IMPACT OF DIGITAL TRANSFORMATION ON INDIA'S INFORMATION TECHNOLOGY EMPLOYEES IN RETAIL INDUSTRY - FROM LEARNING PERSPECTIVE

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Dedication

To my little angels – my sweetest daughter, Anushka and my loving son, Ayush.

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ABSTRACT

IMPACT OF DIGITAL TRANSFORMATION ON INDIA'S INFORMATION TECHNOLOGY EMPLOYEES IN RETAIL INDUSTRY
- FROM LEARNING PERSPECTIVE

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Digital Transformation is driving significant changes in the industries, including the retail industry. As organizations adopt new emerging technologies to meet customers' expectations and improve performance, Information Technology (IT) employees play a crucial role in supporting these efforts. However, while IT organizations create a learning environment to reskill employees with emerging technologies, some employees quickly learn and adapt to the emerging technologies, others face challenges in keeping up with the pace of change. This research focuses on the impact of digital transformation on IT employees in the retail industry in India. The study aims to understand the challenges employees face in learning new technologies and their experience of performance improvement resulting from adopting these technologies. The research highlights common

challenges related to time management, interruptions and the complexity of technologies. The findings of this study can provide valuable insights to IT leaders, enabling them to better understand the impact of digital transformation on IT employees and develop frameworks to address challenges and enhance the learning process. By fostering a smoother learning experience and improving employee productivity, organizations can accelerate their digital transformation efforts and overall growth.

Keywords: Digital Transformation, Retail Industry, Information Technology (IT), Time Management, Workplace Learning, Job Performance.

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CHAPTER I:
INTRODUCTION

1.1 Introduction

Digitalization and Digital Transformation are two important topics in recent days across the industries. Digitalization is a term that defines the phenomena of businesses and societies adopting digital technologies. Emerging technologies like Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT) or blockchain, as well as more established technologies like social media, mobile computing, advanced analytics, and cloud computing, are all examples of digital technologies (Urbach and Röglinger, 2019a).

Digital Transformation is about adopting the disruptive technology to increase productivity, value creation and common wellbeing (Ebert and Duarte, 2018). The term "digital transformation" refers to the incorporation of digital technology into all levels and segments of a company. It has a profound effect on the way a company runs. Using it, companies may upgrade outdated procedures, improve productivity, enhance security, and boost profits and revenue. Many old services are being digitally replicated as companies move their data to the cloud. But genuine digital transformation is much more than that: Transforming a company via digital means may profoundly impact all aspects of the business. It creates a technological foundation for turning services and data into actionable insights.

Digitalization and Digital Transformation are profoundly changing customer experience and customer behavior. In the digital world, customers are networked via social

media or other digital media and can share their experiences with others and can switch to a competitor in fraction of seconds. Hence to remain competitive, providing the best customer experience has become the key. This is due to the fact that a bad customer experience will quickly and directly harm a company's sales and brand impression. Therefore, companies must shift their focus to the broad, personalized optimization of the customer experience across all traditional and digital contact points. Industries are now using information technologies (IT) to develop new business models, products and services (Châlons and Dufft, 2017a).

Retail industry is one of these, which is the last channel in supply chain, is exposed directly to the final consumers and it is greatly exposed to changes in customer behavior. Because of the intensive usage of digital technologies, retailers observe a rapid change in customers behavior. Today's customers demand personalized experiences and offers that are catered to their specific preferences. Organizations must be ready to respond to customer expectations or shifting demand immediately or preferably in advance. At the same time, in every business, pricing pressure has also tended to rise rather than fall. Personalized products at a low cost are possible only with large amount of automation. The continuous changes are evident across the entire purchasing process, beginning with new methods of gathering information on products and services that are no longer solely driven by retail businesses but also by consumer information sharing on social media. In addition, innovative in-store shopping strategies powered by digital technology are developing. Modern retail management also puts a focus on the use of electronic and mobile commerce as alternatives to or additions to conventional storefronts. So, as digital

technology advances, the mode of retail shopping is getting changed along with customer behavior and expectations. Retail industry must be ready to respond in advance with emerging digital technologies.

1.2 Research Problem

In order to adapt rapidly changing customer behavior and expectations, retail industry is going through digital transformation. A lot of emerging technologies are getting used to meet customer demand, attract customers, for better customer experience – be it in-store or online, for smoother retail supply chain management etc. Information Technology (IT) is the backbone of these technologies and IT is playing a key role in this transformation - from both a technical and an organizational perspective, because digitally successful companies are unimaginable without positioning IT centrally. But the IT organization itself needs to undergo significant change in order to fulfil its strategic role in digital transformation and position itself as a leader and service provider for other departments. As a result, the IT organization needs to radically restructure and play a key role in the digital transformation. Agility and innovativeness are essential, and learning of newer technologies is the key for the same. While retailers should be few steps ahead to fulfill customer's changing demand and to retain and attract customers, IT team must be few more steps ahead with technologies and innovations, to support retailers. IT employees are learning these new and newer technologies and supporting retail industry to grow faster. Continuous learning of new technologies and changes is one of the keys to success for individuals and IT organizations. If there are hindrances and challenges which impact the

overall learning in the organization, impact the performance and growth of the organization. IT organizations should build the culture and environment inside organization to 'build the talent' with existing employees for the new and emerging technologies. 'Buy the talent' from the market for the newer technology is not a good option for the IT organization as it is always costlier, limited availability and most importantly change is the constant process and if an IT organization is dependent on external talent for the changes, it will be difficult to survive. The organization will not be able to take the advantage from change, rather be victimized for the change. So, IT organizations are creating the learning environment for the employees in the organization.

In the process of learning the evolving technologies and implementing these technologies, one of the problems IT industries face that while few employees are learning these technologies faster and boosting their performance, another few employees find it challenging to learn and cope up with the new technologies. It impacts team's performance and productivity, and it becomes a bottleneck for the IT department or organization to improve the overall performance and productivity. So, the problem of this research is while IT organizations are creating learning environment in the organization and reskilling the employees with emerging technologies to make the organization future ready, it is also seen that the momentum of learning and adapting them is not same across employees which impacts the overall performance and 'build the talent' strategy of the organization. As a team, if the reskilling progress is slower, it impacts organization's overall progress and performance, and also impacts organization's readiness for future.

1.3 Purpose of Research

The research aims to find the impact of the digital transformation on IT employees in the retail sector. With this in focus, the research highlights the employees' reactions on learning and adapting the new technologies, if they face any challenge in learning and adapting them. The research also highlights employees' reactions toward improvement in their performance due to learning and implementing new technologies due to digitalization and digital transformation.

Findings from this research can help IT leaders to understand the impact of Digital Transformation on IT employees in a better way, with the evolution of emerging technologies, the challenges faced by a set of employees to learn these technologies and to create a framework to eliminate or reduce the challenges and increase the favorable effects. This will help to accelerate the overall learning of the IT department or organization. As learning is one of the keys to success for the IT employees and IT organization, this research result will help to increase the productivity of the IT organization and help to accelerate building the talent within the organization.

This research is focused on the set of IT employees who are supporting retail industry and their digital transformation journey and the geo location is chosen as India. India is one of the large offshore IT hubs in globe and around 5 million IT professionals working from India and supporting IT services of different industries including Retail industry. This research can directly help the IT leaders of this particular industry and geo

to improve their productivity and growth. This can also help the IT leaders of other industries or geo by customizing based on their industry or geo.

The research has the following sub-objectives:

1. To identify the common challenges employees face to learn new technologies
2. To classify any common trend who face the challenges to learn these technologies
3. To provide a comprehensive study how employees feel about their performance improvement due to learning new technologies

1.4 Significance of the Study

As change is continuous and it's a continuous process of evolving new and newer IT technologies in business. IT Organizations should build a culture and environment of continuous learning in organization and thus can take the opportunities from Change, rather suffer from the Change. The long-term goal of the research is to help the IT leaders to build a robust framework to make the learning process smoother and faster for all employees, improve the productivity of employees at individual level and hence overall department and organizational level. This research is significant in this changing IT world – continuous learning is the key to adapt change and smoother learning process helps to adapt change quickly, the outcome of this research can help IT leaders to make this learning process smoother.

Based on a global survey of more than 4,300 managers, executives, and analysts and 17 interviews with executives and thought leaders, in 2018, MIT Sloan Management

Review and Deloitte found that digitally successful companies are differentiated by one common thing, they identified the criticality of individual learning and they focused on the continuous learning for individuals (Gerald C. et al, 2018). According to the report, 44% of respondents said they needed to continuously upgrade their abilities to do their jobs effectively, while more than 90% of respondents said they needed to refresh their skills at least once a year to function effectively in a digital age.

The other existing literatures highlighted the need of learning new digital technologies for the employees, but have not provided sufficient insight on the experiences of the employees while upskilling to the emerging digital technologies. Learning is closely linked with employees performance and development. In the information age, businesses must transform into learning and teaching organizations that each contribute to the organization's overall success (Carleton Edmonton, 2011). This research aims to focus on how are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge adopting these technologies and their performance improvement due to adopting these technologies.

In the other research conducted by Henriette et al. (2016), interviews determined that digital transformation is a strategic concern for organizations as digital transformation has disrupted the organizational culture significantly. The research stated that employees' daily routines are increasingly dominated by digital devices in the workplace and at home. The X, Y, and Z generations, who have access to the same digital tools for work and home, are far more technologically advanced than the older generations, who are finding it more difficult to adapt these tools. As a result, businesses must establish a comprehensive

strategy for implementing digital transformation into their daily operations without jeopardizing staff productivity.

So far, the literatures have highlighted the increasing need for employees to be equipped with emerging digital skills and the lack thereof. According to research conducted by Kozanoglu and Abedin (2021), employers characterize their employees' digital literacy as the skills, knowledge, and abilities they utilize to engage with digital technology. According to the research by Farias-Gaytan et al. (2021), new technologies have emerged, so it is necessary to acquire skillsets for success in the workplace. The internet's growth necessitated accessing, seeking, and critically evaluating information by improving employee digital literacy. Similarly, Kozanoglu and Abedin (2021) stated that digital transformation and innovation might be a barrier for many firms because of the difficulty in redesigning the employee experience and improving their digital literacy.

Ebert and Duarte (2018) mentioned Digital Transformation is challenging because it demands a new set of competences, combining embedded-systems development with IT and cybersecurity. Software thus is the cornerstone of Digital Transformation. Hence, IT industry and IT professionals play an important role toward Digital Transformation.

So far, the researchers mentioned about the necessity of learning the emerging technologies for the IT employees continually to adapt the change and lead this digital transformation, but the literatures have not provided sufficient insight into the experiences and challenges of digital transformation at the employees' level. In the literature review, it is found that a specific section of employees has found it challenging to cope with the sudden influx of digital technologies in their workplaces. Further research to be done to

get the employee experience on learning and adopting emerging technologies, which can help Organizations to create a framework to adopt the changes in positive way. The significance of this research is that this research tries to figure out how these emerging technologies are impacting these set of employees in terms of challenges adopting these technologies and their performance improvement. The findings from this research will help IT leaders and future researchers to understand the impact of adopting new technologies on employees in a better way and to create a framework to eliminate the risks and increase the favorable effects – smoother learning process, better learning experience, better employee productivity and performance, and hence better overall organization productivity and performance.

1.5 Research Purpose and Questions

Technologies are changing rapidly across the industries due to digitalization and digital transformation. Retail industry is one of these, which is the last chain in supply channels exposed directly to the final consumers and it is heavily exposed to changes in consumer behavior. Retailers now witness a swift shift in consumer behaviour as a result of widespread use of digital technologies. Most of these emerging technologies are IT driven. While retailers should be few steps ahead to fulfill customer's changing demand and to retain and attract customers, IT team must be few more steps ahead with technologies and innovations, to support retailers. IT employees are learning these new and newer technologies and supporting retail industry to grow faster. Continuous learning of new technologies and changes is one of the keys to success for individuals and IT

organizations. In the process of learning and implementing new technologies, it is found that while a set of employees are learning these technologies faster and boosting their performance, while another set of employees find it challenging to cope up with the new technologies. It may be a bottleneck for the IT organization to improve the overall performance and productivity. A lot of research has been conducted so far and the researchers mentioned about the necessity of learning the emerging technologies for the IT employees continually to adapt the change and lead this digital transformation, but the literatures have not provided sufficient insight into the experiences and challenges of digital transformation at the employees' level – there is a gap in knowledge in this area, especially the IT employees working for Retail industry in India. Holistic research on the IT employee experience on adopting new technologies and their performance improvement will help IT leaders to understand the impact of adopting new technologies on employees in a better way and to create a framework to eliminate the risks and increase the favorable effects.

This research tries to find out the answer of the following research questions:

RQ1: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning and adopting these technologies?

RQ2: How are these technologies impacting their performance while learning and adopting these technologies?

1.6 Research Plan

The research aims to find the answers of the above research questions and hence finds the impact of the digital transformation on IT employees in the retail sector in India. The following plan and step by step processes are followed to conduct this research.

The type or the nature of this study is Descriptive study in nature – as this research will try to find out the answer how emerging technologies are impacting Indian IT employees, in terms of any challenge learning and adopting these technologies and their performance improvement due to adopting these technologies. Regarding methodology, this study uses a cross-sectional approach.

The research prefers to employ a qualitative method to comprehend the specific phenomena. Qualitative research emphases on gaining insight and understanding about how an individual's experience and perception of events and situations. As this research aims to study individual employee's experience, qualitative method has been preferred over quantitative method.

This research is a phenomenological in nature and studies human experiences while learning new technologies at work. Phenomenological studies investigate human experiences based on the participants' descriptions. In order to avoid biassing their observations, qualitative researchers who use bracketing set aside their personal feelings and views about the phenomenon they are studying (Hennink, Hutter and Bailey, 2020) (Khan, 2014).

Purposive/Judgment Sampling under non-probability sampling is chosen for this study. In purposive sampling or judgement sampling technique, researchers may use judgement to choose participants who can provide dependable and beneficial data to address research questions or achieve research goals (Bernard, 2017).

A general rule from qualitative research regarding sample size is that data gathering and analysis should go on until no new concepts appear (Coyne, 1997; Bryman, 2013). Thirty-Five (35) research participants who met all the requirements of the purposive sampling are selected to obtain the reliable data about the impact of the digital transformation on Indian IT employees working for retail industry. With this count the data saturation should be reached for this study.

Semi-structured interview is considered as the tool to collect data for this study. The reason why the semi-structured interview is considered as data collection method as this research tries to study the employee experience and their feelings, and semi-structured interviews are an effective technique for the data collection when researcher wants:

(1) to collect qualitative, open-ended data;

(2) to explore participant's opinions, feelings and beliefs about a particular topic;

(3) to investigate deeply into personal and sometimes sensitive issues (Kallio *et al.*, 2016). Hence it is deemed that using semi-structured interview to gather the necessary data is appropriate for this study.

The interview techniques used for the semi-structured interview for this study are - Face-to-face interview, Video interview, Telephone interview, Online chant and email

interview based on the identified participants' geographical location, availability and convenience/preference.

The study used computer-assisted qualitative data analysis techniques due to the large number of interviews and the challenging nature of data management and analysis in qualitative study, as recommended by Saldaña (2013). The study used NVivo software to manage and organize the data.

CHAPTER II:
REVIEW OF LITERATURE

2.1 Introduction

This is the era of digitalization and digital transformation. Technologies are getting changed rapidly and this change is constant in current days and in future as well. Due to this rapidly changing digital technologies, customers' especially the end users' behaviour and expectations are also getting changed. Industries should react to this change for survival and the industries which are end user facing, like Retail Industry, should not only react to the change but should be few steps ahead to retain and attract their customers. Most of these technologies are Information Technology (IT) driven and IT industry/department is supporting other industries to achieve this. IT employees supporting the retail industry should be further few steps ahead of retail industry in terms of technology to be capable enough to suggest and introduce innovative ideas to attract the end customers. A lot of learning is required for the IT employees and here comes the research questions which has been described in previous chapter.

The literature review will discuss about Digitalization, Digital Transformation, leading emerging technologies driving Digital Transformation, it's impact on various aspects like on Organization, Industry, Society and especially on employees and workplaces which is the research area. The focus of next few sections will be on literature review of the relevant theories, models, concepts as well as the answers of the above

research questions and the gap in the existing literatures, and thus eventually contribute to the aim of this study.

2.2 Digitalization and Digital Transformation

Digitalization is a term that defines the phenomena of businesses and societies adopting digital technologies (Urbach and Röglinger, 2019a). According to Parviainen et al., (2017), digitalization is a more fundamental change than just digitizing the existing processes or the work products. The process of converting analogue data (such pictures, videos, or text) into digital data is referred to as digitizing. The process of transforming current goods or services into digital form is known as digitalization, and it has benefits over physical goods (Reis *et al.*, 2020). According to Brennen and Kreiss, (2016), the term "digitalization" describes how a company, industry, or organization adopts or increases its usage of digital or computer technology. Digitalization is one of the most significant technological trends, that is transforming both, society and business (Leviäkangas, 2016). Companies are under constant pressure nowadays to adopt digital technologies and change their business strategies to reflect this new reality (Kohli and Melville, 2019).

Digital transformation is a process of improving an entity by starting significant changes to its properties through combinations of information, computation, communication, and connectivity technologies. It is an ongoing process of using new digital technologies in organizational life (Cetindamar, Abedin and Shirahada, 2021). According to (Saarikko, Westergren and Blomquist, 2020), Digital transformation is the sociocultural method of adapting organizations to the new organizational forms and skill

sets required to survive and thrive in a digital landscape. Digital transformation and subsequent business model innovation have basically changed customers' expectations and actions, putting massive pressure on traditional organizations, and disrupting several markets (Verhoef *et al.*, 2021). The use of emerging technologies such as cloud computing, artificial intelligence (AI), machine learning (ML), the internet of things (IoT), blockchain, and augmented reality (AR) and virtual reality (VR) is essential for digital transformation (Urbach and Röglinger, 2019a). When Organizations implement these technologies, modifications are made to their operations, infrastructure, and personnel that enhance Organizational performance (Westerman et al., 2014).

Cloud Computing is the technology that underpins all digital business models and accelerates Digital Transformation. Rimal et al. (2011) defined Cloud Computing as "*Cloud Computing is a model of service delivery and access where dynamically scalable and virtualized resources are provided as a service over the Internet*". In Chapter "The Rise of Cloud Computing in the Era of Emerging Networked Society" of Computer Communications and Networks book series (CCN), Rimal and Lumb (2017) described about evaluation of Cloud Computing with digitalization, cloud computing provided a paradigm shift of business and IT, where computing power, data storage, and services are outsourced to third parties and made available as commodities to enterprises and customers. Cloud computing serves as a center point for the most revolutionary technologies – like Internet of Things (IoT). The IoT is the network of numerous smart devices/objects connect to each other along with sensors and establish seamless data

exchange between them in order to achieve smart recognitions, tracing, positioning, monitoring and administration (Patel et al., 2016; Minh Dang et al., 2019).

Machine learning (ML) and artificial intelligence (AI) are two developing technologies for digitalization and digital transformation. The study and creation of algorithms that carry out activities or exhibit behaviours that need intellect from a human being is known as artificial intelligence (AI). A technique for creating intelligent systems called machine learning (ML) enables the system to modify its behaviour in response to data (Riedl, 2019). It is the success of machine learning algorithms that have led to recent growth in commercialization of AI in digital transformation.

Virtual reality (VR) and augmented reality (AR), two quickly developing technologies, are applied in retail to enhance the environment for selling and the shopping experience (Bonetti, Warnaby and Quinn, 2018) . A system that blends the real world with computer-generated virtual things and appears to coexist in the same place as the real world is known as augmented reality. The augmented reality technology connects real and virtual objects. In the virtual reality (VR) system, the user is immersed in computer-generated virtual environments (Rimal and Lumb, 2017).

Blockchain is another disruptive digital technology of current age. A chain of blocks known as the blockchain can be thought of as a public ledger where all committed transactions are recorded. As new blocks are added to the chain, it continues to expand. Blockchain technology's primary features are decentralization, persistency, anonymity, and auditability. Blockchain technology allows for the decentralised execution of transactions. As a result, blockchain has the potential to significantly reduce costs while also increasing

efficiency. Bitcoin (Cryptocurrency) is the most famous blockchain application (Wang *et al.*, 2018).

New digital technologies including artificial intelligence (AI), the internet of things (IoT), blockchain, and augmented reality and virtual reality (AR/VR) are predicted to have a significant impact on the corporate world. The widespread adoption of new digital technology plainly indicates that businesses must transform their operations to the digital space (Wedel, Kannan and Tyser, 2016; Ng and Wakenshaw, 2017). This digital transformation is required for the organizations to be competitive in the market, better operation and cost optimization, to attract customer and fulfil changing customer demand (Verhoef *et al.*, 2021).

