 'Digital mode of payment is preferred by the customer' with the factor loadings 0.484, 0.550, 0.496, 0.571 and 0.401 respectively. It means that all the five indicators of digital payment have significant influence on benefit of digitalisation.
- The dimensions of boons of digitalisation named 'Employment opportunities' have four indicators i.e., 'Digitalisation led to increase in employment opportunities', 'Employment opportunities increased only for technically qualified person', 'More employment opportunity raised in social media marketing' and 'Improved recruitment process' with the factor loadings 0.803, 0.720, 0.631 and 0.529 respectively. It indicates that all the four indicators of employment opportunities have influence on boons of digitalisation.
- The dimensions explored through EFA are confirmed using confirmatory factor analysis. The result of CFA revealed that all the models of the constructs Operational Performance, Increased Market Share, New Market Opportunities, Inventory Management, Digital Marketing, Better Customer Support, Digital Payment and Employment opportunities are fitted with the adequate values of model fit indices.

- The confirmatory factor analysis confirmed that both the indicating variables of operational performance, 'Digitalisation improves the operational performance of the retail outlets' (0.803) and 'Operational performance of the traditional period was much better' (0.853) have regression coefficient greater than 0.4 which means that these two variables have significant influence on operational performance.
- The confirmatory factor analysis confirmed that all the five indicators of 'increased market share', 'Digitalisation enables the business to access new (geographical) markets'(0.800), 'Digitalisation increases customer awareness of our product/services (broader customer access' (0.723), 'Digitalisation permits differentiating our products/services from those of our competitors' (0.818), 'Digitalisation provides customers with better information about our product/services' (0.771)and 'Digitalisation opens an avenue for customers to make his/her purchase easiness'(0.838) have regression coefficient greater than 0.4 which indicates that all the above mentioned variables have significant influence on increase market share. The construct 'Digitalisation opens an avenue for customers to make his/her purchase easiness' have the highest variance explained, it means that it has highest influence on 'increase in market share'.
- The confirmatory factor analysis confirmed that both the indicators of 'New market opportunities' i.e., 'Digitalisation helps to identify new market opportunities' (0.948) and 'Digitalisation helps to expand the businesses' (0.866) have regression coefficient greater than 0.4 which indicates that all both the variables have significant influence on new market opportunities.
- The confirmatory factor analysis confirmed that all the three indicators of 'Inventory Management' i.e., 'Recording of stock is fully digitalised' (0.781), 'As the inventory management is fully digitalised it is easy to assess the stock level' (0.760) and 'Improves purchase efficiency' (0.552) have regression coefficient greater than 0.4 it means that all the three indicators have significant influence of inventory management. The most important benefit of digitalisation in inventory management is recording of stock is fully digitalised.

- The confirmatory factor analysis confirmed that all the six indicators of 'Digital Marketing' i.e., 'Digital marketing is much better than traditional marketing' (0.864), 'Digital marketing reduces the cost of marketing' (0.938), 'Digital marketing allows you to target your needed audience' (0.757), 'Most commonly used digital marketing platforms are social media' (0.645), 'TV ads are much better than social media ad' (0.484) and 'We share the offers and discounts to the customers through WhatsApp/ Facebook/Instagram' (0.452) have regression coefficient greater than 0.4 which implies that the influence of these indicators on digital marketing is significant. The construct 'Digital marketing is much better than traditional marketing' (74.6%) & 'Digital marketing reduces the cost of marketing' (88%) have the highest variance explained which means that it has highest influence on digital marketing.
- The confirmatory factor analysis confirmed that all the five indicators of 'Better Customer Support' i.e., 'Digitalisation enables us to offer wide variety of products/services to the customers' (0.800), 'Digitalisation enables us to offer goods at reduced price to the customers' (0.607), 'Digitalisation helps to provide better customer service' (0.713), 'Going digital has helped to better understand the customer preference' (.938) and 'Digitalisation enables production of need oriented products/services' (0.876) have regression coefficient greater than 0.4 which indicates that all the five indicators have significant influence on better customer support. The most important benefit of digitalisation in better customer support is 'Going digital has helped to better understand the customer preference'.
- The regression coefficient of all the five indicators of 'Digital Payment' are 'We are accepting payment through POS machines' (0.358), 'We prefer to make payment in cash' (0.487), 'We are accepting payment through e-wallet/UPI' (0.681), 'Digitalisation reduced the risk of handling cash' (0.896) and 'Digital mode of payment is preferred by the customer' (0.375). Here the constructs 'We are accepting payment through POS machines' and 'Digital mode of payment is preferred by the customer' has regression coefficient values less than 0.4. Hence these two constructs have no

significant influence on Digital payment and these items are deleted from further analysis. The other three construct have significant influence on Digital Payment. The most important boons of digitalisation in payment are 'digitalisation reduces the risk in handling cash'.

- The regression coefficients of all the four indicators of 'Employment opportunities' are 'Digitalisation led to increase in employment opportunities' (0.204), 'Employment opportunities increased only for technically qualified person' (0.958), 'More employment opportunity raised in social media marketing' (0.716) and 'Improved recruitment process' (0.414). The construct 'Digitalisation led to increase in employment opportunities' has regression coefficient values less than 0.4 and hence it does not have influence on employment opportunities and is deleted from further analysis. Rest of the constructs have regression coefficient greater than 0.4 and hence it has significant influence on Employment opportunities. The construct 'Employment opportunities increased only for technically qualified person' has the highest variance explained (91.8%), which means that it has the highest influence on employment opportunities and the construct 'Improved recruitment process' has the least variance explained (17.1%), which indicates that its influence is low.
- The influence of internals factors; age of the outlet, type of outlet, size of outlet, number of employees and digital department was analysed using one-way ANOVA and independent sample z test.
- Age wise analysis of the retail outlets revealed that boons of digitalisation is same for retail outlet with different age group. Among them the retail outlets with an experience of 11-20 years are more benefitted from digitalisation.
- Benefit of digitalisation of retail outlets with an experience above 30 years are operational performance and employment opportunities.
- The boons of digitalisation of retail outlets with an experience of 11-20 years are increase in market share, new market opportunities, inventory management, digital marketing, better customer support and digital payment.

- The boons of digitalisation for different type of outlets i.e., sole proprietor, partnership and private limited company is different. The highest mean of boons (115.80) is for private limited company followed by partnership with a mean of 105.39 and least is for sole proprietor 96.53. It indicates that retail outlets registered as private limited companies are more benefited from digitalisation. Benefit of digitalisation for private limited companies are better operational performance, increase in market share, new market opportunities, inventory management, digital marketing, better customer support, digital payment and employment opportunities.
- Boons of digitalisation varies with respect to the number of employees in the retail outlets. Retail outlets with the number of employees above 100 are more benefitted from digitalisation. Benefit of digitalisation of retail outlets with number of employees above 100 are better operational performance, increase in market share, new market opportunities, inventory management, digital marketing, better customer support, digital payment and employment opportunities.
- The boons of digitalisation are different for different size of outlet. The mean of the retail outlets of the size 20000 & above square feet is 123.74, which is highest among all others. The mean score of 5000-10000 sq. ft is 122.67 and 10000-20000 sq. ft. are 122.20 which is very closer to 5000-10000 sq. ft. It means that retail outlets with size above 5000 sq. ft. are benefitted from digitalisation.
- The boons of digitalisation for the retail outlet with the size above 20000 sq. ft. are better operational performance, increase in market share, new market opportunities, inventory management, digital marketing and digital payment.
- Better Customer Support is one of the major boons of digitalisation for the retail outlet with the size 10000-20000 sq. ft. But in case of retail outlets with the size 5000-10000 sq. ft. major boon is more employment opportunities.
- The retail outlets with separate digital department are more benefitted from digitalisation.

- The relation of digitalisation of different constructs like payment, sales, purchase, marketing, maintenance of books of account, inventory management, customer service and recruitment of employees with that of the boons of digitalisation was analysed using correlation technique and it was found that there exists a positive correlation between boons of adopting digital methods and level of digitalisation.
- Social media marketing and mobile marketing are the commonly used digital marketing tool.
- Social media platform used by the most of the retail outlets for digital marketing are WhatsApp, Facebook and Instagram.
- Digital payment tool used by majority of the retail outlets are UPI and POS.

3. Challenges of digitalisation

- Exploratory factor analysis has been carried out and seven dimensions of challenges faced by the retailers during the digitalisation period were identified. They were Employee awareness, Customer awareness, Infrastructure, Technical Issues, Cost, Skilled laborer and Training to existing staff. The awareness of employees and customers were again grouped as 'Awareness', infrastructure and technical issues was grouped as challenges faced during formulation stage and cost, skilled laborer and training to existing staff was grouped as challenges faced during implementation stage.

- The dimension of challenges faced by the retailers during the digitalisation period named 'Employees Awareness' include six indicators i.e., 'Employees were not aware about digitalisation process', 'Employees were not aware to do digital marketing', 'When a new software was installed for accounting or inventory management, employees were not confident to use it', 'Insufficient technical knowledge was a major challenge of employees during digitalisation', 'In the initial stage only card payment was accepted, we were not aware about e-wallets' and 'Employees find difficult to maintain the records digitally' with the factor loadings 0.691, 0.595, 0.539, 0.507, 0.694 and 0.461 respectively. This indicates that all the six indicators of employee's awareness have significant influence on challenges.