2.3 Digital Transformation in Retail Industry

In a world where digital transformation is driving the future, retail and shopping behaviour are rapidly changing. Verhoef et al., (2021) mentioned few major factors for Digital Transformation happening in retail industry. First, a growing number of supporting technologies have emerged since the advent of World Wide Web (WWW) and it's widespread adoption, which has boosted the growth of retail e-commerce. The predominance of Big Data and the emergence of new digital technologies like artificial intelligence (AI), the internet of things (IoT), blockchain, and robotics are expected to have profound impacts on the business world. The widespread adoption of new digital technology plainly indicates that businesses must transform their operations to the digital space (Wedel, Kannan and Tyser, 2016; Ng and Wakenshaw, 2017). Second, these

emerging digital technologies may also have an impact on the firm's cost structure by automating service delivery and displacing expensive human labor with robots or virtual agents, or by streamlining logistics and lowering supply chain costs with the help of AI and blockchain (Verhoef *et al.*, 2021). Third, competition is increasing drastically as a result of these new digital technologies. Technologies have changed the competitive landscape in retail, pushing sales to relatively new digital companies. The competition is now more global and the strength has also amplified. Fourth, as a result of the digital revolution, customer behaviour is also getting changed rapidly. Now more and more customers are becoming comfortable with online purchases and moving to the online retailers, according to market research, and digital touchpoints are crucial in the customer journey, which impacts both online and offline sales (Kannan and Li, 2017). Customers are now more connected, knowledgeable and active with new search and social media network (Lamberton and Stephen, 2016). Digital technologies allow consumers to customize and personalize the products, track the distribution activities and help other customers by sharing the product reviews (Beckers, Doorn and Verhoef, 2017). Mobile devices are playing important role in today's consumer behavior — making product search, comparing the products, transactions, social media sharing, providing reviews etc (Verhoef *et al.*, 2017). Consumers also heavily rely on apps and emerging artificial intelligence (AI)-based products like Google Home and Amazon's Echo. These emerging digital technologies are changing consumer behavior and subsequently, the use of these new digital technologies can easily become the new norm in consumers day to day life and challenge traditional business rules (Hoffman *et al.*, 2016; Verhoef *et al.*, 2017). If retail

companies cannot adapt to these technological changes, they will drop customers attractions, and likely to be replaced by companies that adapt these technologies (Verhoef *et al.*, 2021).

Companies like Amazon, Walmart, Nike, and Zara are acquiring tech startups that specialize in VR, AI, AR, blockchain, and other emerging technologies (Bulovic and Covic, 2019). Through the emerging digital technologies – customer used systems or applications are interconnected now and also getting customer data is easier. Big online retail players are gathering customers' shopping preferences, previous shopping history, searched products etc. to attract and offer customers or potential customers through multiple channels. These are all driven by digital technologies because of digital transformation (Böttcher *et al.*, 2021). At offline/Store also, retailers are introducing emerging technologies for enhanced customer experience, like Omnichannel – a seamless customer journey in online and offline, Augmented Reality (AR) to customize the product and give customer a digital experience in store (Lemon and Verhoef, 2016).

Of course, digitalization in the retail industry is nothing new; in fact, it has played a significant role in the industry's development since at least the 1970s through the use of electronic payment systems, barcodes, point-of-sale data, and other technologies (Watson, 2011). Many of these technologies and changes were indistinguishable to the consumer and consumers were not directly involved in this, but in today's changes due to digitalization and digital transformation consumers are directly involved in various ways. On the consumer side, digitalization is not a brand-new phenomenon either. The shift has been happening for decades as a result of the widespread use of personal computers in

households, as well as the growth of other types of digital gadgets, Internet technologies, etc. Thus, although consumers and retailers historically experienced digitization largely independently of one another, it now primarily involves retailer-consumer interface (Hagberg, Sundstrom and Egels-Zandén, 2016).

2.4 Role of Information Technology in Digital Transformation

Information technology (IT) organizations play a critical role in driving digital transformation in industry and helping organizations stay competitive in a rapidly evolving digital landscape (Nissen, Lezina and Saltan, 2018). In the era of digital transformation, novel technologies such as social media, mobile computing, data analytics, cloud computing, and the internet of things (SMACIT), as well as more recently artificial intelligence, blockchain, and virtual reality, have a significant impact on work processes, products, services, and business models. Information technology (IT) is the driving force behind all of these technologies. They enable new working, collaboration, and automation paradigms and connect people, organizations, machines, and other "things" in unprecedented ways (Urbach and Röglinger, 2019b). The combined revolutionary power of these technologies has an even bigger positive influence on organization (Urbach *et al.*, 2019). This evolution frequently presents a significant challenge for businesses, and in order to succeed in this shifting competitive environment, businesses must fully utilize digital technologies in their business strategies, transform their daily activities, organizational structures, and business models, as well as manage and govern the IT infrastructures that are essential to their value proposition. Hence, Information technology

(IT) has become more important in any organization as a result of digitalization. Not only does business activity grow more efficient, but it also becomes impossible to imagine without IT (Legner *et al.*, 2017). Given that information technology is currently used to create innovations for businesses and this trend will continue to grow in the future, IT organizations should work closely with business leaders to understand their goals and help them leverage technology to achieve and implement their objectives and innovations (Urbach *et al.*, 2019).

Urbach and Röglinger (2019a) also argued, in addition to guaranteeing normal IT operations, IT services are increasingly expected to proactively uncover technological innovations and quickly translate them into marketable solutions, directly supporting the company's core value and hence in digital transformation. With the combination of technological expertise and a deep understanding of the business side of its company, the IT department is now critical in creating new and improved products and services, business models or business processes, and thus IT has promoted from a mere support function to a driver for business innovation, which is required for successful business digitalization and digital transformation (Nissen, Lezina and Saltan, 2018). Companies are now using information technologies to develop fundamentally new business models, products and services and IT has to play a key role here from both a technical and an organizational perspective, because digitally successful companies are unthinkable without centrally positioned IT (Châlons and Dufft, 2017b). According to Drews (2017), Information Technology (IT) functions are expected to collaborate proactive and early on with business departments in order to be able to build and implement such innovations collaboratively

since IT is leveraged to achieve innovations for businesses. Therefore, for digital transformation to take place, revising Information Technology (IT) role and its relationship with business needs is essential (Albino *et al.*, 2019).

In order to fulfill its strategic role in the digital transformation and position itself as a pioneer and service provider for other departments, the IT organization itself has to change fundamentally. In an agile IT organization, the employees need coaches, not strict hierarchies and micro-management (Châlons and Dufft, 2017b). Software engineers must effectively plan their work, take initiative, be outstanding communicators, and be able to complete jobs that demand emotion, intuition, creativity, judgement, trust, empathy, and ethics. These tasks are all required by the digital transformation. The most important thing is to always learn about new technology (Ebert, 2015).

Ebert and Duarte (2018) mentioned Because it calls for a new set of competencies that combines embedded systems development with IT and cybersecurity, digital transformation is difficult. Software thus is the cornerstone of Digital Transformation. Hence, IT industry and IT professionals play an important role toward Digital Transformation.

2.5 Impact of Digital Transformation

According to study, the digital transformation could have significant effects on businesses, industries, and society as a whole(Agarwal *et al.*, 2010; Majchrzak, Markus and Wareham, 2016).

2.5.1 Impact on Organization

a. Operational Efficiency:

Vial (2019) highlighted in his study, the operational efficiency as a benefit of Digital Transformation. This includes the automation, business processes improvement as well as costs savings (Pagani, 2013; Andriole, 2017; Gust *et al.*, 2017). Cloud computing, for example, provides on-demand, elastic resources that do not require IT employees to deploy, manage, or maintain (Avram, 2014). Big data and analytics are expected to speed up the decision-making process (Bharadwaj *et al.*, 2013), allowing for faster response times, while smart products and services can enable automated, algorithmic decision-making by incorporating artificial intelligence that uses big data (Newell and Marabelli, 2014; Loebbecke and Picot, 2015).

b. Organizational Performance:

Improvement of organizational performance in numerous aspects, such as innovativeness (Svahn, Mathiassen and Lindgren, 2017), financial performance (Karimi and Walter, 2015), organizational growth (Karimi and Walter, 2015), reputation (Yang *et al.*, 2012), and competitive advantage (Yang *et al.*, 2012), are also linked to digital transformation.

For example, under the freemium model, a company can leverage online communities to improve customers' sense of belonging and encourage them to upgrade to premium accounts (Oestreicher-Singer *et al.*, 2013). In the context of entrepreneurial organizations with nonlinear growth rates, Tumbas et al., (2015) observed that successful

organizations built up a digital façade to enable communication with customers and business partners, then used this façade to cultivate relationships with other customers and suppliers. It is highly observed in retail industry as well.

2.5.2 Impact on Industry and Society

Several articles also discuss on the impacts of Digital Transformation at higher levels, such as at the industry and the society levels (Morze and Strutynska, 2021). The fourth industrial revolution (Industry 4.0) is the result of a combination of numerous physical and digital technologies such as cloud computing, artificial intelligence (AI), augmented reality (AR), virtual reality (VR), blockchain and Internet of Things (IoT) (Ustundag and Cevikcan, 2018). Retail is one of the industries which evolved massively due to digital transformation – retailers are connected with their customers continuously through different medium, providing them seamless online and offline experience, using AR to customize the products etc. for better customer experience (Lemon and Verhoef, 2016; Böttcher *et al.*, 2021).

Studies show that digital technologies can significantly raise people's quality of life. A prime example of this is the healthcare industry, where a variety of technologies, such as electronic health records, big data analytics, and augmented physical items, are viewed as making significant contributions (Agarwal *et al.*, 2010).

2.5.3 Impact on Employees and Workplaces

The existing literatures on digital transformations, to a large extent, focuses on the impact on the organization, industry, society or customers' experience while it ignores the employees' experience in this process (Cetindamar Kozanoglu and Abedin, 2021). In their study, Cetindamar Kozanoglu and Abedin (2021) mentioned about the role of the employee in the digital transformation journey, like digital literacy, shift in mindset. Other studies mentioned, Organizations need to equip their workforce with digital skills to meet their organizational objectives if they want to benefit from their investments in technologies (Kane, 2019; Rocha *et al.*, 2021).

The workplace is also affected by digitalization and digital transformation. One is that new technologies produce new employment roles and processes, resulting in changes in activities and occupations. Another change concerns working circumstances, since technological advancements have resulted in increased physical, psychological, and environmental demands (Cijan *et al.*, 2019).

In the research conducted by Henriette et al. (2016), interviews determined that digital transformation is a strategic concern for organizations as digital transformation has disrupted the organizational culture significantly. The research conducted by Henriette et al. (2016) stated that employees' daily routines are increasingly dominated by digital devices in the workplace and at home. The X, Y, and Z generations, who have access to the same digital tools for work and home, are far more technologically advanced than the older generations, who are finding it more difficult to adapt these tools. As a result, businesses must establish a comprehensive strategy for implementing digital

transformation into their daily operations without jeopardizing staff productivity. Henriette et al. (2016) mentioned a strong interest in collaborative initiatives like co-working and crowdsourcing in the new digitally transformed landscape. Hence, from an internal perspective, the stake is to mobilize all employees towards new practices like collaboration or remote working, and managers must find new ways to manage their teams remotely. Similarly, in the research by Roblek et al. (2021) shown, disruptive digital transformational technology can have a massive impact on the organizational culture. According to Roblek *et al.* (2021), organizations that wish to be successful disruptive innovators must instill in their culture the belief that disruption is not the development of anything new or ground-breaking but rather a process in which resources are allocated inside an organization.

The literature review has highlighted the increasing need for employees to be equipped with emerging digital skills and the lack thereof. According to research conducted by Kozanoglu and Abedin (2021), employers characterize their employees' digital literacy as the skills, knowledge, and abilities they utilize to engage with digital technology. According to the research by Farias-Gaytan et al. (2021), new technologies have emerged, so it is necessary to acquire skillsets for success in the workplace. The internet's growth necessitated accessing, seeking, and critically evaluating information by improving employee digital literacy. Similarly, Kozanoglu and Abedin (2021) stated that digital transformation and innovation might be a barrier for many firms because of the difficulty in redesigning the employee experience and improving their digital literacy. However, based on literature review, the literatures highlighted the need of acquiring digital skillsets

for the employees, but have not provided sufficient insight on the experiences of the employees while upskilling to the emerging digital technologies and their view about performance improvement due to digitalization and digital transformation.

2.5.4 Impact on IT Employees in India working for Retail

In the Indian context, IT companies are significant since they have come a long way from their origins in the 1970s. The Indian information technology (IT) sector has built a strong reputation for implementing the global services delivery model over the last three decades. The Indian IT industry supports the digital functioning of important developed and developing countries by offering services in the back-office operations, demonstrating the industry's global reach (Jaiswal, Arun and Varma, 2022).

According to India Brand Equity Foundation, today in FY 2022, this sector contributes 7.4% to India’s economic growth and is expected to contribute 10% by 2025 (IBEF, 2022). The IT industry is a result of the rapid world of change and technological advancement generating revenue of more than US$200 billion and employing around 5 million professionals, the highest employment provider in the private sector in India. Exports from the Indian IT industry are around US$178 billion in FY22 (NASSCOM, 2022). India is expected to have nine times more digitally skilled workers by 2025. This indicates that a total of ~ 3.9 billion digital skill trainings are expected by 2025. As of 2022, digitally trained employees constitute 12% of the country's workforce (IBEF, 2022).

Today, India is a very fast-growing economy with a rapidly-expanding retail and IT industries. Retailers such as Reliance Retail, Future Group, RPG Retail, Aditya Birla

Group, Tata Group, ITC Ltd, Vishal Group and many multinational companies such as Walmart, Metro, Tesco are well-known in India and are speedily strengthening their market positions. Retail industry in India is one of the major and fastest growing sectors for IT employees due to e-commerce, digital marketing and ever evolving digital technologies adopted by retailers and consumers, and it is estimated to have a significant portion of the total IT workforce in the country (Garg *et al.*, 2020).

Retail industry is one of the last channels in supply chain, which is exposed directly to the final consumers and it is greatly exposed to changes in customer behavior. Because of the intensive usage of digital technologies, retailers observe a rapid change in customers behavior. Today's customers demand personalized experiences and offers that are catered to their specific preferences. In order to adapt rapidly changing customer behavior and expectations, retail industry is going through digital transformation. The use of new emerging technologies to constantly meet consumers' increasing expectations and demands causes digital transformation (Oh *et al.*, 2022). As most of these emerging technologies are Information Technology driven, to drive and support Digital Transformation, one of the key necessities for IT employees is the continuous learning. The digital transformation requires fundamental organizational changes for IT and needs employees who can embrace new technologies, adapt them to their activities through daily practices and seek ways to use these new technologies (Cetindamar Kozanoglu and Abedin, 2021). Digital Transformation requires IT employees to organize their work efficiently, act on their own initiative and successfully perform tasks involving emotion, intuition, creativity, judgment,

trust, empathy, and ethics. The key thing is the continuous learning of the new and newer technologies (Ebert, 2015).

By utilizing digital technology to add value for their consumers, organizations increase their efficiency and acquire a competitive advantage. Since no change, including technological transformation, will be permanent in the absence of learning in an organization, the persistence of competitive advantage and success of digital transformation significantly depends on the organization's learning capability. As a result, in the age of digital transformation, the new paradigm is to develop the ability to recognize possibilities and build an organization that is based on the future in a constantly shifting environment (Ziadlou, 2021). Learning is the most efficient technique to handle the transformation process, when big changes in organizational technology and internal dynamics take place. Businesses need to become learning organizations if they want to notice changes in the digital transformation process. By keeping up with new technology advances and successfully integrating these technologies into organizational learning processes, they can build and achieve a competitive advantage in the business environment. (Langer, 2017). According to Tabrizi et al. (2019), more than technology, people and their attitude toward change are what drive the digital transformation. If employees do not accept the changes brought by digital transformation in organization, organizational learning will not happen, and the organization will not be successful in digital transformation process. The shift from traditional digital technologies to new digital technologies due to digital transformation needs changes in IT employee roles and skills, as well as changes in the structure, processes and culture of the organization (Henderikx and Stoffers, 2022). IT

organizations should foster a culture of innovation by encouraging employees to embrace new technologies and be open to new ideas and approaches (Ebert and Duarte, 2018).

According to Murawski and Bick (2017), organizations must modify their cultures, mindsets, and capabilities to accommodate the new digital working style. Focusing on people is necessary for the change to culture, attitude, and competencies. Therefore, it is important to recognize that employees play a crucial role in building a technology-based learning business (Balkas, 2022). Continuous digital learning may serve as a catalyst for the development of skills necessary to accelerate an organization's digital transformation. Technology forces both businesses and people to change. New talents are required as old ones become obsolete. The ongoing requirement for learning new skills is turning into a necessity for the economy. Furthermore, research shows that investing on employees helps to retain them and gain the competitive advantage (Sousa and Rocha, 2019).

As change is continuous and it’s a continuous process of evolving new and newer IT technologies in business. IT Organizations should build a culture and environment of continuous learning in organization and thus can take the opportunities from Change, rather suffer from the Change (Ebert and Duarte, 2018). In 2018, the Sloan Management Review of MIT and Deloitte found that digitally successful companies have been distinguished by one common thing: they identified the importance of individual learning and they focused on the continuous learning for individuals. This study was based on a survey of more than 4,000 supervisors, managers, and analysts and 15+ interviews with executives and thought leaders (Gerald C. et al, 2018). According to the report, 44% of respondents said they

needed to continuously upgrade their abilities to do their jobs effectively, while more than 90% of respondents said they needed to refresh their skills at least once a year to function effectively in a digital age. The performance and growth of employees are intimately related to learning. In the information age, businesses must transform into learning and teaching Organizations that each contribute to the organization's overall success (Carleton Edmonton, 2011).

Taşçi and Titrek (2020) argues that the continuous learning for IT employees in the current digital age emphasizes knowledge, skills, and talents that are relevant to technological transformation and continuous learning is crucial for IT employees, regardless of their age, gender, position, social, or economic status, to strengthen competencies and to support the digital transformation in all industries, in the global era. (Cendon, 2018) states that IT employees need to continually update their skills and develop new skills and abilities; hence, continuous learning is come across at all stages of human life. Moreover, continuous learning of the IT employees in organizations can anticipate changes and diversity of knowledge, skills, and abilities of employees, thereby enhancing the performance of the organization (Budiningsih, Soehari and Supriyanto, 2022).

Digital transformation projects generally involve the aspects of information technology, innovation, and organizational change, and hence require the integration of several perspectives (Hafseld, Hussein and Rauzy, 2021). Managing such perspectives in IT industry require continuous learning and then relearning from individual employee level to the entire organization (Ngereja and Hussein, 2022). Several studies have supported the development of a new culture in IT organization as a pre-requisite to support the success

of digital transformation - a new culture at workplace including continuous expansion of new skills and competencies (Arfi, Hikkerova and Sahut, 2020; Stoyanova, 2020; Hafseld, Hussein and Rauzy, 2021). All these aspects require employee learning and hence continuous learning of new digital technologies is very important for the IT employees who are the driver of digital transformation (Ebert and Duarte, 2018).

2.6 Literature Gap

The existing literatures on digital transformations, to a large extent, focuses on the impact on the organization, industry, society or customers' experience while it ignores the employees' experience in this process (Cetindamar Kozanoglu and Abedin, 2021). In their study, Cetindamar Kozanoglu and Abedin (2021) mentioned about the role of the employee in the digital transformation journey, like digital literacy, shift in mindset. Other studies mentioned, Organizations need to equip their employees with digital skills to encounter their objectives if they want to benefit from their investments in technologies (Kane, 2019; Rocha *et al.*, 2021).

The effects of digitization and digital transformation extend to the workplace. One is that new technologies produce new employment roles and processes, resulting in changes in activities and occupations. Another change concerns working circumstances, since technological advancements have resulted in increased physical, psychological, and environmental demands (Cijan *et al.*, 2019).

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The literature review has highlighted the increasing need for employees to be equipped with emerging digital skills and the lack thereof. According to research conducted by Kozanoglu and Abedin (2021), employers characterize their employees' digital literacy as the skills, knowledge, and abilities they utilize to engage with digital technology. According to the research by Farias-Gaytan et al. (2021), new technologies have emerged,

so it is necessary to acquire skillsets for success in the workplace. The internet's growth necessitated accessing, seeking, and critically evaluating information by improving employee digital literacy. Similarly, Kozanoglu and Abedin (2021) stated that digital transformation and innovation might be a barrier for many firms because of the difficulty in redesigning the employee experience and improving their digital literacy.