- The dimension of challenges faced by the retailers during the digitalisation period named 'Customers Awareness' include five indicators i.e., 'Customers were not aware about digitalisation process', 'Customers were not confident to do digital payment, they used to do cash payment', 'Customers were ready to do card payment through POS', 'It was difficult to make the customers aware about digital marketing measures taken by retailers' and 'Social media marketing only attracts youth' with the factor loadings 0.477, 0.506, 0.743, 0.412 and 0.401 respectively which means that all the five indicators of customers awareness have significant influence on challenges.
- The dimension of challenges faced by the retailers during the digitalisation period named 'Infrastructure' include four indicators i.e., 'We don't have a website', 'We were not having any mobile application for sale', 'We didn't have an IT wing' and 'We didn't have a proper network connection' with the factor loadings 0.772, 0.783, 0.871 and 0.736 respectively. It implies that all the four indicators of infrastructure have significant influence on challenges.
- The dimension of challenges faced by the retailers during the digitalisation period named 'Technical issue' include four indicators i.e., 'Lot of technical issues were there in the initial stage', 'We didn't have any technology partners', 'During the rush period, sometimes the payment site goes down' and 'Sometime the software/ system gets hang and couldn't enter the transactions digitally' with the factor loadings 0.758, 0.883, 0.528 and 0.628 respectively which means that all the four indicators of technical issue have significant influence on challenges.
- The dimension of challenges faced by the retailers during the digitalisation period named 'cost' include six indicators i.e., 'Organisations are not ready to do the investment as the initial cost of setup is quite high', 'Cost of recruiting technically skilled labourers is high', 'High cost is required for developing website, mobile application, SEO etc.', 'Investing in digitalisation set up is a waste of money', 'A separate wing is needed for digital marketing' and 'High cost is required for training the existing

employees' with factor loadings 0.823, 0.654, 0.576, 0.756, 0.529 and 0.672 respectively. It implies that all the six indicators of cost have significant influence on challenges.

- The dimension of challenges faced by the retailers during the digitalisation period named 'Skilled laborer' include two indicators i.e., 'Lack of digitally skilled work force' and 'High remuneration to existing technically qualified staff' with the factor loadings 0.645 and 0.658 respectively which means that both the indicators of skilled labourer have an influence on challenges.
- The dimension of challenges faced by the retailers during the digitalisation period named 'Training to existing staff' include three indicators i.e., 'When a new software or application is introduced, employees have to be trained', 'An expert trainer has to be selected for training' and 'Remuneration to the trainer is high' with the factor loadings 0.539, 0.775 and 0.661 respectively. It indicates that all the three indicators of training to existing staff have significant influence on challenges.
- The dimensions explored through EFA are confirmed using confirmatory factor analysis. The result of CFA revealed that all the models of the constructs Employee awareness, Customer awareness, Infrastructure, Technical Issues, Cost, Skilled laborer and Training to existing staff are fitted with the adequate values of model fit indices.
- Among the six indicators of the construct 'Employees Awareness', confirmatory factor analysis confirmed the influence of five indicators which have regression coefficient greater than 0.4. They are 'Employees were not aware about digitalisation process' (0.850), 'Employees were not aware to do digital marketing' (0.683), 'When a new software was installed for accounting or inventory management, employees were not confident to use it' (0.814), 'Insufficient technical knowledge was a major challenge of employees during digitalisation' (0.782) and 'Employees find difficult to maintain the records digitally' (0.662). The regression coefficient of the indicator 'In the initial stage only card payment was accepted, we were not aware about e-wallets' is less than 0.4, which implies that this indicator does not have any influence on the construct employees and is deleted from

further analysis. The highest variance explained is for the construct 'Employees were not aware about digitalisation process' (72.3%) which means that this construct has more influence on the variable employees.

- The confirmatory factor analysis confirmed that all the five indicators of the variable 'Customers Awareness' i.e., 'Customers were not aware about digitalisation process' (0.823), 'Customers were not confident to do digital payment, they used to do cash payment' (0.551), 'Customers were ready to do card payment through POS' (0.401), 'It was difficult to make the customers aware about digital marketing measures taken by retailers' (0.944) and 'Social media marketing only attracts youth' (0.710) have regression coefficient greater than 0.4 which indicates that all the all the five indicators have significant influence on customers. The main challenges faced was 'It was difficult to make the customers aware about digital marketing measures taken by retailers' as it has the highest variance explained (89.1%).
- The confirmatory factor analysis confirmed that all the four indicators of the variable 'Infrastructure' i.e., 'We don't have a website' (0.838), 'We were not having any mobile application for sale' (0.777), 'We didn't have an IT wing' (0.992) and 'We didn't have a proper network connection' (0.737) have regression coefficient greater than 0.4. It indicates that all the construct has significant influence on the variable infrastructure. The main challenges related to infrastructure was that retail outlets didn't have an IT wing.
- Among the four indicators of the variable 'Technical issue', confirmatory factor analysis confirmed the influence of three indicators i.e., 'Lot of technical issues were there in the initial stage' (0.547), 'During the rush period, sometimes the payment site goes down' (0.830) and 'Sometime the software/ system gets hang and couldn't enter the transactions digitally' (0.926) as the regression coefficient value was greater than 0.4. The construct 'We didn't have any technology partners' has the regression coefficient less than 0.4, it implies that it does not have any influence on the variable technical issue and was deleted from further analysis. The main challenges related to technical issue was that 'Sometime the software/

system gets hang and couldn't enter the transactions digitally' and 'During the rush period, sometimes the payment site goes down'.

- The confirmatory factor analysis confirmed that all the six indicating variables 'Organisations are not ready to do the investment as the initial cost of setup is quite high' (0.767), 'Cost of recruiting technically skilled labourers is high' (0.863), 'High cost is required for developing website, mobile application, SEO etc.'(0.834), 'Investing in digitalisation set up is a waste of money' (0.652), 'A separate wing is needed for digital marketing' (0.526) and 'High cost is required for training the existing employees' (0.885) have significant influence on 'cost' since the regression coefficient of them are greater than 0.4. The main challenges related to cost was 'High cost is required for training the existing employees.'
- The confirmatory factor analysis confirmed that both the indicating variables 'Lack of digitally skilled work force' (0.761) and 'High remuneration to existing technically qualified staff' (0.614) have significant influence on 'skilled labourer' since the regression coefficient of them are greater than 0.4.
- The confirmatory factor analysis confirmed that all the three indicating variables 'When a new software or application is introduced, employees have to be trained' (0.665), 'An expert trainer has to be selected for training' (0.927) and 'Remuneration to the trainer is high' (0.817) have significant influence on 'Training to existing staff' since the regression coefficient of them are greater than 0.4. The main challenges related to training to existing staff was 'An expert trainer has to be selected for training'.
- The main challenges related to awareness of digitalisation was employees were not aware about digitalisation process and it was difficult to make the customers aware about digital marketing measures taken by retailers.
- The main challenges of digitalisation in the formulation stage are retail outlets didn't have an IT wing and sometime the software/ system gets hang and couldn't enter the transactions digitally
- High cost is required for training the existing employees, an expert trainer has to be selected for training and high remuneration to existing technically

qualified staff are the major challenges faced during implementation stage of digitalisation.

- The overall challenges faced by the retailers during the period was above average.
- Challenges of digitalisation is similar for retail outlets with different age group. The retail outlets with experience more than 30 years faced more challenges.
- Challenges faced by different type of unit is different. The sole proprietor retailers faced more challenges during digitalisation process than others.
- The challenges of digitalisation were different for the retail outlets with different number of employees. Challenges faced by the retail outlets with number of employees more than 25 was significantly different from the units having number of employees less than 25 but there was a similarity between the retail outlets with number of employees less than 25 and between 25-50.
- The challenges of digitalisation were different for retail units with different size of outlets. The retail outlets with size less than 1000 sq. ft. faced more challenges during digitalisation process. The challenges of digitalisation were almost similar for the retail outlets above 5000 sq. ft. and also observes that there was a similarity in challenges between retail outlets with size 1000-5000 sq. ft. and above 20000 sq. ft.
- The challenges faced by retail outlets having digital department was different from the retail outlet don't have separate digital department.
- The relation between level of digitalisation in payment, sales, purchase, marketing, maintenance of books of account, inventory management, customer service and recruitment of employees with that of the challenges of digitalisation was analysed using correlation technique. The result revealed that there exists a negative correlation between level of digitalisation is sales, purchase and recruitment of employees with challenges of digitalisation.

4. Comparison of level of digitalisation among Food & grocery, Apparel & Consumer electronic retail sectors.

- Comparison of Digitalisation in Food & Grocery, Apparel and Electronic Retail Sector was done using one-way ANOVA and the result revealed that digitalisation is same for different type of retail units. The highest mean (26.75) and lowest SD (6.84) is for the consumer electronic retail sector which implies that consumer electronic retail sector more digitalised followed by food and grocery in the second position and apparel.
- Level of digitalisation is high only for maintaining business record and inventory management for all the three types of retail units. In case of food and grocery level of digitalisation is above average for payment, sales, purchase, marketing and customer service and average for recruitment of employees. In case of apparel retail sector and consumer electronic retail sector level of digitalisation is above average for payment, purchase, marketing and customer service and average for sales and recruitment of employees.
- The external factors of digitalisation and different types of retail units viz. Food & grocery, Apparel and Consumer Electronics was analysed using One-way ANOVA. The result revealed that the external Factors lead to digitalisation is different for different type of retail units. Post hoc test revealed that external factor led to digitalisation is same for consumer electronics and apparel retail sector but different between food & grocery and consumer electronics and food & grocery and apparel. It also found that there is significant difference in the influence of suppliers, government and competitors on different type of outlets. But in case of customers and financial institutions, p value is greater than 0.05, which means that the influence of the external factors; customers and financial institutions on the different type of retail units are same.
- The external factor that influenced food and grocery retail sector towards digitalisation was customers, apparel was government and competitors and consumer electronics was suppliers and financial institutions.