Due to technological advancement and digital transformation, employees will need to obtain the necessary skill sets for roles that will be redefined in the future in order to advance in their careers (Jaiswal, Arun and Varma, 2022). Ngereja and Hussein (2022) argue that IT industry require continuous learning and relearning from individual employee level to the entire organization. Several studies have supported the development of a new culture in IT organization as a pre-requisite to support the success of digital transformation - a new culture at workplace including continuous expansion of new skills and competencies (Arfi, Hikkerova and Sahut, 2020; Stoyanova, 2020; Hafseld, Hussein and Rauzy, 2021). All these aspects require employee learning and hence continuous learning of new digital technologies is very important for the IT employees who are the driver of digital transformation (Ebert and Duarte, 2018).

However, based on literature review, the literatures highlighted the need of acquiring digital skillsets for the employees, but have not provided sufficient insight on the experiences of the IT employees while upskilling to the emerging digital technologies and their view about performance improvement due to digitalization and digital transformation.

There are few researchers, as described below, who discussed about the challenges of learning new technologies for employees and the performance improvement, but have not provided the experience of specifically IT employees working from India.

Ruggieri et al. (2019) mentioned in their study about the challenge of balancing work and personal responsibilities with learning and development activities. Similarly, Bhattacharyya and Sharma (2019), Buyung et al. (2020), Rizvi and Kumar (2020) mentioned in their studies that work-life balance is a critical challenge for employees across various industries to manage time for learning new technologies and adopting them. Previous studies also mentioned about interruptions from different workplace and home related activities, which also impacted the flow of work and negatively impact the ability to focus and concentrate, leading to decreased learning and performance (Macdonald, Brown and Teevan, 2018; Kostopoulos, Pratte and Dubé, 2019). According to Anand and Pangilinan (2020), providing access to training materials, tutorials, and documentation can help employees acquire new skills and knowledge, leading to improved performance and productivity. In their study, Martín-Santana, Beerli-Palacio and Fernández-Monroy (2020), Shami and Abdullah (2021) highlighted the importance of staying up-to-date with emerging technologies and continuously learning to remain effective and efficient in one's job role.

Colman (2022) mentioned few difficulties in adult or employees learning from general perspective - these are the most frequent challenges, or learning obstacles, that adult learners often face and which might prohibit adults from attempting new things, developing their skills, and acquiring new information at work.

While existing literature and researchers highlighted few challenges for employee learning in general or for different industries, this study tries to find out the learning experience or challenges for the Indian IT employees working for Retail industries, while learning and implementing the emerging technologies due to digital transformation.

2.7 Theoretical Framework

The study relies on the Andragogy and Self-Directed Learning Theories to explain how the learning or upskilling happens and challenges during upskilling for IT employees. Andragogy theory was developed by Malcolm Knowles in 1968 and the concept of andragogy was described as the art and science of helping adults learn. Malcolm Knowles outlined the four cornerstones of adult education for which andragogy is renowned (Merriam, 2001):

1. Adults learn better from their experiences and their past knowledge should be taken into account.
2. Adults favor a pragmatic approach and must be able to apply learning to solve a specific problem.
3. Adults are most interested in learning things that have immediate relevance.
4. Adults need to be involved in the planning and evaluation of their instruction.

According to andragogy theory, adult learners are self-directed, motivated and independent to learn based on their own requirements. And, the adult learners must be able

to apply what they learn in the practical way (Colman, 2022). These are much relevant for the IT employees in the era of digital transformation when IT employees are learning newer technologies continuously and applying in business.

Self-Directed Learning (SDL) theory is rooted in Malcolm Knowles' theory of adult learning; in 1997, D.R. Garrison added the elements of self-management to the model (Colman, 2022). SDL is a method where individuals take the initiative to diagnose learning requirements, identify resources, implement a learning plan, and assess their own results. SDL (Self-Directed Learning) often happens with the help of the teachers, mentors, resources, and peers. The learner exercises control over all learning decisions. SDL is best matched for the self-motivated learners using technology based learning and available courses (Loeng, 2020). Since SDL skill theory is a theory for adult learning which best fits for IT employees, this study invoked it in the context of continuous learning for IT employees in the era of Digital Transform.

2.8 Theory of Reasoned Action

The Theory of Reasoned Action (TRA) is a social psychological theory that was developed by Martin Fishbein and Icek Ajzen in 1967 and was later amended in 1975. It is a model that clarifies and forecasts human behaviour, especially with regard to making decisions.

According to the TRA, a person's intentions, which are in turn impacted by their attitudes and subjective norms, determine their behaviour. Subjective norms refer to the social pressure or influence that a person perceives from others to perform or not perform

a specific behaviour, whereas attitudes refer to an individual's favorable or negative judgement of a given behaviour (Figure 2.1).

According to the TRA, a person's intention to engage in a specific behaviour depends on their attitude towards the behaviour and the subjective norm attached to the behaviour. The individual's perception of the behaviour and the perceived social pressure to do or refrain from performing the behaviour determine the degree of the intention. As a result, the TRA contends that comprehension of a person's attitudes and subjective norms can aid in the prediction and justification of their behaviour (Madden, Ellen and Ajzen, 1992).

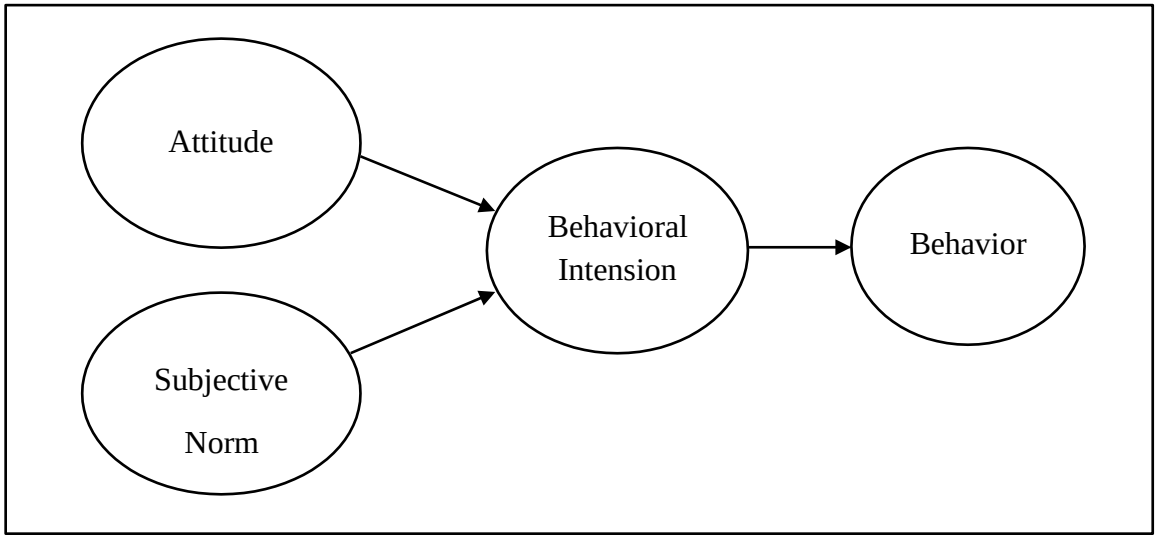

Figure – 2.1

(Source : https://www.researchgate.net/figure/The-Theory-of-Reasoned-Action-TRA-Source-Fishbein-Ajzen-1975-The-difference-in_fig1_228747997)

The TRA has been widely applied in various fields, including health behavior, consumer behavior, and organizational behavior, among others. It has also been extended and refined into the Theory of Planned Behavior (TPB), which includes an additional factor, perceived behavioral control, in determining an individual's behavior (Figure – 2.2). The theory of planned behavior addresses the boundary condition of pure self-control mentioned by the theory of reasoned action.

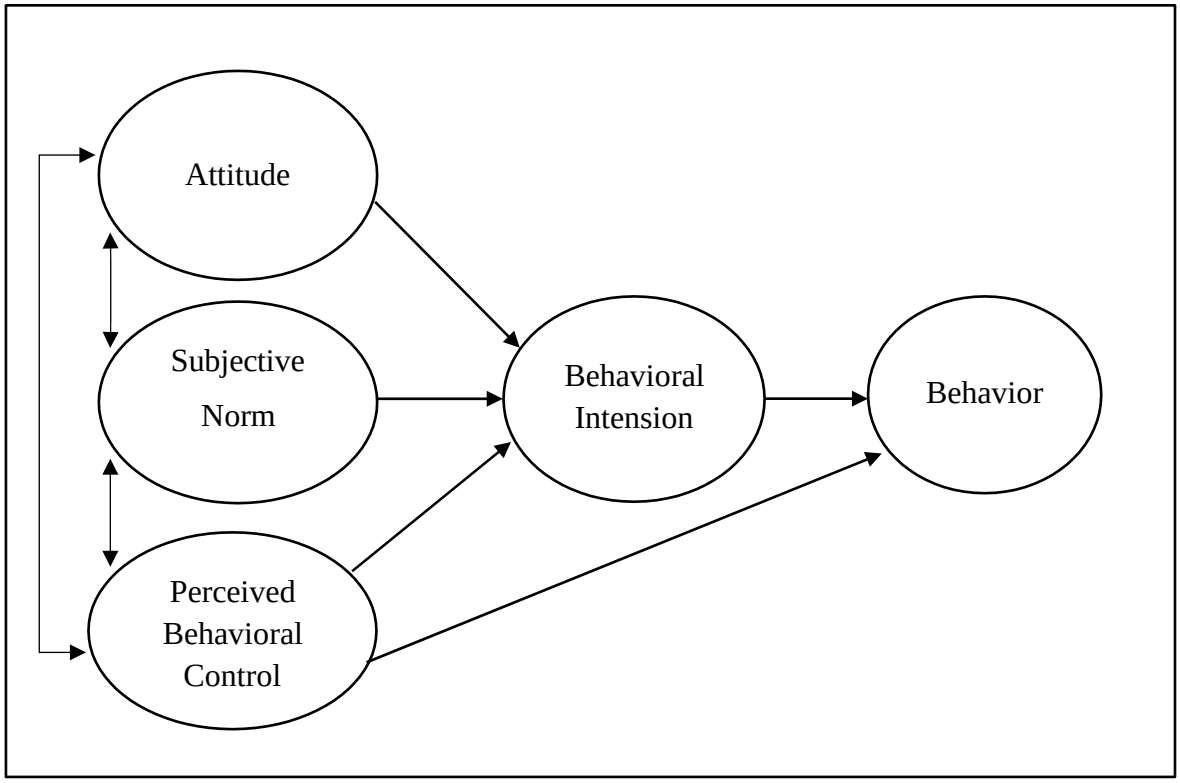

Figure – 2.2

(Source : The Theory of Planned Behavior (Ajzen, 1991))

Figure – 2.2 represents the theory of planned behavior. Perceived behavioral control is included as an additional variable that has both a direct effect on behavior and indirect effect on behavior through behavioral intensions (Madden, Ellen and Ajzen, 1992).

2.9 Human Society Theory

Human society theory is a very general term that could refer to a wide range of theoretical approaches and perspectives in the social sciences that seek to understand human societies, cultures, and social relations. Numerous social theories aim to explain the structure of human society and the social interactions that take place within it. Here are some of the most important social theories:

Structural Functionalism - According to this view, society is a complex system with interdependent pieces that cooperate to preserve social stability and order.

Conflict Theory - According to this idea, society is viewed as a struggle for few resources, with wealth and power concentrated in the hands of a dominating group that exploits it to maintain its dominance over others.

Symbolic Interactionism - This theory is concerned with how people perceive and provide meaning to the interactions they have with others, and how these interpretations affect how they behave.

Social Constructionism - According to this idea, social constructs like gender, ethnicity, and sexual orientation are not inherent or natural, but rather the result of social and cultural forces.

Rational Choice Theory - This theory suggests that individuals make decisions based on a rational calculation of the costs and benefits of different options.

2.10 Summary

Literature provides plenty of information about Digital Transformation and the impact of Digital Transformation on Organization, Industry, Society as well as on Employees and workplace. Literature also provides the information about the role of IT sector and IT employees in Digital Transformation. IT is the driver and effect of digital transformation. The research aims to find the impact of the digital transformation on IT employees in the retail sector in India. With this in focus, the proposed research will highlight the employees' reactions on adapting to the new technologies (in terms of any challenge in learning and improvement in their performance) due to digitalization and digital transformation.

How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge adopting these technologies and their performance improvement due to adopting these technologies? – the research aims to answer these questions.

Findings from this research can help IT leaders to understand the impact of Digital Transformation on IT employees in India working for retail industry in a better way and to create a framework to eliminate the risks and increase the favorable effects.

CHAPTER III:
METHODOLOGY

3.1 Overview of the Research Problem

Technologies are changing rapidly across the industries due to digitalization and digital transformation and retail industry is one of them. Digitalization and Digital Transformation are profoundly changing customer experience and customer behavior. In the digital world, customers are networked via social media or other digital media and can share their experiences with others and can switch to a competitor in fraction of seconds. Hence to remain competitive, providing the best customer experience has become the key. This is due to the fact that a bad customer experience will quickly and directly harm a company's sales and brand impression. Therefore, companies must shift their focus to the broad, personalized optimization of the customer experience across all traditional and digital contact points. Industries are now using information technologies (IT) to develop new business models, products and services (Châlons and Dufft, 2017a).

Retail industry is one of these, which is the last channel in supply chain, is exposed directly to the final consumers and it is greatly exposed to changes in customer behavior. Because of the intensive usage of digital technologies, retailers observe a rapid change in customers behavior. Today’s customers demand personalized experiences and offers that are catered to their specific preferences. Organizations must be ready to respond to customer expectations or shifting demand immediately or preferably in advance. At the same time, in every business, pricing pressure has also tended to rise rather than fall.

Personalized products at a low cost are possible only with large amount of automation. The continuous changes are evident across the entire purchasing process, beginning with new methods of gathering information on products and services that are no longer solely driven by retail businesses but also by consumer information sharing on social media. In addition, innovative in-store shopping strategies powered by digital technology are developing. Modern retail management also puts a focus on the use of electronic and mobile commerce as alternatives to or additions to conventional storefronts. So, as digital technology advances, the mode of retail shopping is getting changed along with customer behavior and expectations. Retail industry must be ready to respond in advance with emerging digital technologies.

In order to adapt rapidly changing customer behavior and expectations, retail industry is going through digital transformation. A lot of emerging technologies are getting used to meet customer demand, attract customers, for better customer experience – be it in-store or online, for smoother retail supply chain management etc. Information Technology (IT) is the backbone of these technologies and IT is playing a key role in this transformation - from both a technical and an organizational perspective, because digitally successful companies are unimaginable without positioning IT centrally. But the IT organization itself needs to undergo significant change in order to fulfil its strategic role in digital transformation and position itself as a leader and service provider for other departments. As a result, the IT organization needs to radically restructure and play a key role in the digital transformation. Agility and innovativeness are essential, and learning of newer technologies is the key for the same. While retailers should be few steps ahead to

fulfill customer's changing demand and to retain and attract customers, IT team must be few more steps ahead with technologies and innovations, to support retailers. IT employees are learning these new and newer technologies and supporting retail industry to grow faster. Continuous learning of new technologies and changes is one of the keys to success for individuals and IT organizations. If there are hindrances and challenges which impact the overall learning in the organization, impact the performance and growth of the organization. IT organizations should build the culture and environment inside organization to 'build the talent' with existing employees for the new and emerging technologies. 'Buy the talent' from the market for the newer technology is not a good option for the IT organization as it is always costlier, limited availability and most importantly change is the constant process and if an IT organization is dependent on external talent for the changes, it will be difficult to survive. The organization will not be able to take the advantage from change, rather be victimized for the change. So, IT organizations are creating the learning environment for the employees in the organization.

In the process of learning the evolving technologies and implementing these technologies, one of the problems IT industries face that while few employees are learning these technologies faster and boosting their performance, another few employees find it challenging to learn and cope up with the new technologies. It impacts team's performance and productivity, and it becomes a bottleneck for the IT department or organization to improve the overall performance and productivity. So, the problem of this research is while IT organizations are creating learning environment in the organization and reskilling the employees with emerging technologies to make the organization future ready, it is also

seen that the momentum of learning and adapting them is not same across employees which impacts the overall performance and 'build the talent' strategy of the organization. As a team, if the reskilling progress is slower, it impacts organization's overall progress and performance, and also impacts organization's readiness for future.

3.2 Research Purpose and Questions

The research aims to find the impact of the digital transformation on IT employees in the retail sector. With this in focus, the research highlights the employees' reactions on learning and adopting the new technologies, if they face any challenge in learning and adapting them. The research also highlights employees' reactions toward improvement in their performance due to learning and implementing new technologies due to digitalization and digital transformation.

Findings from this research can help IT leaders to understand the impact of Digital Transformation on IT employees in a better way, with the evolution of emerging technologies, the challenges faced by a set of employees to learn these technologies and to create a framework to eliminate or reduce the challenges and increase the favorable effects. This will help to accelerate the overall learning of the IT department or organization. As learning is one of the keys to success for the IT employees and IT organization, this research result will help to increase the productivity of the IT organization and help to accelerate building the talent within the organization.

This research is focused on the set of IT employees who are supporting retail industry and their digital transformation journey and the geo location is chosen as India.

India is one of the large offshore IT hubs in globe and around 4.5 million IT professionals working from India and supporting IT services of different industries including Retail industry. This research can directly help the IT leaders of this particular industry and geo to improve their productivity and growth. This can also help the IT leaders of other industries or geo by customizing based on their industry or geo.

The research has the following sub-objectives:

1. To identify the common challenges employees face to learn new technologies
2. To classify any common trend who face the challenges to learn these technologies
3. To provide a comprehensive study how employees feel about their performance improvement due to learning new technologies

Continuous learning of new technologies and changes is one of the keys to success for individuals and IT organizations. In the process of learning and implementing new technologies, it is found that while a set of employees are learning these technologies faster and boosting their performance, while another set of employees find it challenging to cope up with the new technologies. It may be a bottleneck for the IT organization to improve the overall performance and productivity. A lot of research has been conducted so far and the researchers mentioned about the necessity of learning the emerging technologies for the IT employees continually to adapt the change and lead this digital transformation, but the literatures have not provided sufficient insight into the experiences and challenges of digital transformation at the employees' level – there is a gap in knowledge in this area,

especially the IT employees working for Retail industry in India. Holistic research on the IT employee experience on adopting new technologies and their performance improvement will help IT leaders to understand the impact of adopting new technologies on employees in a better way and to create a framework to eliminate the risks and increase the favorable effects.

This research tries to find out the answer of the following research questions:

RQ1: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning and adopting these technologies?

RQ2: How are these technologies impacting their performance while learning and adopting these technologies?

As change is continuous and it's a continuous process of evolving new and newer IT technologies in business. IT Organizations should build a culture and environment of continuous learning in organization and thus can take the opportunities from Change, rather suffer from the Change. The long-term goal of the research is to help the IT leaders to build a robust framework to make the learning process smoother and faster for all employees, improve the productivity of employees at individual level and hence overall department and organizational level. This research is significant in this changing IT world – continuous learning is the key to adapt change and smoother learning process helps to adapt change quickly, the outcome of this research can help IT leaders to make this learning process smoother.

The significance of this research is that this research tries to figure out how these emerging technologies are impacting these set of employees in terms of challenges adopting these technologies and their performance improvement. The findings from this research will help IT leaders and future researchers to understand the impact of adopting new technologies on employees in a better way and to create a framework to eliminate the risks and increase the favorable effects – smoother learning process, better learning experience, better employee productivity and performance, and hence better overall organization productivity and performance.

3.3 Operationalization of Theoretical Constructs

Operationalization is the process of converting abstract concepts into measurable or quantifiable observations. While certain things, such as age or height, can be directly or easily measured, others, such as anxiety or spirituality, cannot. The phenomena which are not directly measurable, researchers can collect data systematically through operationalization to measure or quantify those. Without clear operational definitions, researchers may contain the risk of measuring unrelated thoughts or applying inconsistent methods. Operationalization lessens subjectivity, reduces the chance of research bias, and improves the study's dependability (Bhandari, 2022).

As Bhandari (2022) mentioned, there are 3 main steps for operationalization which have been followed in this research:

1. Identify the main concepts of the study
2. Choose relevant variables to represent each of the concepts

3. Select indicators for each of the variables

This research followed the step-by-step approach for operationalization of the theoretical construct.

1. Identify the main concepts of the study:

In this study the research problem has already been identified and the following research questions have been defined.

RQ1: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning these technologies?

RQ2: How are these technologies impacting their performance while learning and adopting these technologies?

The following have been identified as the main concepts in the research questions:

Table : 3.1

Concepts
Challenges learning new technologies for IT Employees
Impact on performance adopting new technologies

2. Choose relevant variables to represent each of the concepts:

Each of the main concepts may have many variables, or properties, that can be measured. For this research, following variables are considered as most relevant variables for the concepts.

Table : 3.2

Concept	Variable
Challenges learning new technologies for IT Employees	Managing time due to work and personal commitments
	Interruptions during studies at work or home
	Complexity of the technology
	Getting proper training and learning resources
	Motivation
Impact on performance adopting new technologies	Productivity
	Problem solving ability
	Innovation and Creativity
	Collaboration and Teamwork
	Building Confidence

3. Select indicators for each of the variables:

To measure variables, the next step to decide on indicators that can represent them. Sometimes these indicators are obvious, but sometimes it is harder to measure. A list of indicators representing the variables or concept can either be formulated from scratch, or can be replicated from other sources.

Listing indicators from scratch: This is easy to execute when a straightforwardly detected concept is measured. However, the more real-world concepts are more complicated to measure. So, concepts considered in this research like “Challenges learning new technologies for IT Employees” and “Impact on performance adopting new technologies”, are not easy to measure as their indicators are not that easy to come up with. This is because, there are many different dimensions to these concepts and multiple things from real life can be affecting one’s challenges of learning new technologies or performance.

Duplicating indicators from external sources: When concepts like “Challenges learning new technologies for IT Employees” and “Impact on performance adopting new technologies”, are being measured, it is preferred to use a list of indicators already developed by other researchers, like indexes, scales, or typologies.

– Indexes: Indexes are a type of measurement which contain a list of indicators, which collectively give an overall synopsis of that concept. Although indexes are made up of separate statements and questions, the replies to them when put together provide a comprehensive picture of the respondent's experience. As this research is trying to find out employees’ experience on challenges learning new technologies and, on their performance, this research uses indexes during this step of operationalization.

– Scales: A researcher may go one step further by ranking different indicators of a concept, called measuring by scales. Scales are different from indexes in that they are designed to take into consideration the different intensities of each indicator.

– Typologies: Typology is the third method for measuring a multidimensional variable in research. It groups ideas according to their common topics. The micro-meso-macro framework is the variant of a typology that is most frequently utilized in research. In this paradigm, one identifies key components of the social environment by their ecological relationship with the individual at hand. (Nicolas, 2022; Bhandari, 2022).

This research has used indexes to measure the variables, as this research is trying to find out employees' experience on challenges learning new technologies and, on their performance.

The research prefers to employ a qualitative method to comprehend the specific phenomena. Both quantitative and mixed approaches, however, were insufficient for this analysis since quantitative research examines associations or similarities between variables or tries to test theories and takes into account causative effects between variables.

To confirm the work, boost the credibility of the research results, and help ensure that all basic biases resulting from the use of a single method are eliminated, all the data obtained will be triangulated using a triangulation strategy (Carter *et al.*, 2014).

3.4 Research Design

The research design, also known as the research plan or research blueprint, is the framework for research. It serves as the "Glue" that holds all of a research project's components together (Birhanie and Akhtar, 2016). It deals with questions such how the data will be handled and analyzed, what data will be relevant to the study, what data should be collected, and what research question will be investigated (Isaga, 2012).

The research prefers to employ a qualitative method to comprehend the specific phenomena. Qualitative research emphases on gaining insight and understanding about how an individual's experience and perception of events and situations. As this research aims to study individual employee's experience, qualitative method has been preferred over quantitative method. Also, as mentioned by several researchers (Yauch and Steudel, 2003; Mohajan and Mohajan, 2018), qualitative research has several advantages for choosing this as the method of this study, including:

In-depth understanding: Qualitative research enables a thorough grasp of the subject under investigation. This is due to the fact that it emphasizes examining the underlying causes, perspectives, and motives of the participants.

Flexibility: Qualitative research techniques are flexible and can be tailored to a study's demands. Depending on the results, researchers can change their approach and the questions they ask.

Rich data: Rich data are produced through qualitative research in the form of in-depth explanations, quotes, and narratives. This information can give important insights into the viewpoints and experiences of the participants.

Participant perspective: The participant's perspective is given priority in qualitative research, enabling them to express their experiences and thoughts in their own words. This can help us grasp their attitudes, behaviors, and beliefs more precisely.

Contextual understanding: Qualitative research provides a contextual understanding of the topic being studied. It can explore the cultural, social, and historical factors that shape the participants' experiences and perspectives.

Validity: Qualitative research can provide a high level of validity when the data collection and analysis are rigorous. This research uses the triangulation technique to ensure the validity of the findings.

Overall, qualitative research can provide valuable insights and a deep understanding of the topic being studied and hence qualitative method has been chosen for this study.

This research is a phenomenological in nature and studies human experiences while learning new technologies at work. Phenomenological studies investigate human experiences based on the participants' descriptions. In order to avoid biassing their observations, qualitative researchers who use bracketing set aside their personal feelings and views about the phenomenon they are studying (Hennink, Hutter and Bailey, 2020) (Khan, 2014).

Other types of most common qualitative research are ethnographic, grounded theory, case study, also discussed as below to argue that the current study is phenomenological in nature and not the other types of research:

Ethnographic research gathers information from certain social groupings, like cultural communities. Living among the subjects they are researching is common practice for ethnographers. The most informed individuals about the culture, known as key informants, are used to gather data (Agar, 1986).

In grounded theory investigations, facts are gathered, examined, and then a hypothesis is created that is based on the information. Data are continually compared to

previously collected data using a method known as constant comparison. Relevant concepts are recognized, and codes are issued (Walker and Myrick, 2006).

Case studies are in-depth analyses of specific individuals, social groups, or institutions. The phrase "content analysis" refers to the analysis of communication messages discovered through case studies and other kinds of qualitative research (Njie and Asimiran, 2014).

Semi-structured interview is considered as the tool to collect data for this study. The reason why the semi-structured interview is considered as data collection method as this research tries to study the employee experience and their feelings, and semi-structured interviews are an effective technique for data gathering when the researcher wants:

(1) to collect qualitative, open-ended data;

(2) to explore participant views, feelings and beliefs about a particular subject;

(3) to delve deeply into personal and sometimes sensitive issues (Kallio *et al.*, 2016). Hence it is deemed that using semi-structured interview to gather the necessary data is appropriate for this study

Semi-structured interviews are a well-liked method for qualitative research that allows for flexibility and the in-depth gathering of participant information (Pathak and Intratat, 2012). Semi-structured interviews are usually used when a researcher wants to completely study a subject and provide participants the chance to share their ideas, experiences, and opinions. These kinds of interviews are useful when the researcher wants to understand the attitudes, beliefs, and values of the participants because they allow for

open-ended inquiry and follow-up questions depending on the participants' responses (Adams, 2015).

Semi-structured interviews have several advantages in research:

One of the main benefits of the semi-structured interview method is that it is effective at encouraging reciprocity between the interviewer and participant, allowing the interviewer to improvise follow-up questions based on participant responses, and giving participants room to express themselves verbally in their own unique ways (Galletta, 2012).

As a result of the researcher's ability to adapt the questions in response to the participant's comments, semi-structured interviews provide for flexibility in the research process. This enables a more thorough investigation of the subject and may produce surprising insights. (Pathak and Intratat, 2012).

During semi-structured interviews, interviewers can gain more insight into participants' beliefs, attitudes, and behaviours by letting them speak freely about their experiences and perspectives (Galletta, 2012).

Interviewers can learn more about participants' ideas, attitudes, and actions by allowing them to express their opinions and experiences in their own words during semi-structured interviews (Adams, 2015).

Semi-structured interviews provide a more personal and lively exchange between the researcher and participant, which can increase trust and rapport. (Pathak and Intratat, 2012).

Overall, semi-structured interviews can provide valuable data and insights in qualitative research, allowing researchers to gain a deep understanding of a topic and the

perspectives of those being studied and hence semi-structured interview is considered to gather the necessary data for this study.

3.5 Population and Sample

In research, a population refers to the entire group of individuals or objects that share a common characteristic for a research in which the researcher is studying (Taherdoost, 2016). The population of this study is the Information Technology (IT) employees working from India and supporting the retail industry. In 2022, around 5 million IT employees are working from India, the highest employment provider in the private sector in India (NASSCOM, 2022). Retail industry in India is one of the major and fastest growing sectors for IT employees due to e-commerce, digital marketing and ever evolving digital technologies adopted by retailers and consumers, and it is estimated to have a significant portion of the total IT workforce in the country (Garg *et al.*, 2020).

A sample is a portion or subset of the population that has been carefully chosen to be representative of the entire population. The expenses, time, and people required to complete the study can be decreased by selecting a representative sample (Acharya *et al.*, 2013). And sampling is the technique used by a researcher to methodically select a relatively smaller number of representative items or individuals (sample) from the pre-defined population to serve as the data source of the study (Sharma, 2017a). Sampling technique is one of the important factors for the accuracy of the study result and should be systematic and well-defined to draw valid inferences from the sample (Acharya *et al.*, 2013). Broadly the sampling technique is classified as below - probability and non-

probability sampling (Baker, 2003). There are advantages and disadvantages associated with each sampling technique (Sharma, 2017b).

Table : 3.3

Sample Technique	
Probability Sampling	Non-probability Sampling
Simple random Stratified random Cluster sampling Systematic sampling Multi stage sampling	Quota sampling Snowball sampling Purposive/Judgment sampling Convenience sampling

Purposive/Judgment Sampling under non-probability sampling is chosen for this study. In purposive sampling or judgement sampling technique, researchers may use judgement to choose participants who can provide dependable and beneficial data to address research questions or achieve research goals (Bernard, 2017). This nonrandom technique does not require underlying theories or a predefined number of participants. Simply put, purposive sampling is a form of non-probability sampling where the researcher uses as judgment for selecting members of the participants to participate in the study, who can and are willing to provide the information or evidence by virtue of their knowledge or experience (Etikan, 2016). It is typically used in qualitative research to identify and select the information-rich cases for the most proper utilization of available resources (Patton, 2015). Purposive sampling technique involves identification and selection of participants

who are proficient and knowledgeable with the phenomenon of interest (Jp and Oppong, 2013). In addition to knowledge and experience, participants should have the availability and inclination to participate, and the ability to communicate their experiences and opinions in a clear, expressive, and reflective way (Palinkas *et al.*, 2015). Purposive sampling aims to focus on persons with certain qualities that can help with the relevant research, as opposed to random studies, which encompass a varied cross section of ages, backgrounds, and cultures (Bernard, 2017).

A general rule from qualitative research regarding sample size is that data gathering and analysis should go on until no new concepts appear (Coyne, 1997; Bryman, 2013). Thirty-Five (35) research participants who met all the above-mentioned requirements of the purposive sampling are selected to obtain the reliable data about the impact of the digital transformation on Indian IT employees working for retail industry. With this count the data saturation has reached for this study, as discussed in the following section in more detailed manner.

3.6 Participant Selection

To select the participant for this study, Purposive/Judgment Sampling is chosen. Purposive sampling is one of the most effective sampling techniques in qualitative research to identify and select the information-rich cases for the most proper utilization of available resources (Patton, 2015). Purposive sampling technique involves identification and selection of participants who are proficient and knowledgeable with the phenomenon of interest (Jp and Oppong, 2013). The logic of selection of participant in purposive technique

is based on the value of information-rich participants and emergent; because the in-depth understanding of the phenomena is not obtainable through random sampling (Reybold, Lammert and Stribling, 2013). From this perspective, purposive or judgmental selection the best strategy to obtain 'information-rich' participants who provide in-depth insight of the subject of study (Freeman *et al.*, 2007; Maxwell, 2013).

While selecting the participants for this study, which is purposive sampling in qualitative research, following key factors are considered (Yin, 2011):

Research question and purpose: The participants chosen for this study are relevant to both the research question and the purpose of the investigation, making them the most suitable for achieving the study's objectives. The participants are Indian-based IT professionals who help the retail sector.

Knowledge and expertise: To gather individuals with a wealth of information, this component is crucial when using the purposive sampling strategy to pick participants. Knowledgeable participants or who have experience in the subject matter under study can offer insightful opinions.

Availability and willingness to participate: Participants are selected for this study if they meet the first two requirements and are available and willing to take part. Participants have been made aware of the goals of the study and the prerequisites for taking part.

Diversity: Diversity was taken into account when choosing the study participants, and this included elements like age, gender, ethnicity, and other pertinent traits.

Ethics: When choosing participants, ethical factors including informed permission, confidentiality, and privacy are taken into account. Participants' rights as research subjects are protected, and they are fully informed of the study's goals and parameters.

Based on the study question and goal, criteria for inclusion and exclusion are established. The inclusion and exclusion criteria are set forth in the selection of study participants. Which members of the target population can and cannot participate in a research project are determined by inclusion and exclusion criteria. Important elements of purposive sampling include inclusion and exclusion criteria. The unique research topic and the study's objectives will determine the inclusion and exclusion criteria for purposive sampling. Here are some of the inclusion and exclusion criteria that were used in this research (Yin, 2011):

Inclusion criteria: The qualities or qualifications that potential research subjects must possess in order to be included in the study are known as inclusion criteria.

Occupation: Participants who work in IT and supporting retail customers.

Experience: Participants who need to learn new technologies and implement those in their job.

Geographical location: Participants who are working in India.

Exclusion criteria: Exclusion criteria are traits used to determine which potential research subjects should not be included in a study.

Occupation: Participants who are outside of IT industry.

Experience: Participants who don’t need to learn new technologies.

Geographical location: Participants who are not from India.

Any form of research that investigates traits of a certain subset of a population must define inclusion and exclusion criteria. This aids in the constant, trustworthy, and impartial identification of the study population by researchers. It also reduces bias and increases efficiency. As a result, selected participants are more likely to have the qualities that will make it possible to actively answer the research question (Nikolopoulou, 2022a).

Depending on the research objectives, there are several purposive sampling techniques can be used and this study used Expert sampling. In order to obtain information-rich participants who can provide in-depth insight into the subject of study, this method involves choosing experts or professionals who have considerable knowledge and expertise in the area of the study. When a research project calls for people with extensive expertise of the issue, expert sampling is used. Experts are thus selected based on the evident skill set related to the study, or level of experience possessed (Freeman *et al.*, 2007; Maxwell, 2013).

Kassiani Nikolopoulou (2022) mentioned about the other common purposive samplings are:

Maximum variation (or heterogeneous) sampling - Maximum variation (or heterogeneous) sampling captures the widest range of viewpoints possible from the population and purposive selection.

Homogeneous sampling - This sample, as opposed to maximum variation sampling, tries to reduce variance, speeding the analysis and thoroughly detailing a particular subgroup.

Typical case sampling - Typical case sampling is used when researchers want to highlight a normal or average instance of a phenomenon.

Extreme case sampling – This sampling is used to illuminate unusual cases or outliers. This can involve notable successes or failures, or any unusual appearance of a phenomenon of interest.

Critical case sampling - When one or a very small number of cases are used to explain several more similar circumstances, this technique is known as critical case sampling.

A general rule from qualitative research regarding sample size is that data gathering and analysis should go on until no new concepts appear (Coyne, 1997; Bryman, 2013). At this point it is said that the "theoretical saturation" is touched and all the appropriate data that is needed to gain the complete understandings of the subject has been found (Bryman, 2013; Bryman, Bell and Harley, 2022). The majority of qualitative researchers who strive for theoretical saturation do not rely on probability sampling, rather they prefer the purposive sampling technique (Marshall, 1996; Coyne, 1997). It tries to choose information rich cases whose assessment will lighten the questions under study. The choice of which cases to include in the sample is made by the researcher based on previous knowledge, such as theory, or learnings from the data gathering process. Even though it can be challenging to estimate the size of a purposive sample that is necessary to achieve theoretical saturation, a researcher can make the call based on data saturation (Guest, Bunce and Johnson, 2006; Bowen, 2008; Francis *et al.*, 2010; Baker and Edwards, 2012; O'Reilly and Parker, 2013). Some researchers provide tentative estimates of sample sizes, which

typically range from 20 to 30 and are under 50 (Mason, 2010; Marshall *et al.*, 2013), However, the theoretical foundation for these estimates is unknown; depending on the research topic, data saturation typically falls within this range. Thus, researchers rely on their own expertise and judgement (Sandelowski, 1995; Tuckett, 2004; Suddaby, 2006; Trotter, 2012). As a result, the standards for determining the sample size are frequently implicit. This is because the majority of qualitative research is interpretivist in nature, requiring flexible creativity, experience, and tacit knowledge (Van Rijnsoever, 2017).

Tong and Dew (2016) mentioned that in qualitative research, the researcher must emphasis on selecting participants who can express their viewpoints related to the question of the research in order to achieve the data saturation. This study conducted thirty-five (35) interviews with IT employees in India who are supporting retail customers and learning new emerging technologies to support the digital transformation in retail industry. This ensured an overlap of data to achieve saturation and the study objectives.

3.7 Instrumentation

Instrumentation in qualitative research methodology refers to the process of developing and using tools or instruments to collect and analyze data in a systematic and standardized way. These tools and techniques can include interview protocols, observation guides, surveys, focus group scripts, field notes, audio or video recordings, and various forms of software for data analysis (Creswell *et al.*, 2007).

In qualitative research, instrumentation is crucial to ensure that data collection and analysis are systematic and rigorous. Properly designed instruments can help ensure that

data is collected in a consistent and reliable manner, and data analysis is thorough (Mensah Adosi, 2020).

The process of developing instruments in qualitative research involves a number of steps, including identifying the research question, selecting the appropriate data collection methods, designing the data collection instruments, and pre-testing the instruments to ensure that they are effective and appropriate (Johnson, Adkins and Chauvin, 2020).

Also, researchers must consider various ethical considerations when developing instruments for qualitative research, such as obtaining informed consent from participants and protecting the confidentiality and privacy of participants (Mensah Adosi, 2020).

To achieve the purpose of the study, the selection of a suitable research instrument is very crucial to capture the data that enables analysis of research questions/objectives. Thus, researchers are required to select the research instruments directed by their competencies/capabilities. This is very relevant for qualitative research as in qualitative research researchers are observed as the part of the data collection instrument (McGrath, Palmgren and Liljedahl, 2019). This study follows the above-mentioned instrumentation guidelines and steps for data collection and analysis.

To improve the quality of research findings, it is important that data is collected using the correct instrument(s). In qualitative study, researchers have a number of data collection instruments to choose, based on the purpose of the study – like interview guide, focus group guide, observation checklist, documentary analysis guide (Creswell *et al.*, 2007). This study intends to conduct an interview and hence used an interview guide. An interview guide is basically a list of subjects or topics and the questions under the topic,

which a researcher plan to cover in an interview (Jamshed, 2014). The interview guide followed to collect the data for this study is attached in Appendix B.

The data collection for this study is finding the critical facts of the study phenomenon, which is the employee experience while learning new technology, and it includes observing participants' emotions, feelings, and the thought process (Silverman, 2016). The data is extracted for this study using primary and secondary methods. The study used the semi-structured interview as the primary source of data of IT employees' experience while learning new technology and about their performance. The primary methods are collected through semi-structured interviews and observation while interviewing. The secondary method is reviewing documents, websites, and journal articles. That made it possible for the researcher to concentrate on the study's main problem rather than just the literature. Semi-structured interviewing techniques also enable the researcher to focus, organize, and give study participants the freedom to speak freely and to clarify responses with more questions in order to obtain detailed understanding and data from the participant (Rabionet, 2011). The interview allows the researcher to gather the knowledge and experiences of the IT employees who are learning new technologies and the one-on-one interview helped to build the rapport and trust with the interviewee and gets the support required to acquire accurate data for validation (Patton, 2015).

Yin (2011) mentioned in his book "Qualitative Research from Start to Finish" about sources of evidence in qualitative research - interviews, documentation, direct observation, physical artifacts, participant observation, and archival records. The sources of evidence for this study have been chosen includes interviews, direct observation, and document

analysis as a secondary resources of data collection. A key component of methodological triangulation is the use of numerous sources of evidence and therefore, the study used the above-mentioned sources as part of a methodological triangulation to increase the validity and reliability of the data (Golafshani, 2003). Methodological triangulation ensures the validity and reliability of the research since it provides a variety of datasets from different sources, including research interviews, documents obtained from literature reviews, and observations made before and during the data gathering process (Yin, 2011). Validity and reliability are two aspects that each qualitative researcher should think about while planning a study, interpreting the findings, and assessing the study's quality; and in order to achieve reliability in qualitative research, analysis of trustworthiness is essential (Patton, 2015). The study took into account previous interviews and experiences that had been thoroughly prepared for the interview, watching for verbal cues, and assessing the current process. Also, the study used Member checking which involved the participants in the research process to ensure that the findings accurately reflect their experiences and perspectives. This involved presenting the findings to participants and asking for their feedback or asking participants to review transcripts or other materials to ensure accuracy and to achieve the trustworthiness (Morse et al., 2002).

3.8 Data Collection Procedures

Semi-structured interview is considered as the tool to collect data for this study. The reason why the semi-structured interview is considered as data collection method, as

this research tries to study the employee experience and their feelings, and semi-structured interviews are an effective method for data collection for this scenario (Kallio *et al.*, 2016).