- The boons of digitalisation of different types of retail units viz. Food & grocery, Apparel and Consumer Electronics was analysed using One-way ANOVA. The result revealed that the boons of digitalisation is same for different type of retail units.
- The boons of digitalisation in operational performance, increase in market share, new market opportunities, inventory management, better customer support and digital payment are same for the different type of retail units but it is different in case of digital marketing and employment opportunities. The post hoc test revealed that in case of digital marketing and employment opportunities digitalisation is same for apparel and consumer electronics but different from food and grocery.
- The digitalisation in consumer electronic retail outlets leads to better operational performance, increase in market share, better customer support and employment opportunities.
- The digitalisation in apparel retail sectors created new market opportunities and inventory management.
- The digitalisation in food and grocery retail outlet increased digital marketing and digital payment.
- The challenges faced by the retailer of different type of retail unit during the digitalisation is different. While comparing the challenges of different type of retail unit, it was found that food and grocery retail sector faced major challenges than apparel and consumer electronic retail sector. It was also found that the challenges faced by the food and grocery retail sector is entirely different from apparel and consumer electronics but there are some similarities between apparel and consumer electronics.
- The challenges related to awareness of employees and customers on digitalisation is different for different type of retail unit. The main challenges related to the awareness of digitalisation was faced by the food and grocery retail sector. The awareness of employees of apparel and consumer electronics on digitalisation is almost same but it is different with food and grocery. In case of customers, awareness on digitalisation is different for different type of retail units.

- The challenges faced during the formulation stage of digitalisation is different for different type of retail units. The major challenges related to infrastructure and technical issues was faced by the food and grocery retail units than others. The challenges faced in the formulation stage of both food & grocery and consumer electronics related to infrastructure and technical issues are entirely different.
- The challenges of digitalisation in the implementation stage are different for different type of retail units. The major challenges with respect to cost, skilled labourer and training to existing staff was faced by apparel retail sector. The challenges faced by apparel retail sector with respect to cost and training to existing staff is different from food & grocery but similar with consumer electronics. In case of skilled labourer, the challenges faced by apparel retail outlets is different from consumer electronics but similar with food and grocery.

5. Impact of Covid-19 pandemic and lockdown on digitalisation of retail sector.

- The overall impact of Covid-19 pandemic and lockdown on digitalisation was low. Only in case of mode of payment there was an average impact.
- In case of food and grocery retail outlet, the impact of Covid-19 pandemic and lockdown on digitalisation of marketing, customer service and customer relationship management were average but in case of mode of payment there was a good impact.
- In case of apparel and consumer electronics retail outlet, the impact of Covid-19 pandemic and lockdown on digitalisation was low in case of marketing, sales, customer service, inventory management, vendor management and customer relationship management but there was an average impact on the mode of payment.

8.4 Conclusions

The study has identified that customers, suppliers, government, competitors and financial institutions are the external factor that influenced the retail outlets towards digitalisation. Social media have started to influence the buying behaviour of customers and they also have started to search websites to know about the products influenced the retail outlet towards digitalisation. Suppliers have started to share the list of available products online which make it convenient for the retailers to place orders and they also have started to prefer digital payment which influences the retailers towards digitalisation. Financial institutions started to provide an online option for repayment of loan and they also share the financial statements online. This influenced the retail outlets towards digital.

The main boons of digitalisation are; it opens an avenue for customers to make his/her purchase easy, it helps to identify new market opportunities, it helps to expand the businesses, digital marketing is much better than traditional marketing, digital marketing reduces the cost of marketing, going digital has helped to better understand the customer preference, digitalisation enables production of need oriented products/services, it reduced the risk of handling cash and employment opportunities for technically qualified person increased.

The main challenges faced by the retail outlets during the digitalisation period are that when a new software was installed for accounting or inventory management, employees were not confident to use it, it was difficult to make the customers aware about digital marketing measures taken by retailers, most of the retail outlets didn't have an IT wing and website, sometimes the software/ system gets hang and couldn't enter the transactions digitally, cost of recruiting technically skilled labourers and training the existing employees are high because an expert trainer has to be selected for training and his remuneration is high.

While comparing the digitalisation in food and grocery, apparel and consumer electronics it was found that the external factors that lead to digitalisation are different for different type of retail units. The boons of digitalisation are same for different type of retail units. The challenges faced by the retailer of different type of retail unit during

the digitalisation is different. While comparing the challenges of different types of retail unit, it was found that food and grocery retail sector faced major challenges than apparel and consumer electronic retail sector. It was also found that the challenges faced by the food and grocery retail sector are entirely different from apparel and consumer electronic retail sector.

The overall level of digitalisation of organised retail outlet is above average. The level of digitalisation in maintaining business records and inventory management is high but in case of payment, customer service, marketing and purchase it is only above average. The overall impact of Covid-19 pandemic and lockdown on was low. Only in case of mode of payment there was an average impact on digitalisation

CHAPTER 9

RECOMMENDATIONS

RECOMMENDATIONS

9.1 Introduction

This chapter includes recommendations based on the finding of the study, contributions from the study, implications of the study, limitations and scope for further research.

9.2 Recommendations

Based on the findings of the study, suggestions are given to the organised retail sector undergone digitalisation

- One of the main reasons for digitalisation is that the customers have started to search websites to know about the products but many retail outlets don't have websites. It would be better if all the retail outlets have their own websites and update the details of the product there.
- It would be better to have an IT wing in the retail outlet.
- Digitalisation in sales is only average. Retail outlets can promote online sales through their websites. They can even launch mobile apps for sale.
- Digitalisation in purchase is only just above the average. Retailers can use digital mode for placing orders of both finished and semi-finished products which would help to save time and cost.
- The retail outlets with size less than 1000 sq. ft. and registered as sole proprietor are not so digitalized. They can use inventory management software which would help to easily assess the stock level and also use effective digital marketing tools which would help to avail new market opportunities, increase market share etc.
- Commonly used digital marketing tools are social media marketing and mobile marketing. Retailers can also think of other tools like Content Marketing, Search Engine Optimization.

- WhatsApp is the commonly used social media platform for digital marketing. Retailers can also pay more attention towards Instagram, Facebook and Twitter.
- It was identified that digital marketing reduces the cost of marketing but still the retailers feel that TV ads are more effective than social media ads. In order to minimize the cost, it would be better to promote social media ads. Retailers can either outsource social media marketing or appoint a social media marketing expert which would help to make it effective.
- When a new software or new technology was adopted, employees were not confident to use it. Adequate training to the employees will help to make them confident.
- Retailers feel that the customers are not aware of the digital marketing measures taken by them. In order to make them aware of the digital marketing measures, retailers can appoint a staff for short period and they will orient the customers while they visit the outlet about digital marketing platforms used by the them, online services, can also ask them to like the social media pages, download e-commerce apps if any.
- Good PC/ Laptop with reliable internet connections will help to reduce software/system hang.
- Retailers can request the respective banks whose payment sites goes down to use server with better configuration.

9.3 Contributions from the study

The major contributions of the study 'Digitalisation in the select organised retail sector in Kerala' is that it had developed a new scale for external factors lead to digitalisation, boons of digitalisation and challenges of digitalisation. The study will help the retailers to identify the factor that influence them towards digitalisation. The level of digitalisation in payment, purchase, marketing and customer service is only above average and sales is average; retailers can improve the level of digitalisation by increasing the use of digital modes and promoting it.

The study will also help the retailers to identify the major boons of digitalisation i.e., digitalisation will open avenue for customers to make purchase easiness, identify different market opportunities, digital marketing reduces the cost of marketing, reduces the risk of handling cash and increases the employment opportunities of technically qualified staff. It will also help the retailers to overcome the challenges of digitalisation. Food and grocery retail sector faced major challenges during the digitalisation process. Half of the retail outlets don't have an IT wing and a technology partner, huge investment in the initial stage and difficulty to make the customers aware of digital marketing measures were the major challenges of digitalisation.

Another major contribution of this study is the impact of Covid on digitalisation. The Covid-19 pandemic and lockdown had made an above average impact on mode of payment. Among the three different types of retail sector; food and grocery sector had more impact. The level of impact on marketing, sales, customer service, inventory management, vendor management and customer relationship management were low.

9.4 Implications of the study

This research would benefit the organised retail outlets in Kerala. Retailers can identify the area where they have to give more importance and how to overcome the challenges of digitalisation. The major challenges of digitalisation were during formulation stage and it was related to infrastructure and technical issues. The challenges related to infrastructure are retail outlets don't have separate IT wing and websites and challenge related to technical issues was sometime the software/ system gets hang and couldn't enter the transactions digitally. If the retailers adopt an advanced digital technology and recruit technical experts, it will help to minimize these issues. When a new software was installed for accounting or inventory management and if the employees were not confident to use it this can be reduced by giving proper training to the employees. Customers are not aware of the digital marketing measures taken by the retailers. This can be avoided by appointing a digital marketing expert or by outsourcing digital marketing to an expert which will help to enhance the publicity.