The following steps have been followed to gather data using semi-structured interviews:

1. Identifying the prerequisites to use semi-structured interviews

The first step is to find out the necessary pre-conditions for employing semi-structured interviews. This step's objective is to assess the semi-structured interview's suitability as a rigorous data gathering technique in respect to the chosen research questions. In respect to the research theme, which is to understand the experience and challenges faced by the employees while learning new emerging technologies, semi-structured interviewing proved effective for analyzing respondents' perspectives and opinions about challenging or sensitive issues (Turner, 2010). In a semi-structured interview, it is feasible to concentrate on the topics that are significant to the participant, allowing for the expression of a range of viewpoints (Cridland *et al.*, 2015).

2. Retrieving and applying previous knowledge

The second step of this process is retrieving and applying previous knowledge. Gaining a thorough and adequate grasp of the topic is the goal of this step, which necessitated a critical evaluation of prior information and the potential need for further empirical knowledge. A predefined structure for the interview is developed using prior knowledge (Turner, 2010). It is the foundation of pre-interview preparations, therefore it is crucial that the researcher has a firm understanding of the research's main topics (Rabionet, 2011). By conducting a thorough literature research that is focused on the goal

of the study, the critical evaluation of prior information has been carried out (Krauss *et al.*, 2009).

3. Framing preliminary semi-structured interview guide

The third step of this process is framing the initial semi-structured interview guide. This step's objective is to create an interview guide to be used as a tool for gathering interview data by applying prior understanding of structural, logical, and cohesive forms (Barriball and While, 1994). An interview guide is a series of questions that directs the interview's dialogue towards the study topic (Krauss *et al.*, 2009). The execution of the interview and analysis of the gathered data are both impacted by the quality of the interview guide (Cridland *et al.*, 2015). The semi-structured interview guide has been considered to take a loose, flexible form that would allow for conversation during an interview, the option to rearrange the questions, and simple transitions between them. (Turner, 2010; Cridland *et al.*, 2015). In order to obtain the richest data possible, the interview questions in the guide are described (Turner, 2010). The goal of the guide is to elicit from participants spontaneous, in-depth, distinctive, and expressive responses (Krauss *et al.*, 2009; Baumbusch, 2010). This meant that the responses are a reflection of the respondents' unique experiences and sentiments, and the interview process produced information that allowed for the emergence of new ideas (Baumbusch, 2010; Rabionet, 2011).

There are two tiers of questions in a semi-structured interview guide: main themes and follow-up questions. The main themes consisted the key content of the research topic and within those respondents are encouraged to express their opinions and experiences without restriction. Typically, the main themes are discussed with each participant, and

they are presented in a logical and progressive order. (Krauss *et al.*, 2009). These can be used as a warm-up to ease tension and break the ice. These questions may deal with topics that are common to the participant but crucial to the subject under research. The sequence of the main themes can then change from the lighter ones to the more intense and emotional ones, returning to the lighter themes towards the conclusion. Follow-up questions are intended to help participants better understand the main themes and to steer the dialogue towards the study topic. The goal is to keep the interview going smoothly and get accurate, useful information (Krauss *et al.*, 2009; Baumbusch, 2010; Rabionet, 2011). Follow-up questions can be pre-designed, impulsive or based on the respondent's reply (Turner, 2010; Chenail, 2011). Pre-designed follow-up questions are useful for improving the uniformity of the topics addressed in interviews, conducted by several interviewers (Krauss *et al.*, 2009). As a spontaneous or impulsive follow-up question, the researcher may ask respondents to elaborate on any specific point that came up in the interview or by asking for additional information or an example of the topic (Rabionet, 2011). As follow-up questions, verbal and nonverbal probing tactics are used. Verbal probes include things like reiterating the participant's points, verbally expressing interest or agreement, or providing the impression that the interviewer is knowledgeable about a particular topic. Non-verbal probing is the practice of remaining silent and letting the respondent to think aloud (Turner, 2010).

4. Pilot testing of interview guide

The fourth step of this process is the pilot testing of semi-structured interview guide. The goal of this step is to confirm the coverage and significance of the content of

the initial guide and to find the probable requirement to reformulate the questions. By putting the interview guide to the test, it is possible to update and improve the interview questions and raise the quality of collecting data (Chenail, 2011). Three different techniques have been used to perform pilot test of the interview guide: internal testing, expert assessment and field-testing.

Internal testing referred to the review of the drafted interview guide. This technique highlights any potential interviewer bias and removes ambiguities and unsuitable leading questions, among other important information about the interview guide (Chenail, 2011). Expert assessment referred reviewing the preliminary interview guide by experts outside the study team. It is helpful to have the contents of the interview guide evaluated by outside experts to determine whether they are comprehensive and appropriate for the given study's objectives and research subjects. It gave the chance to talk with the external expert about the questions' applicability and receive helpful advice about their language and organization (Barriball and While, 1994). Field-testing is a technique that involves testing the preliminary interview guide with potential study participants. Field testing simulates the actual interview environment and offers vital information regarding how the interviews will be implemented. To ensure clarity, improve the questions' applicability, and ascertain whether they actually evoked the participants' various perspectives and experiences, the preliminary guide was tested with prospective participants (Barriball and While, 1994; Chenail, 2011). Field testing led to changes in the questions' format and arrangement that made them more useful. Also, the effectiveness of the questions is evaluated, and the follow-up questions are improved to increase the interview guide's coverage. Field testing

is particularly advantageous since it allows the interviewer to determine how much time is required for each session and whether the design has any additional defects or restrictions (Turner, 2010; Chenail, 2011; Cridland *et al.*, 2015).

5. Presenting the complete semi-structured interview guide

The fifth and last step of this process is presenting the complete semi-structured interview guide in the study paper. The complete semi-structured interview guide of this study is placed in the Appendix B. The goal is to produce a clear, complete and logical semi-structured interview guide for collecting the data. It offers a practical technique for responding to the study's objectives, and as it is universal, other researchers can utilize it as well (Barriball and While, 1994; Krauss *et al.*, 2009).

The interview techniques used for the semi-structured interview for this study are - Face-to-face interview, Video interview, Telephone interview, Online chat and email interview based on the identified participants' geographical location, availability and convenience/preference.

1. The face-to-face interviews

Majority of the interviews for this study is face-to-face interview. Face-to-face interviews allow for direct communication between the interviewer and the interviewee without any interruptions from technology. The interviewer is aware of the interviewee's body language, facial expressions, and other non-verbal social cues. Another benefit is that having a physical gathering makes it more likely to establish a welcoming environment. Depending on the goal and the study topic, these qualities are more or less significant. (Opdenakker, 2006). Face-to-face interviews, however, take a lot of time and money since

they need travel, which can be expensive and, in some situations, risky if the interviewer or the interviewee must go through or to places where there is a higher risk to personal safety (Saarijärvi and Bratt, 2021).

2. The video interviews

Video interview is another major interview technique used for this study. The in-person interview and the video interview are thought to be the most identical. Face-to-face interviews may only slightly outperform video interviews, according to some research. (Krouwel, Jolly and Greenfield, 2019). As everyone can participate, regardless of where they live, the pool of prospective participants for the study is increased. Travel, distance, and safety are not the factors that the researcher must take into account. Yet, there are some factors that differ from face-to-face interviews when it comes to the real interview environment. Depending on how the respondent is positioned in front of the camera, the interviewer can see and observe the respondent fully or partially and understand facial expressions, body language, and to some extent other non-verbal cues. However, there are some restrictions and limitations that require attention. A reliable internet connection, a high-quality camera, and a good microphone are essential for video interviews (Krouwel, Jolly and Greenfield, 2019). Moreover, confidentiality should be a major consideration. There is a chance that an additional uninvited person, who is not visible, is in the space and might exert influence. This is especially crucial to take into account if sensitive subjects will be covered during the interview (Saarijärvi and Bratt, 2021).

3. The telephone interviews

Telephone interview is the next major interview technique used for this study after face-to-face and video interview. Telephone interviews, like video interviews, allow participants from a wide geographic area to participate. This technology increases the possibility of interviewing people in locations that are challenging to reach for a variety of reasons. Disadvantages of telephonic interview are that during the interview, nonverbal cues like facial expressions and body language are not observed (Burke and Miller, 2001). Telephone interview is appropriate for brief, focused interviews that don't require too much personal information and getting information of this study with telephone interview is suitable. In terms of confidentiality, there is same risk in telephone interview as with the video interview situation. For a variety of reasons and depending on the topic of the interview, there may also be a chance that the interview will be done by someone posing as the real participant, which could be challenging to verify (Saarijärvi and Bratt, 2021).

4. The online chat and email interviews

There are few online chat and email interviews conducted for this study based on participants' availability and preference. A benefit of the online chat and email interview is that more people can participate. An online chat interview might be considered of as a text-based real-time conversation using some type of "instant messaging," as opposed to an email interview which is not instant conversation but participants can respond at their convenience (Neville, Adams and Cook, 2016). In online chat and email interviews, while using the emoticons and 'e-mojis' interviewers need to keep it in mind that interviewees may come from different geographical locations and cultures and these symbols can have different meaning for them depending on the context (Opdenakker, 2006). It has been

argued that email and chat interviews, which have been found to be comparable to telephone interviews, are appropriate for use in sensitive topic research (Neville, Adams and Cook, 2016; Hershberger and Kavanaugh, 2017). When discussing sensitive topics, the interviewee may benefit from having extra time to think before responding for online chat and email interview, which is an advantage of online chat and email interview (Saarijärvi and Bratt, 2021).

A safe and positive relationship with the interviewees is maintained before, during, and after the interview session in order to foster trust and gather reliable data. The interview guide is attached in Appendix B.

3.9 Data Analysis

In Qualitative research, data analysis is the process of examining non-numerical data such as text, images, audio, or video to identify patterns, themes, and meanings. It involves a systematic approach to categorizing, coding, and interpreting data in order to draw conclusions and make inferences about the phenomenon being studied (Grbich, 2013). There are several methods of qualitative data analysis, including content analysis, grounded theory, thematic analysis, discourse analysis, and narrative analysis. The research used thematic analysis method to analyze the data. The analysis of qualitative data is often subjective and researcher's own perspectives and biases can influence the interpretation of the data. So, it is important to use multiple sources of data and to triangulate findings with other sources in order to increase the validity and reliability of the analysis (Grbich, 2013). The purpose of qualitative data analysis is to get a deeper understanding of the data and to

derive knowledge and insights from the data that may be applied to decision-making or more study (Merriam and Tisdell, 2015).

As Merriam and Tisdell (2015) mentioned in their book "Qualitative Research: A guide to Design and Implementation", that in Qualitative research data collection and analysis should be a simultaneous process. Though data collection and analysis are ongoing process, but cannot be extended indefinitely. Once the researcher finds the saturation point, that is no new insight is coming out from the new interview or observation or reviewing document, researcher can stop collecting data and can focus on extensive data analysis. This study followed the same approach of simultaneous data collection and analysis.

This study used purposive sampling and the data is collected through personal one-on-one semi-structured interviews, observation and document analysis. All the data that are collected from interviews, documents and direct observation are triangulated. Triangulation is a research technique used to increase the validity and reliability of research findings by combining multiple sources or methods of data collection and analysis. The idea behind triangulation is that if different sources or methods of data collection produce similar findings, it increases the likelihood that the findings are accurate and valid. In qualitative research, triangulation can involve using multiple methods of data collection, such as interviews, focus groups, and observations, to gather data from different perspectives (Fusch and Ness, 2015). To identify common patterns, triangulation helped in the study to cross-validate the data collected from the interviews and compare the transcripts with the secondary sources. For each participant interviewed, a matrix was made by the study in order to quickly identify themes and link the data. A member check was

performed to confirm the accuracy of the interpretation of the data obtained from the participant during the interview. Member check process involved presenting the findings to participants and asking for their feedback or asking participants to review transcripts or other materials to ensure accuracy (Morse et al., 2002). This two-way analysis and clarification help researchers to get the reliable input from the participants, which researchers utilize to validate the validity, interpretation, and understanding of the participants' statements (Merriam and Tisdell, 2015).

The study used computer-assisted qualitative data analysis techniques due to the large number of interviews and the challenging nature of data management and analysis in qualitative study, as recommended by Saldaña (2013). The study used NVivo software to manage and organize the data. NVivo is a software tool that facilitates qualitative research and analysis. It is used by researchers, scholars, and businesses to analyze and manage unstructured data, such as text, audio, video, and images. The software allows users to organize, code, and analyze data from a variety of sources and supports various research methodologies such as grounded theory, content analysis, discourse analysis, and more. The software was developed by QSR International, and it is available for both Windows and Mac operating systems (Hamed, Saleh and Alabri, 2013). This is study, the raw data collected from semi-structured interviews have been transcribed into a Microsoft Word document, then uploaded the Word document to NVivo document, and then uploaded the documents for the process. It helped to manage the qualitative data and coded the data.

Validity and reliability are two important aspects in qualitative research and researchers should take into consideration and in order to achieve reliability in qualitative

research, analysis of trustworthiness is essential (Patton, 2015). The study established consistency through member verification, transcript analysis, and data triangulation. Triangulation ensures the validity and reliability of the research since it provides a variety of datasets from different sources, including research interviews, documents obtained from literature reviews, and observations made before and during the data gathering process (Yin, 2011). The study took into account previous interviews and experiences that had been thoroughly prepared for the interview, watching for verbal cues, and assessing the current process. The use of member checks contributed to the consistency and the reliability of the data. The study used Member checking which involved the participants in the research process to ensure that the findings accurately reflect their experiences and perspectives. This involved presenting the findings to participants and asking for their feedback or asking participants to review transcripts or other materials to ensure accuracy and to achieve the trustworthiness (Morse et al., 2002).

Reliability refers to the accuracy with which the study would provide the same results, if replicated. The significance of the study must be viewed from various angles by qualitative researchers to make the study more reliable (Fusch and Ness, 2015). The study concentrated on all the adjustments affecting the analysis process to guarantee data compatibility and hence data strength, consistency, and reliability. During an interview procedure, maintained the transparency and clear interview questions and a copy of the interview transcript were given to the participant for confirmation. Fusch and Ness, (2015) specified that member checking increased the validity of the findings and advised qualitative researchers to utilize member checking to evaluate data when conducting

interviews. The researcher of this study provided interview interpretation copies to each respondent, and received their approval or clarification. The researcher ensured that every respondent had enough time to complete member checking to confirm the accuracy of the transcript. The credibility of the research effort is demonstrated by the repeated member checks and transcript evaluations.

Validity in qualitative research refers to the extent to which the findings, interpretations, and conclusions of a study accurately represent the experiences, perspectives, and meanings of the participants and the phenomenon being studied (Golafshani, 2003). The researcher must ensure adherence to the criteria of the research by abiding by the principles of integrity, replicability, and reliability in order to assure the trustworthiness of the research results (Yin, 2011). Validity is the primary indicator of study quality since it ensures that the data will be correctly interpreted to provide valid results. Because a qualitative researcher uses interpretive, contextual, and subjective data, the researcher's findings must change in order to maintain the validity and reliability of the study's findings. Hence, for the research to be valuable to the readers and other academics, it must be consistent, believable, applicable, and credible (Merriam and Tisdell, 2015). The use of member checks helped in this study to create credibility and provided the analysis of the data corrected and confirmed from the participants. To help readers the results are correctly analyzed from various circumstances and the report carefully explained the analysis situation. To make the results clearer and assist future researchers who might want to reproduce them in order to achieve reliability, the study thoroughly documented any anomalies or unanticipated events. The study also ensured compliance by maintaining

neutrality throughout the analytical process and disregarding the biases of the study participants.

3.10 Research Design Limitations

This study adopted qualitative research design which has great strengths and few limitations as well. Because qualitative research sometimes uses a small sample size and is conducted in a particular location, its results might not be generalizable to other groups or settings. One of this study's limitations is that.

The researcher in this study made several assumptions when creating and evaluating the research design. It is challenging to assume that participants in interviews answered questions accurately and honestly. The researcher also predicted that all the participants would have proper knowledge of the phenomena of the study. There are chances that the research participants being hesitant to share their information openly.

Qualitative research relies on the researcher's interpretation of data, which can introduce subjectivity and bias into the findings, though researcher in this study has taken all the necessary actions to be transparent about their biases and to minimize their impact.

3.11 Conclusion

The chapter outlined the methodology, research design, sample size, participation selection, instrumentation, data collection and data analysis of the study. The study also highlighted the value of using NVivo software to identify emergent themes in data analysis and relate them to the conceptual setting and body of literature to answer the research

question. The study emphasized the value of member checking and triangulation in ensuring reliability and validity. The findings from this study could contribute to a better understanding of the impact of digital transformation on Indian IT employees, their experience to learn new emerging technologies. The next chapter presents the findings obtained from the study on the impact of digital transformation on Indian IT employees.

CHAPTER IV:

RESULTS

4.1 Introduction

The previous Methodology chapter (Chapter III) discussed about the recommended methodology, research design, and the data collection for the study and highlighted the importance of using the triangulation methodology to validate the findings of the study. The findings from the study's research participants are presented in this chapter. This chapter also discussed in very brief about the demographic analysis of the participants. Then followed by the results in the subsequent sections.

For this qualitative study, the overall research problem was: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning these technologies and how are these technologies impacting their performance? To get the data of this study to find the answer of the research question, semi-structured interviews were conducted with thirty-five IT Employees in India who are working for retail industry. All these employees were part of the digital transformation journey and were going through the continuous learning process.

The research conducted semi-structured interviews with 35 participants (Information Technology Employees) from different IT companies and from different cities within India and the interviews were conducted between the period January to May 2023. The duration of interviews were between 20 to 35 minutes long.

To assure the reliability and validity of their responses from the audio recordings, the interviews were transcribed into Microsoft Word files. Thematic analysis was used to compile the qualitative data of the study. Analysis was done on the themes that emerged from the study participants' discussions of the research topics.

In this study, following themes are emerged and used to describe and discuss the research questions - How are the emerging technologies (due to digital transformation) impacting India’s IT employees in retail industry, in terms of any challenge learning these technologies and how are these technologies impacting their performance?

Theme 1: Managing time due to work and personal commitments

Theme 2: Interruptions during studies at work or home

Theme 3: Complexity of the technology

Theme 4: Getting proper training and learning resources

Theme 5: Motivation

Theme 6: Productivity

Theme 7: Problem solving ability

Theme 8: Innovation and Creativity

Theme 9: Collaboration and Teamwork

Theme 10: Building Confidence

4.2 Demographic Information

This study, the impact of digital transformation on India's IT employees - from learning perspective, started with the semi-structured interviews with IT employees and they have provided their brief background, age, educational background, experience level, as below. The graphical representations about the demographic of the participants are also shown below.

The study used acronym ITE to represent Information Technology Employee and a number (1,2,3 etc.) appended with the acronym to represent different IT Employee or participant of the sample population (like ITE1, ITE2, ITE3 etc). The ITE used in the following table under results section to provide a break of age and gender categories, experience levels, and the type of semi-structured interviews conducted with the participants (like, face-to-face, video, telephone, online).