The overall level of digitalisation is above average. The level of digitalisation of sales is only average, this can be improved by promoting online sales. Retail outlets can sell their products through websites and even create an app for selling the products.

9.5 Limitations of the study

1. The possibility for generalizing the research findings is comparatively low as non-probability sampling method was used.
2. Samples drawn are not based on proportion but an equal number of samples are drawn from the selected three organised retail sector.
3. Level of digitalisation is not measured using a standard scale. It was measured on a five-point Likert scale defined by the researcher ranging from 5 to fully digitalised to 1 not digitalised. This assumption may not be scientific.
4. The impact of Covid-19 on the digitalisation of retail sector was studied by a pre-post comparison of qualitative data, it may not be systematic.

9.6 Scope for Further Research

1. Comparative study on digitalisation of organised and unorganised retail sector.
2. Attitude of customers towards digitalisation of Retail Sector.
3. Inter State Comparison of Digital Transformation in organised Retail sector.
4. The present study has covered the largest three cities in Kerala; the future study may cover the other regions of India.
5. A comparative view of customers and retailers towards digitalisation.
6. The study is limited to food and grocery, apparel and consumer electronics retail sectors. Digitalisation of other retail sectors can be done.

APPENDIX

QUESTIONNAIRE

Respected Sir/Madam

I, Ninikala K (part time research scholar, DCMS, University of Calicut), doing research on the topic 'Digitalisation in the Select Organised Retail Sector in Kerala. The purpose of this survey is purely academic. I assure you that the details given by you will not be disclosed to any third party.

Thank you for your kind cooperation

Outlet Type

1. Type of retail unit:
   □ Food & Grocery □ Apparel □Consumer Electronics
2. Name of Outlet: _____
3. Place of Outlet: □ Thiruvananthapuram □ Ernakulam □Kozhikode
4. Year of starting the unit: _____
5. Type of outlet: □ Sole Proprietor □ Partnership □ Private Ltd. Co.
6. Numbers of employees in the unit: _____
7. Size of the outlet: ……. sq. ft.
8. Do you have a separate dedicated digital department in your unit?
   □ Yes □ No
   If yes, mention in which all operational level you have digital team?
   □ Accounts / Finance □ Marketing □ Purchase
   □ Customer care □ Internal communication □All of the above

Please express your opinion towards the following aspects by marking (✓) in the appropriate place. (Please mark in any box against each sub question).

Instructions: Read each item carefully, and then rate how much you agree with each item, using Likert type scale. After reading each item put a tick mark against the response which you feel is most appropriate. (5=Strongly Agree, 4=Agree, 3=Neither agree nor disagree, 2= Disagree and 1=Strongly disagree)

1. **External factors that lead to digitalisation**

External Factors	5	4	3	2	1
Customers					
Customers started to prefer digital payment					
Customers started to search websites to know about the products which influenced us to go digital					
Social medias started to influence the buying behaviour of customers					
Customers started to prefer online shopping which led us too digital					
Suppliers					
Suppliers prefer digital mode for order placement					
Suppliers prefer digital payment					
It is easy to get price quotes from different suppliers					
As the list of available products are shared online it is easy to place orders					
It is easy to compare the quotation of different suppliers when it is digitally shared					
It is easy to identify the suppliers who supply quality products at reasonable price					
Government					
Provide funding and subsidies for digital transformation					
Promote digital technologies and tools					
Provide digital services					

Encouraged digital payments					
Financial Institutions					
All documents can be shared online.					
Since the transactions are digitalised processing time is less.					
Repayment of loan can be done digitally					
Financial statements are shared digitally					
Easiness of vendor payment settlement					
Competitors					
Competitors started to market their product digitally					
Competitors Launched their own website					
Competitors developed an app for sale of products					
Competitors started to accept digital payments					
Competitors are maintaining the digital records					
Competitors are using social medias like Instagram, WhatsApp, Facebook etc to reach the customers					

2. Boons of Digitalisation

Economic Boons	5	4	3	2	1
Operational performance					
Digitalisation improves the operational performance of the retail outlets					
Operational performance of the traditional period was much better					
Increase in market share					
Digitalisation enables the business to access new (geographical) markets					
Digitalisation increases customer awareness of our product/services (broader customer access)					
Digitalisation permits differentiating our products/services from those of our competitors.					

Digitalisation provides customers with better information about our product/services.					
Digitalisation opens an avenue for customers to make his/her purchase easiness.					
Technological Boons					
New market opportunities					
Digitalisation helps to identify new market opportunities					
Digitalisation helps to expand the business					
Inventory management					
Recording of stock is fully digitalised					
As the inventory management is fully digitalised it is easy to assess the stock level.					
Improves purchase efficiency					
Digital Marketing					
Digital marketing is much better than traditional marketing					
Digital marketing reduces the cost of marketing					
Digital marketing allows you to target your needed audience.					
Most commonly used digital marketing platforms are social media					
TV ads are much better than social media ad					
We share the offers and discounts to the customers through WhatsApp/ Facebook/Instagram.					
Social Boons					
Better customer support					
Digitalisation enables us to offer wide variety of products/services to the customers.					
Digitalisation enables us to offer goods at reduced price to the customers.					

Digitalisation helps to provide better customer service					
Going digital has helped to better understand the customer preference.					
Digitalisation enables production of need oriented products/services.					
Digital payment					
We are accepting payment through POS machines.					
We prefer to make payment in cash					
We are accepting payment through e-wallet/UPI.					
Digitalisation reduced the risk of handling cash					
Digital mode of payment is preferred by the customer.					
Employment opportunities					
Digitalisation led to increase in employment opportunities					
Employment opportunities increased only for technically qualified person.					
More employment opportunity raised in social media marketing					
Improved recruitment process					

3. Challenges faced during digitalisation period

Challenges	5	4	3	2	1
General Awareness					
Employees					
Employees were not aware about digitalisation process.					
Employees were not aware to do digital marketing					

When a new software was installed for accounting or inventory management, employees were not confident to use it					
Insufficient technical knowledge was a major challenge of employees during digitalisation					
In the initial stage only card payment was accepted, we were not aware about e-wallets					
Employees find difficult to maintain the records digitally					
Customers					
Customers were not aware about digitalisation process.					
Customers were not confident to do digital payment, they used to do cash payment.					
Customers were ready to do card payment through POS					
It was difficult to make the customers aware about digital marketing measures taken by retailers					
Social media marketing only attracts youth.					
Formulation					
Infrastructure					
We don't have a website					
We were not having any mobile application for sale					
We didn't have an IT wing					
We didn't have a proper network connection					
Technical Issues					
Lot of technical issues were there in the initial stage					
We didn't have any technology partners					
During the rush period, sometimes the payment site goes down					

Sometime the software/ system gets hang and couldn't enter the transactions digitally					
Implementation					
Cost					
Organisations are not ready to do the investment as the initial cost of setup is quite high					
Cost of recruiting technically skilled labourers is high					
High cost is required for developing website, mobile application, SEO etc.					
Investing in digitalisation set up is a waste of money.					
A separate wing is needed for digital marketing					
High cost is required for training the existing employees					
Skilled Labourers					
Lack of digitally skilled work force					
High remuneration to existing technically qualified staff					
High remuneration to newly recruited technically qualified staff					
Training to existing staff					
When a new software or application is introduced, employees have to be trained					
An expert trainer has to be selected for training					
Remuneration to the trainer is high					

4. **Level of digitalisation**

   Read each item carefully, and then rate the level of digitalisation of each aspect in your retail outlet.

   (5= Fully Digitalised, 1=Not digitalised and 2,3 and 4= Partly digitalised)

2=Slightly using digital technology, 3= moderately using digital technology and data and 4= highly using digital technology and data.

Rate the digitalisation of your outlet	**5**	**4**	**3**	**2**	**1**
Payments					
Sales					
Purchase					
Marketing					
Maintaining business records					
Inventory management					
Customer Service					
Recruitment of employees					

5. Impact of Covid-19 pandemic and lockdown on digitalisation of retail sector.

Read each item carefully, and then rate the level of digitalisation of each aspect in your retail outlet for a period before Covid 19 Lockdown and present level of digitalisation.

(5= Fully Digitalised, 1=Not digitalised and 2,3 and 4= Partly digitalised)

2=Slightly using digital technology, 3= moderately using digital technology and data and 4= highly using digital technology and data.

Before Covid 19 Lockdown					**Level of Digitalisation**	**After Covid 19 Lockdown**				
1	2	3	4	5		1	2	3	4	5
					Marketing					
					Sales					
					Mode of Payment					
					Customer service					
					Inventory Management					

					Vendor management					
					Customer Relationship Management					

6. Which are the commonly used digital marketing tools?

□ Social media marketing

□ Content marketing

□ Email marketing

□ Pay per click

□ Affiliate marketing

□ Mobile marketing

□ Influencer marketing

□ Search engine optimisation

□ Others

If others, Specify _____

7. Which all social media platforms are used for digital marketing?

□ Instagram

□ Facebook

□ LinkedIn

□ Twitter

□ WhatsApp

□ YouTube

□ Pinterest

8. **Which are the commonly used digital payment tools?**

 Google Pay

 Phone Pay

 Paytm

Banking cards

Account transfer

 POS

 UPI

 Others

If others, Specify _____

Suggestions if any……

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