Table : 4.1

ITE	Gender	Age range	Educational Background	Work Experience	Location (City)	Interview Type
ITE1	Female	41-45 years	BE/BTech	18-22 years	Kolkata	Face-to-Face
ITE2	Male	36-40 years	BE/BTech	13-17 years	Kolkata	Face-to-Face
ITE3	Male	31-35 years	MCA/MTech/MSc	4-7 years	Kolkata	Face-to-Face
ITE4	Male	36-40 years	BE/BTech	13-17 years	Bangalore	Video
ITE5	Female	41-45 years	MBA	13-17 years	Hyderabad	Telephone

ITE6	Female	26-30 years	BE/BTech	4-7 years	Bangalore	Video
ITE7	Female	> 45 years	BE/BTech	23 years or more	Kolkata	Face-to-Face
ITE8	Male	31-35 years	BE/BTech	8-12 years	Hyderabad	Video
ITE9	Female	31-35 years	BE/BTech	4-7 years	Mumbai	Telephone
ITE10	Male	41-45 years	BE/BTech	18-22 years	Chennai	Face-to-Face
ITE11	Female	26-30 years	BCA/BSc	4-7 years	Chennai	Face-to-Face
ITE12	Male	31-35 years	BE/BTech	8-12 years	Chennai	Face-to-Face
ITE13	Male	< 25 years	BE/BTech	1-3 years	Chennai	Face-to-Face
ITE14	Male	> 45 years	MCA/MTech/MSc	23 years or more	Chennai	Face-to-Face
ITE15	Male	> 45 years	MCA/MTech/MSc	18-22 years	Chennai	Face-to-Face
ITE16	Male	36-40 years	BE/BTech	13-17 years	Chennai	Face-to-Face
ITE17	Female	> 45 years	MCA/MTech/MSc	18-22 years	Bangalore	Video
ITE18	Male	26-30 years	MCA/MTech/MSc	1-3 years	Mumbai	Video
ITE19	Female	< 25 years	BCA/BSc	1-3 years	Kolkata	Face-to-Face
ITE20	Male	36-40 years	MCA/MTech/MSc	8-12 years	Mumbai	Telephone
ITE21	Female	26-30 years	MCA/MTech/MSc	1-3 years	Hyderabad	Video
ITE22	Male	31-35 years	BE/BTech	8-12 years	Hyderabad	Video
ITE23	Female	36-40 years	BE/BTech	13-17 years	Kolkata	Face-to-Face

ITE24	Female	31-35 years	BE/BTech	8-12 years	Kolkata	Face-to-Face
ITE25	Male	41-45 years	MCA/MTech/MSc	13-17 years	Bangalore	Online Chat/Email
ITE26	Male	> 45 years	MBA	18-22 years	Bangalore	Video
ITE27	Female	36-40 years	BE/BTech	8-12 years	Hyderabad	Telephone
ITE28	Male	26-30 years	BCA/BSc	4-7 years	Hyderabad	Online Chat/Email
ITE29	Male	41-45 years	BE/BTech	18-22 years	Kolkata	Face-to-Face
ITE30	Female	31-35 years	MCA/MTech/MSc	4-7 years	Hyderabad	Video
ITE31	Female	< 25 years	BE/BTech	1-3 years	Bangalore	Video
ITE32	Male	< 25 years	BCA/BSc	1-3 years	Bangalore	Video
ITE33	Female	36-40 years	MCA/MTech/MSc	8-12 years	Bangalore	Telephone
ITE34	Male	26-30 years	BE/BTech	4-7 years	Mumbai	Telephone
ITE35	Female	31-35 years	BE/BTech	8-12 years	Mumbai	Online Chat/Email

Gender distribution of participants

The gender distribution of the research participants is shown in the below figure.

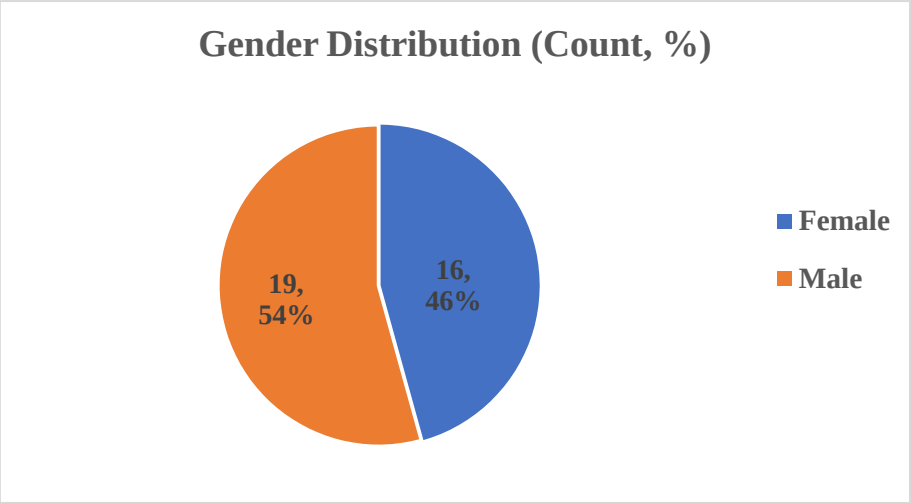

Figure : 4.1

Out of total 35 participants, there were 46% Female and 54% Male participants.

Age distribution of participants

The age distribution of the research participants ranged between 23 years to 50 years. Figure below illustrates the age distribution. Total Participants – 35.

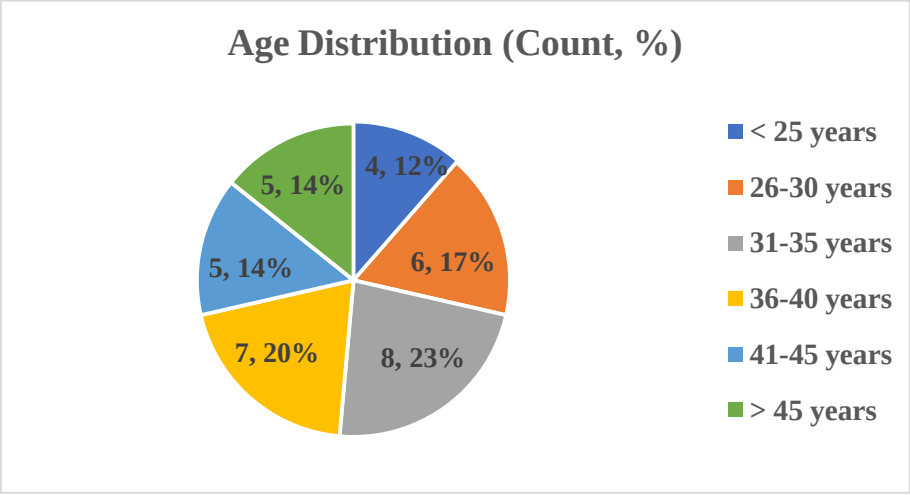

Figure : 4.2

Majority of the ITE participants were aged between 26 to 40 years, representing 60% of the sample. The age group of 23 to 25 shows the smallest percentage (12%). However, the number of young people < 30 years were 29%.

Educational background of participants

Figure illustrates the distribution of the ITEs level of educational qualification for the study. Total Participants – 35.

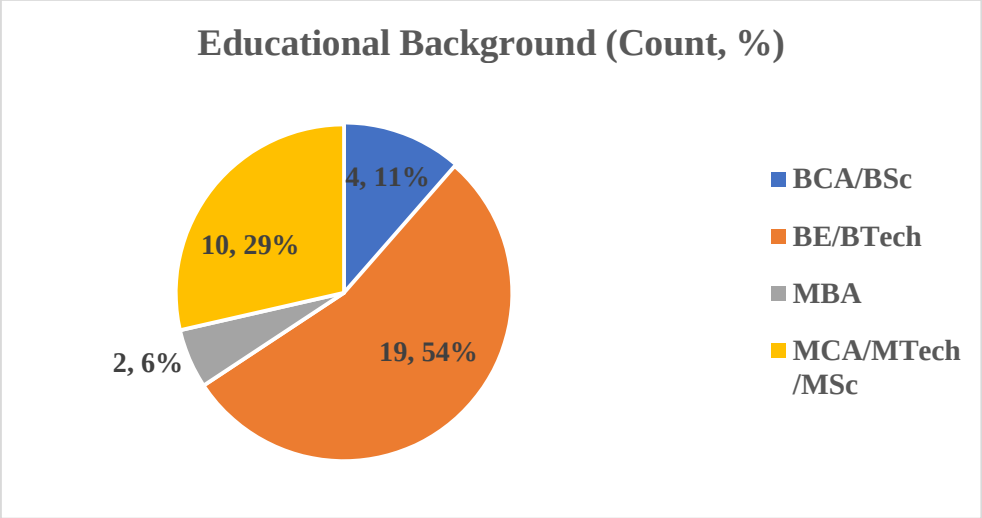

Figure : 4.3

Majority of the participants' hold a Bachelor of Engineering (BE) or Bachelor of Technology (BTech) degree (54%).

Work Experience of participants

Figure illustrates the distribution of the ITEs based on number of years of experience for the study. Total Participants – 35.

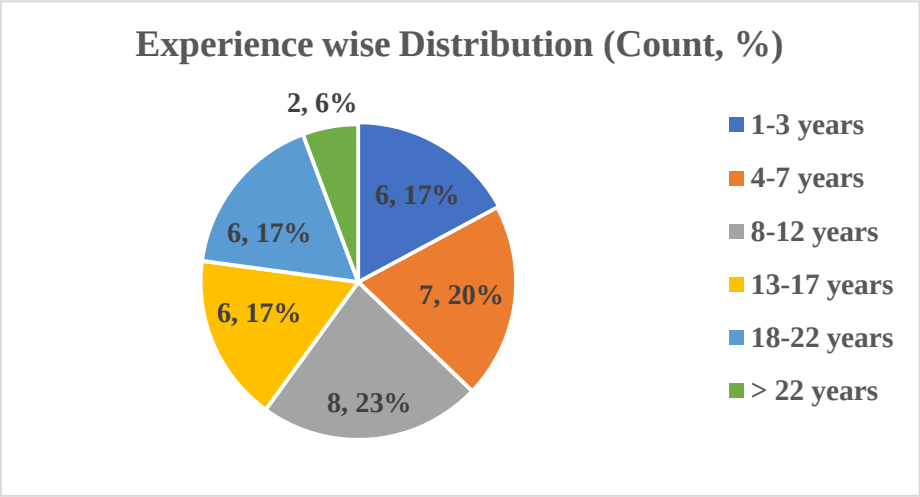

Figure : 4.4

Most of the participants were having experience between 4-12 years (43%). Least number of ITEs were with experience level 23 years or more (6%).

Location distribution of participants

The location distribution of the research participants is shown in the below figure.

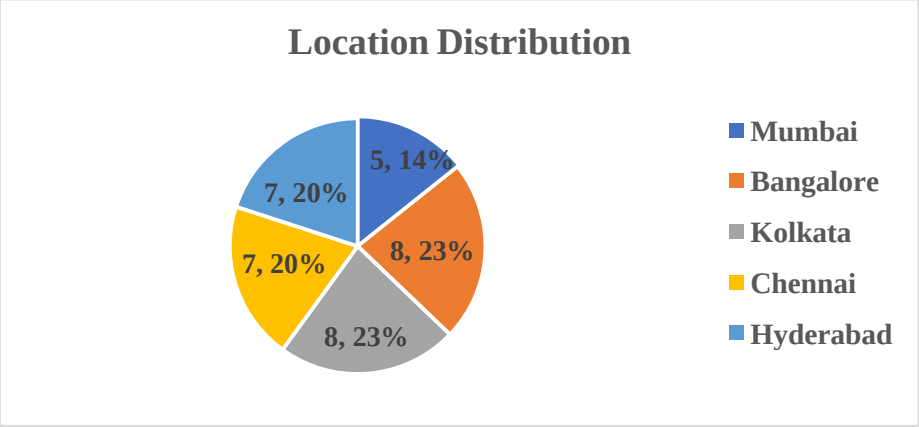

Figure : 4.5

Participants were selected from India's IT hub cities Bangalore (23%), Chennai (20%), Hyderabad (20%), Kolkata (23%), Mumbai (14%).

4.3 Results

4.3.1 Challenges in learning new technologies for IT Employees

While learning the new technologies at work, IT employees experienced few challenges and were organized as themes depending on the properties of the challenges. The identified themes were Managing Time, Interruptions during studies, Complexity of the technology, Getting proper training and resources, Motivation.

4.3.1.1 Theme 1: Managing time due to work and personal commitments

The first theme came out from the data inspected revealed that managing time for learning new technologies due to multiple work and personal commitments. The IT employees indicated that managing time was the biggest challenge they faced for study. This was the most common theme for all the participants and all the participants indicated that they faced the time crunch due to work and family responsibilities. Creating a balance between job and family or other social responsibilities is mentioned by several of the participants as a primary issue for employees to spend additional time for learning new technologies. The majority of female employees said the same, as they are more challenged by both their workplace and household responsibilities including childcare and housework. Mostly the middle-aged employees between the ages of 36 and 50 mentioned that they faced challenge to create a balance between their learning and work, family, and social life.

Additionally, female learners who were married and had children generally have challenge to create balance between their family and job. Though they understood the importance of learning in their job, they could not provide adequate time to their learning, what they wanted to spent time for their learning.

It came out from participants' response that overcommitting to multiple tasks, responsibilities, or activities resulted insufficient time for learning. Having a packed schedule without allocating dedicated time for learning left little or no time for effective studying or skill development. ITL29 stated, "*On top of my scheduled delivery work I am involved in multiple ad hoc activities which leave me with little or no time for effective studying*". ITL1, ITL15, ITL20 mentioned the same thing that they needed to involve in multiple ad hoc activities on top of their scheduled work resulting very little time left for their study. ITL33, ITL35 specified about the heavy workload - a heavy workload with numerous tasks, responsibilities, and deadlines left them with limited time to allocate for learning.

Participants mentioned about the lack of prioritization of learning with other tasks, as a result faced time crunch. Work-related tasks have taken precedence, leaving little or no time for dedicated learning activities. ITL26 said, "*Sometimes I failed to prioritize learning as an important activity and neglected to provide dedicated time for it. Other tasks, responsibilities, or distractions might have taken precedence, leading to inadequate time allocation for learning*". Participants indicated that unexpected work-related emergencies or urgent tasks had taken over the priorities from planned learning activities, leading to poor time management for learning.

Participants indicated about lack of planning - not having a clear plan or schedule for learning had leaded to poor time management, hence lost tracking of time and missed out regular learning opportunities. Procrastination, or putting off learning tasks or assignments, had also leaded to a lack of time management, as mentioned by the participants. ITE25 said, "*Sometimes lack in plan or procrastination from my side leaded to a poor time management and lost the time for learning*".

Few junior employees ITE13, ITE19 indicated that the unrealistic expectations about the time required for completing a task or underestimating the effort needed to complete a task resulted in poor time management. This leaded to frustration, discouragement, and a lack of motivation to allocate adequate time for learning.

Junior employees also indicated that though their organization and senior leadership encourage to spend more time for learning new things, but on ground their supervisors or project leads assigned the work in such volume that they felt they got very less or no time for dedicated learning activities. Though they agreed that they were enjoying the on the job learning. ITE3 said, "*Our organization and our senior leadership always encourage to learn new technologies, but when it comes to my daily work, my project leader assigns me the work in such a volume that it takes the whole day for me to complete and I really don't get time for learning newer technology, though I really enjoy my current work and technology*".

Workplace distractions, such as interruptions from colleagues, phone calls, emails, or meetings disrupted the focus and concentration needed for effective learning. These

distractions consumed valuable time and hinder time management for learning, as mentioned by the participants.

Few employees who are new to the organization mentioned about the lack of awareness or access to learning opportunities in the organization. They were not fully aware of available learning opportunities at the workplace or did not sure about their access to learning resources; and it impacted their ability to manage time effectively for learning. Limited knowledge about the access of learning materials or programs resulted inadequate time allocation for learning activities for them. ITE11 mentioned, "*As a new joiner of the organization, it took time for me to understand the knowledge repository and learning portal of the organization, which impacted pace of my learning*".

Participants mentioned about personal commitments or responsibilities while studying at home, such as taking care of children, managing household tasks, or attending to other family or personal responsibilities, limited the time available for learning. Balancing these commitments with learning activities were challenging, resulting in poor time management for learning at home. This is mostly mentioned by middle aged employees and female employees, like ITE5, ITE10, ITE27.

Participants mentioned about health or well-being as concerns to manage their time for learning. As they mentioned, due to physical or mental health issues, fatigue, or stress affected their ability to manage time effectively for learning at home or workplace. These factors impacted their focus, concentration, and motivation, resulting in poor time management for learning activities. ITL7 said, "*Managing my daily work activities and*

home responsibilities, I feel very fatigue and stressed and can't concentrate to continue my learning activities".

4.3.1.2 Theme 2: Interruptions during studies at work or home

The second theme was the interruptions during studies at workplace as well as at home. Majority of the participants reported that learning a new technology needed a lot of focus and concentration. At workplace, while studying or practicing the new technologies different kind of interruptions came – it may be some priority work, any ad hoc meeting or call, or may be from any co-workers. As they mentioned, dedicated classroom sessions are more effective as they got the dedicated time slots for training only, interruptions are much less there. But it is limited for specific period only and also classroom sessions sometimes impacted the project delivery if something timebound and other team/member is dependent on that delivery. So, dedicated classroom sessions are not always feasible, participants mentioned.

Participants mentioned about the interruptions by email, phone calls, and instant messages. These email notifications, phone calls, instant messages, and other notifications interrupted their studies by creating a feelings of responding to them immediately. These interruptions disrupted their concentration and derailed their focus from their studies. ITE24 said, "*At workplace one of the most common challenge during focus learning is the interruptions from emails, phone calls and instant messages. Sometime it creates an urgency of responding immediately, but ultimately derail the focus*". Also participants

mentioned that workplace meetings, discussions, or unplanned brainstorming sessions interrupted their study time.

Participants mentioned about the interruptions from colleagues or coworkers while studying or focus learning at workplace. Colleagues or coworkers approached to the participants for various reasons, like with questions, requests for help, or just for casual conversation, which disrupted participants' concentration and focus. ITE6 specified, "*At office, it's quite natural that colleagues approach to me for any help or with some question or just for casual conversation at any point of time. So, if it's during study, the concentration and focus get distracted*". Noise from office equipment or chatter from coworkers also distracted and interrupted their focus studies and made it difficult to concentrate and learn effectively, as participants indicated.

Participants highlighted work-related emergencies and urgent tasks that required their immediate attention disrupted their study time. These unexpected situations needed participants to shift their focus from studying to addressing the work-related issue. ITE4 said, "*It is pretty common at work that some urgent work comes suddenly and take the priority over the scheduled work and learning. Net net the study and learning get affected*".

Participants indicated the interruptions about their personal matters, such as personal phone calls, text messages, or unexpected personal appointments, interrupted their studies. Sometimes self-interruptions unintentionally interrupted their own studies due to lack of discipline or self-control or procrastination, browsing social media, or engaging in other non-work-related activities, as mentioned by the participants. ITE21 said, "*While studying, sometimes unintentionally I start browsing social media, engaging in non-work-*

related activities, or getting distracted by other personal tasks, which interrupt my study and waste my valuable study time and hinder my progress in learning new technologies".

While learning at home, participants mentioned about interruptions from family members, including spouses, children, or other household members, during their studies at home. They might seek attention, engage in noisy activities, or require assistance with household tasks, which interrupted concentration and focus. Home responsibilities, such as household tasks or cooking, and environmental factors at home, such as noise from neighbors, construction, pets, or other external sources, poor lighting, uncomfortable seating, or extreme temperatures, interrupted participants during their studies and affect their ability to concentrate, as mentioned by the participants. ITE23 specified, "*At home, it's very difficult for me to concentrate in study as I have two kids and I get interrupted frequently. I have different home responsibilities as well to take care*".

4.3.1.3 Theme 3: Complexity of the technology

Other theme from the study result became as the complexity of technology and it impacted the learning experience of the participants in several ways.

Participants mentioned that technologies with higher complexity had steeper learning curves, meaning that it took more time and effort for learners to become proficient in their use. Complex technologies required learners to invest more time and effort in understanding how they work, navigating their features and functions, and becoming proficient in their use, which impacted the learning process. As participant mentioned, complex technologies required learners higher amount of mental effort (known as cognitive

load) to process and manage information. Complex technologies with multiple features, functions, and interfaces increased the cognitive load, which negatively impacted the learning process and lead to cognitive overload or mental fatigue. ITE28 specified, "*Complex technologies have steeper learning curves, requiring more time and effort to become proficient. These technologies increased cognitive load due to their multiple features, functions, and interfaces, negatively impact the learning process*".

Complexity of the technologies impacted learners' confidence and self-efficacy, which referred to their belief in their ability to use the technology effectively. When technology was too complex, few participants found it lowered their levels of confidence and self-efficacy, which impacted their motivation to learn and their ability to engage with the technology effectively. ITE32 said, "*When the technology is very complex and takes lot of time to understand, I personally feel bit low in confidence, because scare if I devote that much of time or can pick it up within the timeframe* ".

As mentioned by few participants, complexity of the technologies also evoked a fear of failure to them. Few participants were worried about making mistakes, encountering errors, or not being able to use the technology correctly, which demotivated them from engaging in the learning process. As they mentioned, complex technologies had more opportunities for errors, such as incorrect inputs, settings, or operations. Many and frequent mistakes while learning the complex technologies lowered participants' confidence and motivation, and can also impact their learning effectiveness.

As mentioned by participants, complex technologies impacted respondents' engagement and motivation. When they found a technology too complex, sometimes they

felt overwhelmed, frustrated, or disinterested, which reduced their motivation to learn and engage with the technology. On the other hand, technologies that were perceived as manageable and user-friendly enhanced their engagement and motivation, leading to more effective learning. ITE28, ITE31, ITE34 specified, when they perceived a technology as overly complex, they perceived complex technologies as difficult to learn or require a significant time investment to become proficient in their use. This perception of high effort or difficulty demotivated learners from investing time and energy in the learning process, especially if they have competing priorities or limited time available.

Participants mentioned about the retention and transfer of the knowledge during learning of the complex technologies. As ITE9, ITE22 mentioned, when they struggled to understand the technology due to complexity, they found difficulties retaining the information and applying it to real-world scenarios. As retention and transfer of learning are crucial for effective application of technology skills in practical settings, complex technologies posed barriers to these processes, as per participants.

Participants mentioned about required additional support and resources for complex technologies and their frustration and confusion. ITE18, ITE30 mentioned, complex technologies required additional support and resources to facilitate learning, like access to tutorials, documentation, help desk support, or other forms of assistance to navigate the complexity of the technology. When such support and resources were not readily available, it impacted the effectiveness of the learning process. ITE14, ITE17 mentioned, complex technologies required them to navigate through multiple features, functions, and interfaces, and when they struggled to understand how the technology works

and they needed to spend more time figuring out how to use the technology, leaded to frustration or confusion.

4.3.1.4 Theme 4: Getting proper training and learning resources

The next theme came out from the study result was getting the proper training and learning resources. Many participants mentioned that learning a new technology required proper training, additional support and resources, like access to tutorials, documentation, help desk support, or other forms of assistance to navigate the complexity of the technology. In case of not getting proper training and learning resources, it became a challenge for the learner to learn a new technology.

Participants mentioned, having proper training, documents or training materials in the workplace contributes to effective learning by providing clarity, accuracy, consistency, accessibility, reusability, compliance, and supporting onboarding and knowledge transfer. It helped them to acquire the necessary knowledge, skills, and information, leading to improved performance and productivity in the workplace.

But as participants mentioned, for new technologies getting proper documentation and materials are challenging and without proper documents and training materials they struggled to understand the new technology and processes, resulting in knowledge gaps and hindered learning. ITE34 said, "*Lack of documentation and training materials poses challenges for understanding new technologies, leading to knowledge gaps and hindered learning*". One of the key factors that hindered proper training is the unavailability or inadequacy of training resources. This included a lack of training programs, limited access

to relevant training materials or tools, or insufficient trainers. Without adequate resources, they did not have access to the necessary training materials and tools needed to learn new technologies effectively.

Participants mentioned, new technologies evolved rapidly and new versions or new updates were keeping on coming. Getting training materials with all latest updates and developments could be challenging. Training materials became outdated quickly, and organizations struggled to provide up-to-date training materials for learning new technologies. This resulted in employees receiving outdated or incomplete training materials that have not effectively addressed their learning needs, as specified by ITE12, ITE25.

Participants mentioned about lack of in-house trainers and expertise. For the very new technologies, though external training was available but participants mentioned about lack of in-house expertise in a particular technology, because of that they faced challenge in proper internal training, follow-up doubt clarification, internal guidance and learning materials. Due to these, it hindered the effective learning process. ITE16 said, "*Limited in-house expertise in new technologies posed challenges in providing internal training, clarifying doubts, and offering guidance, resulting in hindered learning due to lack of proper internal resources and materials*".

4.3.1.5 Theme 5: Motivation

Another theme came out from the study result was Motivation. If employees were motivated or engaged, they learnt the new technologies faster. At the same time if

employees were not motivated or engaged in their learning activities at the workplace, they may struggle with time management. Lack of interest or enthusiasm for learning can result in procrastination or failure to allocate dedicated time for learning.

As per the response results, there are several factors that can contribute to a lack of motivation in learning for the employees. Respondents indicated that sometimes they found it not motivating for them as they did not perceive the learning content or objectives as relevant to their job or career goals. They mentioned, sometimes they didn't see a direct and clear connection between the learning content and their job responsibilities or performance and as a result they didn't see the value in investing time and effort into learning. ITE26 said, "*I am often motivated to learn when I see a direct relevance or applicability of the learning content to my personal or professional life. But there are few learnings where I do not find those as relevant to my goals, interests, or needs*". Without clear goals or incentives for learning new technologies, learners struggled with motivation. Having a sense of purpose, such as career advancement, job opportunities, or personal growth, positively impacted motivation to learn new technologies to the participants.

Participants in the survey stated that their motivation to learn was impacted by the complexity of technology. They felt less motivated to participate in the learning process when they thought a technology was too sophisticated or tough because they thought it would be too difficult or time-consuming. On the other hand if the perceived the technology as manageable or interactive, the felt more motivated to engage in the learning process. ITE19 said, "*When perceiving a technology as overly complex, I felt less motivated due to*

perceived challenges. However, if the technology was manageable or interactive, my motivation to engage in the learning process was higher".

Participants mentioned about lack of confidence or self-efficacy and fear of failure or consequences negatively impacted their motivation to engage in learning activities. They mentioned about their lack of confidence in their ability to learn and also fear of failure, negative consequences, or repercussions for not meeting learning goals or expectations - demotivated them from engaging in the learning process. ITE11 specified, "*Sometime I fear if I take the challenge of learning new technology, but not able to acquire the new knowledge or skills, that failure in learning may have negative consequences in my job, such as performance evaluations, promotions, or job security*".

Participants mentioned about lack of resources or support, like insufficient access to resources, such as learning materials, support from instructors or peers, mentorship, or technical support, impacted their motivation for learning. Learners felt unsupported or ill-equipped, which impacted their motivation to invest time and effort in learning. Participants also mentioned about their time constraints, competing priorities, and external pressures, complexity or difficulty of the technology reduced motivation for learning.

4.3.2 Impact on performance adopting new technologies

After learning a new technology and adopting it in their work, IT employees found several impacts in their performances. These were organized as themes depending on the

properties of the impacts. The identified themes were Productivity, Problem solving ability, Innovation and Creativity, Collaboration and Teamwork, Building Confidence.

4.3.2.1 Theme 6: Productivity

Participants mentioned that after learning a new technology and applying that in work, their productivity got enhanced by equipping them with new skills, knowledge, and tools to perform their tasks more effectively and efficiently. When they acquired new knowledge and skills through workplace learning, they applied them to their job tasks, leading to better performance and increased productivity, as participants revealed. ITE2, ITE8 mentioned, IT employees, such as software developers, network administrators, and data analysts, need to stay updated with the latest technologies to remain effective in their roles. Learning new technologies, such as new programming languages, frameworks, cloud computing platforms, or data analytics tools, enhanced their technical skills and made them more proficient at their job tasks. This leaded to improved performance in developing software applications, managing networks, analyzing data, and other IT-related responsibilities.

Participants mentioned about their increased efficiency in their work after learning and adopting new technology. As they indicated, new technologies are often designed to improve efficiency and streamline IT processes. For example, automation tools, DevOps practices, and agile methodologies helped IT employees automate repetitive tasks, streamline development and deployment processes, and optimize workflows. This resulted in increased productivity, faster project completion, and improved job performance. ITE12

said, "*Learning new technologies improved my technical skills, enabling me to use new tools, software, and systems more effectively. This resulted in increased efficiency, accuracy, and productivity in performing job tasks that require the use of these technologies*".

4.3.2.2 Theme 7: Problem solving ability

New technologies often require employees to develop problem-solving skills to troubleshoot issues, overcome challenges, and optimize their use. Participants indicated, learning new technologies in the workplace has sharpen their problem-solving abilities, which can be transferable to other areas of their work and result in more effective and efficient problem-solving skills. Participants also mentioned that when they were equipped with more technological skills, they felt more confident and became more capable to solve a problem in shorter duration. ITE6 said, "*Learning new technologies in the workplace enhanced my problem-solving skills, which I can transfer to other areas of work for improved effectiveness and efficiency*".

Participants mentioned about the enhanced adaptability and agile mindset to solve the problem quickly by learning emerging technologies. As workplaces continue to evolve and technology rapidly changes, by learning new technologies they improved adaptability and agility, enabling them to quickly learn, adopt, and integrate new technologies into their work processes. These adaptibility and agility increased their ability to solve the problem quickly and performance as well with changing technological landscapes, as mentioned by the participants ITE22, ITE29.

4.3.2.3 Theme 8: Innovation and Creativity

Participants mentioned that after learning and adopting the new technology, on top of their performance improvement, they felt they became more innovative and creative. Learning new technologies sparked innovation and creativity among them. After learning new technologies, they came up with creative ways to apply them to their work, leading to the development of new solutions, processes, or products that positively impacted performance and business outcomes. ITE27 said, "*After learning new technologies, new ideas, perspectives, and approaches stimulated my creativity and encouraged me to think outside the box. This helped to generate of innovative solutions and ideas that positively impacted my performance and gave me the competitive advantage*".

Participants mentioned that after learning a new technology, while experimenting with them in real-world scenarios to get practical experiences, collaborating and brainstorming with peers and team members, these allowed them to come up with creative problem solving skills and finding unique solutions to challenges. This continuous approach fueled their creativity and innovative skillsets.

4.3.2.4 Theme 9: Collaboration and Teamwork

Participants mentioned about collaboration and teamwork. They mentioned while learning a new technology at workplace, it helped to build a community which promoted collaboration and teamwork among IT employees. These learning opportunities encouraged employees to work together, share knowledge, and collaborate on projects enhanced teamwork and fostered a culture of continuous learning. This leaded to improved

performance of the participants as they leveraged each other's strengths and expertise, as they mentioned. ITE24 said, "*Learning new technologies nurtured collaboration and teamwork among us by creating the community. When we learn new technologies together, we can collaborate on projects, share knowledge, and provide support to each other. This enhanced teamwork and improved performance as we leveraged the capabilities of new technologies and collaborated with others and used everyone's strengths more effectively*".

Participants mentioned that when they felt that their organizations invested in their learning and future growth, they felt more connected with organization and coworkers. When they got access to learning and development opportunities, it demonstrated that the organization valued their growth and development, which increased their loyalty and commitment to the organization, leading to higher retention rates and greater team bonding.

4.3.2.5 Theme 10: Building Confidence

Participants mentioned about increased confidence and motivation. Learning new technologies boosted their confidence and motivation. Acquiring new technical skills empowered them and increased their self-confidence in using these technologies in their work. This increased confidence motivated IT employees to apply their newly acquired skills, resulting in improved performance and outcomes, as participants mentioned.

Participants mentioned learning new technology and applying them at workplace increased their employee engagement and motivation. When they got the access to learning opportunities, it created a sense of ownership and investment in their professional development, leading to higher levels of engagement and motivation to perform well in

their roles, they mentioned. ITE16 said, "*In today's competitive business environment, staying updated with new technologies gave me a competitive edge. Learning new technologies helped me to stay current and relevant, it made me more confident to accept the challenges as opportunities which positively impacted my performance in my role and industry"*.

ITE5, ITE25 indicated that learning new technologies at workplace they found themselves to be eligible and fit for different high skilled demands at higher level. This helped them to grow faster in the organization. This made them more confident and motivated to perform their roles more effectively.

4.4 Summary of Findings

In summary, the findings of the study from the semi-structured interviews with IT employees about their experience in learning emerging technologies and adopting those in their work, due to digital transformation, are as mentioned below.

RQ1: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning and adopting these technologies?

While learning the new technologies at work, IT employees experienced few challenges, which came out as below:

The IT employees indicated that managing time was the biggest challenge they faced for study. All the participants indicated that they faced the time crunch due to work and family responsibilities. Creating a balance between job and family or other social

responsibilities is mentioned by the participants as a primary issue for employees to spend additional time for learning new technologies. The majority of female employees said the same, as they are more challenged by both their workplace and household responsibilities including childcare and housework.

Majority of the participants reported that learning a new technology needed a lot of focus and concentration. At workplace, while studying or practicing the new technologies different kind of interruptions came – it may be some priority work, any ad hoc meeting or call, email, instant message or may be from any co-workers. While learning at home, participants mentioned about interruptions from family members, including spouses, children, or other household members, during their studies at home.

Participants mentioned about the complexity of technology and it impacted the learning experience of the participants in several ways. Participants mentioned that technologies with higher complexity had steeper learning curves, complex technologies required learners to invest more time and effort in understanding how they work, complex technologies required learners higher amount of mental effort to process and manage information, which impacted the learning process.

Complexity of the technologies impacted learners' confidence and self-efficacy - when technology was too complex, few participants found it lowered their levels of confidence and self-efficacy, which impacted their motivation to learn and their ability to engage with the technology effectively.

Many participants mentioned that learning a new technology required proper training, additional support and resources, like access to tutorials, documentation, help desk

support, or other forms of assistance to navigate the complexity of the technology. In case of not getting proper training and learning resources, it became a challenge for the learner to learn a new technology.

Another theme came out from the study result was Motivation. If employees were motivated or engaged, they learnt the new technologies faster. At the same time if employees were not motivated or engaged in their learning activities at the workplace, they may struggle with time management. Lack of interest or enthusiasm for learning can result in procrastination or failure to allocate dedicated time for learning.

RQ2: How are these technologies impacting their performance while learning and adopting these technologies?

After learning a new technology and adopting it in their work, IT employees found several impacts in their performances, as described below.

Participants mentioned that after learning a new technology and applying that in work, their job performance got enhanced by equipping them with new skills, knowledge, and tools to perform their tasks more effectively and efficiently. When they acquired new knowledge and skills through workplace learning, they applied them to their job tasks, leading to better performance and increased productivity, as participants revealed.

Participants indicated, learning new technologies in the workplace has sharpen their problem-solving abilities, which can be transferable to other areas of their work and result in more effective and efficient problem-solving skills. Participants also mentioned that

when they were equiped with more technological skills, they felt more confident and became more capable to solve a problem in shorter duration.

Participants mentioned that after learning and adopting the new technology, on top of their performance improvement, they felt they became more innovative and creative. Learning new technologies sparked innovation and creativity among them. After learning new technologies, they came up with creative ways to apply them to their work, leading to the development of new solutions, processes, or products that positively impacted performance and business outcomes.

Participants mentioned about collaboration and teamwork. They mentioned while learning a new technology at workplace, it helped to build a community which promoted collaboration and teamwork among IT employees. These learning opportunities encouraged employees to work together, share knowledge, and collaborate on projects enhanced teamwork and fostered a culture of continuous learning. This leaded to improved performance of the participants as they leveraged each other's strengths and expertise, as they mentioned. Participants mentioned that when they felt that their organizations invested in their learning and future growth, they felt more connected with organization and coworkers.

Participants mentioned about increased confidence and motivation. Learning new technologies boosted their confidence and motivation. Acquiring new technical skills empowered them and increased their self-confidence in using these technologies in their work. This increased confidence motivated IT employees to apply their newly acquired skills, resulting in improved performance and outcomes, as participants mentioned.

4.5 Conclusion

The results chapter of this research paper has presented the findings and analysis of the data collected. The data were analyzed using Thematic Analysis, the appropriate qualitative analysis technique. The research objectives were addressed, and the key findings were highlighted. The results have provided insights into the research questions and have contributed to the existing knowledge in the field. Overall, the results chapter has presented a comprehensive analysis of the data and has contributed to the research findings in a meaningful way.

The findings from this study could contribute to a better understanding of the impact of digital transformation on Indian IT employees, their experience to learn new emerging technologies. The impact of emerging technologies on IT employees in the retail industry in India, in terms of learning and adopting these technologies, presents several challenges as mentioned by participants. Managing time was identified as a significant challenge due to work and family responsibilities, and the need to balance job and family responsibilities was particularly challenging for female employees. Interruptions at work and home, as well as the complexity of technologies, further hindered the learning process. Participants mentioned that complex technologies required more time and effort to understand, and impacted their confidence and self-efficacy. Proper training and resources were identified as crucial for effective learning of new technologies.

On the other hand, after learning and adopting new technologies, IT employees reported several positive impacts on their performance. They mentioned enhanced job performance, improved problem-solving abilities, increased innovation and creativity, and

fostering of collaboration and teamwork. Learning new technologies also increased their confidence and motivation, leading to improved performance and outcomes.

The next chapter highlights the findings' discussions and the correlation of the results with existing literature review.

CHAPTER V:

DISCUSSION

5.1 Discussion of Results

The purpose of this qualitative study was to find the impact of the digital transformation on IT employees of India in the retail sector. With this in focus, the research highlighted the employees' reactions on learning and adapting the new technologies, if they faced any challenge in learning and adopting them. The research also highlighted employees' reactions toward improvement in their performance due to learning and implementing new technologies in their work due to digitalization and digital transformation.

This chapter contains discussion of the results to help answering the research questions:

RQ1: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning and adopting these technologies?

RQ2: How are these technologies impacting their performance while learning and adopting these technologies?

Key findings:

1. The IT employees expressed that time management was their biggest challenge when it came to studying. All participants mentioned that they faced time constraints due to their work and family responsibilities, and finding a balance between their job and

personal commitments was a primary issue in allocating time for learning new technologies. Female employees, in particular, highlighted the challenges they faced in managing both workplace and household responsibilities, including childcare and housework.

2. The majority of participants reported that learning new technologies required significant focus and concentration. At the workplace, they encountered various interruptions such as priority work, ad hoc meetings or calls, emails, instant messages, or interruptions from co-workers while studying or practicing new technologies. Participants also mentioned interruptions from family members, including spouses, children, or other household members, while studying at home.

3. The complexity of the technologies also impacted the participants' learning experience. Participants mentioned that technologies with higher complexity had steeper learning curves, required more time and effort to understand, and demanded higher mental effort to process and manage information, which affected the learning process. The complexity of the technologies also influenced the participants' confidence and self-efficacy, as some found that overly complex technologies lowered their confidence and motivation to learn and effectively engage with the technology.

4. Many participants emphasized the need for proper training, additional support, and resources, such as tutorials, documentation, help desk support, or other forms of assistance, to navigate the complexity of the technologies. Inadequate training and learning resources posed challenges for learners in acquiring new technologies.

5. Motivation emerged as another theme from the study. Participants noted that being motivated and engaged facilitated faster learning of new technologies. On the other hand, lack of interest or enthusiasm for learning caused procrastination and difficulty in managing time for learning at workplace.

6. Participants mentioned that their productivity improved as a result of obtaining new skills, information, and tools that allowed them to carry out duties more effectively and efficiently after implementing new technologies into their work. Their problem-solving skills were strengthened through workplace learning, which they found to be transferable to other aspects of their work. This resulted in better problem-solving abilities and higher confidence in their ability to solve problems quickly.

7. Participants reported that learning new technologies at workplace helped to sharpen their problem-solving abilities, which can be transferred to other areas of their work resulting in improved effectiveness and efficiency. They also mentioned that they felt more confident and capable of solving problems quickly with the knowledge of technological skills. Additionally, participants reported enhanced adaptability and an agile mindset to solve problems quickly by learning emerging technologies, enabling them to learn quickly, adopt and integrate new technologies into their work processes.

8. Furthermore, participants noted that learning new technologies sparked innovation and creativity among them. They came up with creative ways to apply the newly acquired technologies to their work, resulting in the development of new solutions, processes, or products that positively impacted performance and business outcomes.

9. Participants also highlighted the role of collaboration and teamwork in workplace learning. Learning new technologies encouraged employees to work together, share knowledge, and collaborate on projects, leading to enhanced teamwork and a culture of continuous learning. Participants felt more connected to their organization and coworkers when they perceived that their organizations invested in their learning and future growth.

10. Lastly, participants mentioned that learning new technologies increased their confidence and motivation. Acquiring new technical skills empowered them and boosted their self-confidence in using these technologies in their work, which in turn motivated them to apply their newly acquired skills, resulting in improved performance and outcomes.

Interpretation of the Findings

1. The finding suggests that managing time is a significant challenge faced by IT employees when it comes to pursuing further education or learning new technologies. This challenge is exacerbated by work and family responsibilities, and particularly affects female employees who may have additional household and childcare duties to balance with their job.

This finding is consistent with the existing on technology adoption, where employees often struggle to find the time and resources to learn new skills (Chen and Huang, 2012). Work-family conflict has also been identified as a major barrier to technology adoption, especially for women (Bhattacharyya and Sharma, 2019; Buyung *et al.*, 2020). Recent literature supports this finding, as studies have shown that work-life

balance is a critical issue for employees across various industries, including the IT sector (Clark and Mainiero, 2010; Rizvi and Kumar, 2020).

2. The finding suggests that learning new technologies requires significant focus and concentration, which can be challenging due to various interruptions that participants face both at work and at home. Interruptions at workplace might come in the form of importance work, ad hoc meetings or calls, emails, instant messages or interruptions from co-workers. Meanwhile, participants also reported about the interruptions while studying at home from family members, such as spouses, children, or other household members.

Recent literature supports the finding that interruptions can have a significant impact on learning and productivity (Reushle and McDonald, 2018). Likewise, Radesky et al. (2014) mentioned interruptions at home can impact an individual's ability to focus and learn new skills. Research has demonstrated that frequent interruptions can lead to a decrease in cognitive performance, such as memory retention and attention span for learning and cognitive work (Mark, Smith and Jackson, 2016).

3. The complexity of technology and its impact on learning experience has been explored in several studies and they support with the result found in this study. Participants in these studies have reported that complex technologies require more time and effort to become proficient in their use, and this impacts the learning process (Ali and Ahmad, 2021). Complex technologies also increase cognitive load, leading to mental fatigue and cognitive overload, which negatively impacts learning effectiveness (Khan and Ahmad,

2021). Additionally, complexity lowers learners' confidence and self-efficacy, leading to demotivation and reduced engagement with the technology (Fatima and Faisal, 2019). Furthermore, fear of failure is evoked by complex technologies, reducing motivation and engagement. Participants have also reported that complex technologies pose barriers to retention and transfer of learning, and additional support and resources are required to facilitate learning (Park and Kim, 2020).

4. The result - getting proper training and learning resources, which got highlighted in this study aligns with existing literature that suggests the importance of training and learning resources for effective technology learning. In order to help learners better understand new technologies and increase their performance and productivity, previous research has emphasized the importance of providing them with the necessary training and tools (Meier, Tietz and Gierling, 2019; Kavota, Yumba and Kiyindou, 2021). This study also highlights the role of proper training materials in ensuring clarity, accuracy, consistency, accessibility, reusability, compliance, and supporting onboarding and knowledge transfer, which aligns with the recommendations of previous studies (Lee and Chen, 2018).

The study also points out the challenges associated with obtaining proper training and learning resources, which is consistent with previous research. Previous studies have shown that the lack of proper training and resources can hinder the effective learning of new technologies and result in knowledge gaps (Chang, Chen and Chen, 2018). The study also highlights the challenges associated with obtaining up-to-date training materials and

the need for continuous updates to training resources to keep up with the rapid evolution of new technologies, which is also consistent with the recommendations of previous studies (Davern, Curry and Kannan, 2018; Meier, Tietz and Gierling, 2019).

5. The theme of motivation at workplace learning is an existing researched area, and the findings of this study are consistent with the existing literature. The study highlights several factors that can affect employees' motivation to engage in learning activities. For example, perceived relevance of the learning content to their job or career goals, complexity of the technology, lack of confidence or self-efficacy, fear of failure or consequences, and lack of resources or support. These factors are consistent with the factors identified in previous studies (Shin, Kim and Park, 2019; Chiu and Chi, 2020; Cheng, Chen and Liao, 2021).

The study also emphasizes the importance of having clear goals or incentives for learning new technologies to increase learners' motivation. This finding is consistent with the expectancy-value theory of motivation. The theory postulates that learners' motivation is influenced by their expectation of success and the perceived value of the learning outcomes (Eccles and Wigfield, 2002).

The finding of the study, that the motivation of the learners is positively impacted by a sense of purpose, like as career advancement, job opportunities, or personal growth – this is also consistent with the self-determination theory of motivation (Deci and Ryan, 2000a). This theory emphasizes the importance of satisfying learners' basic psychological

needs for autonomy, competence, and relatedness to enhance their motivation and engagement in learning activities.

6. The result highlights the positive impact of learning on job performance. Learning new technologies and applying them at work tasks enhanced technical skills, increased efficiency and improved productivity. These findings are consistent with existing literature on the relationship between workplace learning and job performance (Noe, 2010; Choi and Lee, 2017; Kesuma, Astuti and Hidayat, 2020). The study also identified specific technologies that IT employees need to stay updated with new technologies. Klassen and Wilson (2018); Gao et al. (2019) highlighted in their studies about the importance of staying up-to-date with the latest technologies.

The study also showed that new technologies are made to promote productivity by increasing efficiency. This outcome is consistent with the research on how technology affects work performance. According to the report, implementing new technology can boost performance, effectiveness, and production (Brynjolfsson and McAfee, 2014; Kochan *et al.*, 2018; Liang, Huang and Yeh, 2019).

7. The result suggests that workplace learning of new technologies can enhance employees' problem-solving abilities. It leads more effective and efficient problem-solving skills. Existing literatures support this findings of problem-solving skills at workplace, which shown that workplace learning can improve the problem solving skills, adaptability, agility and confidence (Lee, Lee and Choi, 2016; Lee and Choi, 2019; Sánchez, Pérez and

Cantón, 2020). A study by Kaur and Kaur (2015) highlighted the importance of problem solving skills in the workplace and they found that employees who are good in problem solving, are more productive and confident. The results the studies highlight the importance of staying up-to-date with emerging technologies and continuously learning to remain effective and efficient in their job role (Martín-Santana, Beerli-Palacio and Fernández-Monroy, 2020; Shami and Abdullah, 2021).

8. The theme of innovation and creativity emerging from workplace learning aligns with the existing literature, which suggests that learning and development opportunities enhance employees' creativity and innovation abilities. Damanpour and Aravind (2012) mentioned in their study that technology adoption can have a positive impact on innovation and creativity within an organization. The study found that adopting new technologies can lead to the development of new processes or products or services which positively impact organizational performance.

Similarly, a study by Pohjola and Melkas (2014) found that workplace learning can stimulate innovation and creativity among employees. By learning new technologies, employees can expose to new ideas, perspectives and approaches, which can lead to the development of innovative solutions and ideas. The study also found that collaboration and brainstorming with team members can further fuel creativity and innovation.

Moreover, the study by (Farooq, Ahmad and Fasih, 2021) found that workplace learning positively affects innovation in organizations. Their study found a significant

positive relationship between workplace learning and innovation, suggesting that providing learning opportunities to employees can promote innovation in the workplace.

9. The result regarding the positive impact of workplace learning on collaboration and teamwork is supported by existing literature. Many studies have found that learning and training opportunities can foster a culture of collaboration and teamwork among employees (Jones *et al.*, 2018; Roche and Teague, 2019; Gegenhuber and Dobusch, 2020). Research has shown that workplace learning opportunities that promote collaboration and teamwork among employees can enhance organizational performance and employee engagement (Decuyper, Dochy and Van den Bossche, 2010; Salas *et al.*, 2012).

Furthermore, studies have found that employees are more loyal and committed to the organization, when employees perceive that their organization invests in their learning and development (Allen and Shanock, 2013; Ahmad, Yaseen and Raziq, 2020). This can lead to greater team bonding, higher retention rates and improve organizational performance.

10. The results indicating that learning new technologies can increase confidence and motivation among employees are supported by existing literature. Several studies have found that providing learning and development opportunities can increase employee engagement, motivation, and job satisfaction (Schneer and Reitman, 2015; Yoon and Kim, 2017; Macedo *et al.*, 2020). Additionally, learning new skills and applying them in the

workplace can increase employees' self-efficacy, which is a key factor in motivation and performance, as supported by a study conducted by (Wasti, Khan and Foustana, (2017).

Moreover, the findings that learning new technologies can make employees feel more eligible and fit for higher-level roles align with the concept of "skill upgrading" or "skill-biased technological change," which refers to the phenomenon of technological advancements increasing demand for higher-skilled workers (Acemoglu and Autor, 2011; Yoon and Kim, 2018). This can lead to greater career opportunities and higher wages for employees who acquire new technological skills.

In conclusion, the results found from the study aligned with Malcolm Knowles (1968) Andragogy theory and Garrison's (1997) Self-Directed Learning (SDL) theory, as discussed in Chapter 2.

5.2 Discussion of Research Question One

The research purpose of this study is to understand the impact of emerging technologies due to digital transformation on India's IT employees working in the retail industry. The study aims to explore the challenges that the employees face in learning and adopting these technologies and how these technologies affect their performance.

The first research question (RQ1) aims to investigate the challenges faced by IT employees of India working in retail industry in terms of learning and adopting emerging technologies due to digital transformation.

RQ1: How are the emerging technologies (due to digital transformation) impacting India's IT employees in retail industry, in terms of any challenge learning and adopting these technologies?

The business landscape is getting reshaped, including retail industry in India, due to Digital transformation. Digital transformation is driven by the evolving technologies - artificial intelligence, blockchain, cloud computing, internet of things etc. These technologies offer new opportunities to the businesses, and at the same time they also bring challenges, particularly for the employees who must learn and adapt to them.

To keep the same pace with digital transformation across industries, IT employees must continually learn and update their skills. However, not all employees may be equally proficient in learning and adopting new technologies. Some may find it challenging to adapt to the changes, leading to a skills gap that could hinder the organization's performance.

Therefore, RQ1 aims to identify the challenges that IT employees in the retail industry face while learning and adopting emerging technologies. This research question will help to understand the experiences of employees and the factors that influence their ability to learn new technologies. The findings from this research question can help IT leaders in the retail industry to design more effective strategies for training and upskilling their employees. They will be able to create a framework that addresses the specific challenges faced by employees in learning and adopting new technologies.

In conclusion, the first research question is critical in providing insights into the challenges faced by IT employees in the retail industry in India when learning and adopting

emerging technologies due to digital transformation. This research can help to understand the factors that impact the employees' ability to learn new technologies and inform the development of strategies that support their performance and productivity.

The results found from this research helped to answer the research question one. The study found that the IT employees faced few challenges while learning new technologies. These challenges are themed as - Managing Time, Interruptions during studies, Complexity of the technology, Getting proper training and resources, Motivation. These are discussed in detailed manner in the following sections.

5.2.1 Managing time due to work and personal commitments

Managing time for learning new technologies is a significant challenge for IT employees due to their multiple work and personal commitments. Balancing job and family or social responsibilities, lack of planning, workplace distractions, and health or well-being concerns are the major factors that contribute to poor time management.

Discussion of Results from the Study

The results of this study reveal that managing time for learning new technologies is a major challenge for IT employees due to their multiple work and personal commitments. The participants indicated that creating a balance between job and family or other social responsibilities is a primary issue for employees to spend additional time for learning new technologies and this is particularly challenging for female employees. Most female employees need to balance their workplace and household responsibilities including childcare and housework. The study also found that middle-aged employees between the

ages of 36 and 50 faced challenges in creating a balance between their learning and work, family, and social life.

One of the key reasons for poor time management for learning activities is overcommitting to multiple tasks, responsibilities, or activities. This results in insufficient time for learning and having a packed schedule without allocating dedicated time for learning left little or no time for effective studying or skill development. The lack of prioritization of learning with other tasks is also another reason for the time crunch. Work-related tasks have taken precedence, leaving little or no time for dedicated learning activities. This lack of prioritization is often due to unexpected work-related emergencies or urgent tasks that have taken over the priorities from planned learning activities, leading to poor time management for learning.

The study also found that lack of planning and procrastination were also reasons for poor time management for learning activities. Not having a clear plan or schedule for learning had led to poor time management, hence losing track of time and missing out on regular learning opportunities. Procrastination, or putting off learning tasks or assignments, had also led to a lack of time management, as mentioned by the participants. Junior employees also indicated that unrealistic expectations about the time required for completing a task or underestimating the effort needed to complete a task resulted in poor time management.

The study also found that workplace distractions, such as interruptions from colleagues, phone calls, emails, or meetings disrupted the focus and concentration needed for effective learning. These distractions consumed valuable time and hindered time

management for learning, as mentioned by the participants. In addition, few employees who were new to the organization mentioned the lack of awareness or access to learning opportunities in the organization. They reported, they were either not fully aware of available learning opportunities at the new workplace or did not sure about their access to learning resources. This impacted their ability to manage time effectively for learning.

While studying at home, personal commitments or responsibilities, such as taking care of children, managing household tasks, or attending to other family or personal responsibilities, limited the time available for learning. Balancing these commitments with learning activities was challenging, resulting in poor time management for learning at home. The study also found that health or well-being was a concern for managing time for learning. Due to physical or mental health issues, fatigue, or stress, employees' ability to manage time effectively for learning at home or workplace was affected. These factors impacted their focus, concentration, and motivation, resulting in poor time management for learning activities.

From this theme, it is found that managing time for learning new technologies is a significant challenge for IT employees. These are predominantly due to overcommitment to multiple tasks, lack of prioritization of learning with other tasks, lack of planning, workplace distractions, lack of awareness or access to learning opportunities, personal commitments, and health or well-being concerns. These factors contributed to poor time management for learning Organizations can take several steps to address these challenges and by addressing these challenges, organizations can help their employees manage their time more effectively and support their ongoing learning and development.

Discussion Related to Existing Literature

The theme of managing time due to work and personal commitments identified in the study aligns with previous research that has highlighted the challenge of balancing work and personal responsibilities with learning and development activities (Saini, Mangla and Tripathi, 2018; Ruggieri *et al.*, 2019). This is also highlighted in earlier studies conducted by Kramarski and Michalsky (2010; Allen and Seaman (2017).

The study also identified the lack of prioritization of learning with other tasks as a reason for the time crunch. This finding is in line with previous research that has highlighted the importance of prioritization in effective time management (Orpen, 1994; Beşoluk and Önder, 2014). Furthermore, the study participants reported that work-related tasks often take precedence over learning activities, leading to inadequate time allocation for learning. This aligns with previous research that has identified work-related demands as a barrier to learning (Fullagar, Knight and Sovern, 2013; Saks and Gruman, 2014).

The study participants also reported that unexpected work-related emergencies or urgent tasks had taken over the priorities from planned learning activities, leading to poor time management for learning. This finding is consistent with research that has highlighted the challenge of balancing planned learning activities with unexpected work demands (Kramarski and Michalsky, 2010; Saini, Mangla and Tripathi, 2018).

The lack of planning and procrastination reported by the study participants as reasons for poor time management aligns with previous research that has identified planning and self-regulation as critical components of effective time management (Orpen, 1994; Beşoluk and Önder, 2014). Junior employees in the study also reported unrealistic

expectations about the time required for completing a task or underestimating the effort needed to complete a task, which is consistent with previous research that has highlighted the importance of setting realistic goals and expectations for effective time management (Chu and Choi, 2005; Saks and Gruman, 2014).

The workplace distractions reported by the study participants align with previous research that has identified interruptions and distractions as a significant barrier to effective learning (Kramarski and Michalsky, 2010; Allen and Seaman, 2017). The lack of awareness or access to learning opportunities in the organization reported by some participants also aligns with previous research that has highlighted the importance of clear communication and access to learning resources (Fullagar, Knight and Sovern, 2013; Ruggieri *et al.*, 2019).

The study participants also reported personal commitments or responsibilities while studying at home, such as taking care of children, managing household tasks, or attending to other family or personal responsibilities, as a significant challenge to effective time management for learning. This finding is consistent with previous research that has highlighted the challenge of balancing personal responsibilities with learning activities (Fullagar, Knight and Sovern, 2013; Saini, Mangla and Tripathi, 2018).

Finally, the study participants reported health or well-being as a concern for managing time for learning. This finding is consistent with previous research that has identified physical and mental health as factors that can impact time management and learning (Chu and Choi, 2005; Fullagar, Knight and Sovern, 2013).

5.2.2 Interruptions during studies at work or home

Interruptions during studies at work or home can hinder concentration and focus, resulting in poor time management. Colleagues, phone calls, emails, and meetings at work, and personal commitments like childcare and household tasks at home can disrupt learning, affecting productivity and skill development.

Discussion of Results from the Study

The research explores the interruptions faced by individuals while learning new technologies, both at workplace and at home. The second theme that emerged from the study was the interruptions that participants faced during their studies. The participants reported that learning new technologies required a lot of focus and concentration, and interruptions during the learning process disrupted their concentration and derailed their focus from their studies.

The interruptions at workplace were of various kinds, such as priority work, ad hoc meetings, phone calls, instant messages, and interruptions from colleagues. Participants found that classroom sessions were more effective as they provided dedicated time slots for training, with minimal interruptions. However, classroom sessions were not always feasible, and sometimes impacted project delivery if time-bound and other team members were dependent on that delivery.

Email notifications, phone calls, instant messages, and other notifications also disrupted participants' studies by creating a feeling of responding to them immediately. Participants mentioned that workplace meetings, discussions, or unplanned brainstorming sessions interrupted their study time. Colleagues or coworkers approaching the participants

for various reasons, such as with questions, requests for help, or just for casual conversation, disrupted participants' concentration and focus. Noise from office equipment or chatter from coworkers also distracted and interrupted their focus studies and made it difficult to concentrate and learn effectively.

Participants also faced interruptions due to work-related emergencies and urgent tasks that required their immediate attention, which disrupted their study time. Participants sometimes unintentionally interrupted their own studies due to lack of discipline or self-control, procrastination, browsing social media, or engaging in other non-work-related activities such as personal phone calls, text messages, or unexpected personal appointments.

While learning at home, participants faced interruptions from family members, including spouses, children, or other household members, who might seek attention, engage in noisy activities, or require assistance with household tasks. Home responsibilities such as household tasks, and environmental factors like noise from neighbors, construction, pets, poor lighting, uncomfortable seating, or extreme temperatures etc interrupted participants during their studies and affect their ability to concentrate.

The study suggests that interruptions during the learning process can significantly affect an individual's ability to learn and retain new technologies. The findings suggest the need for strategies to minimize interruptions during the learning process.

Discussion Related to Existing Literature

The findings of this research are consistent with previous literature on interruptions in the workplace and their impact on productivity and performance. A study conducted by

Kostopoulos, Pratte and Dubé (2019) found that interruptions during learning can negatively impact performance and increase cognitive load. In their study, they found that task-irrelevant interruptions disrupted attention, impaired retention, and negatively impacted task performance. Research has shown that interruptions can lead to lower quality work, increased stress, and decreased job satisfaction (Macdonald, Brown and Teevan, 2018; Robertson, Wilkins and Fitzgerald, 2019). Interruptions can also disrupt the flow of work and negatively impact the ability to focus and concentrate, leading to decreased learning and performance (Macdonald, Brown and Teevan, 2018; Kostopoulos, Pratte and Dubé, 2019).

In terms of interruptions during studying at home, studies found that distractions and interruptions at home can negatively affect the learning process (Schwagler *et al.*, 2019). The authors suggest that minimizing distractions and creating a quiet and comfortable environment can help to improve learning outcomes.

5.2.3 Complexity of the technology

Complex technology had a significant impact on the learning experience, with participants noting that it had steeper learning curves and required greater investment of time and effort to become proficient in using them, as study found. The mental effort required to process and manage information, known as cognitive load, was also higher with complex technologies.

Discussion of Results from the Study

The study emphasizes the effect of technological complexity on users' learning processes. The study's participants noted that learning curves for more complicated technologies were steeper, requiring more time and effort to become adept. This result underlines the significance of taking the user's learning curve into account when creating sophisticated technologies. As this might have a detrimental impact on learning and result in cognitive overload or mental tiredness, designers should take into account the level of cognitive load that the technology places on the user.

The study also emphasizes the effect of technology complexity on users' self-efficacy and confidence. When a piece of technology is overly complicated, it lowers users' confidence and self-efficacy levels, which affects their learning motivation and their capacity to interact with the technology successfully. This conclusion emphasizes how crucial it is to create technology that is manageable and user-friendly because doing so can increase users' motivation and engagement, which will result in more efficient learning.

The study also discovered that users may experience a fear of failure due to complexity. Users might be concerned about using the technology incorrectly, making mistakes, or running into faults. Users may get unmotivated to participate in the learning process due to this fear of failure. Therefore, designers must to think about giving consumers enough assistance and resources to speed up learning and lessen their fear of failing.

The study also highlights the impact of technology complexity on retention and transfer of knowledge. Participants found difficulties retaining the information and

applying it to real-world scenarios when they struggled to understand the technology due to complexity. This finding emphasizes the importance of designing technology that facilitates retention and transfer of knowledge, as these processes are crucial for effective application of technology skills in practical settings.

Lastly, the study highlights the need for additional support and resources for complex technologies. Participants mentioned about required additional support and resources, like access to tutorials, documentation, help desk support, or other forms of assistance to navigate the complexity of the technology.

Discussion Related to Existing Literature

The study's results are in line with existing literature that emphasizes how technology complexity affects users' learning, confidence, self-efficacy, fear of failure etc.

For instance, studies have shown that technology complexity can negatively impact users' confidence, self-efficacy, and motivation to learn (Kirschner, Sweller and Clark, 2006; Paas and Sweller, 2012). The studies have also shown that technology complexity can lead to cognitive overload, mental fatigue, poor performance (Sweller, Ayres and Kalyuga, 2011).

Moreover, studies have shown that providing adequate supports and resources to the learners can simplify the learning process, reduce their frustration, and enhance learners' engagement and motivation (Kirschner, Sweller and Clark, 2006; Mayer, 2014). Providing tutorials, documentation, help desk support, and other forms of assistance can

help users navigate the complexity of the technology and reduce the fear of failure (Mayer, 2014).

5.2.4 Getting proper training and learning resources

Proper training and learning resources are crucial for mastering new technology. With the access of high-quality training materials and knowledgeable instructors, employees can develop the skills required to excel in their field. Without these resources, employees may struggle with their learning.

Discussion of Results from the Study

The study result highlights the importance of proper training and learning resources for effective learning of new technologies. Many participants emphasized that learning a new technology required proper training, additional support, and resources like tutorials, documentation, help desk support, or other forms of assistance to navigate the complexity of the technology. Without these resources, learners struggled to understand the new technology and processes, resulting in knowledge gaps and hindered learning.

Participants also mentioned that having proper training, documents, or training materials in the workplace contributes to effective learning by providing clarity, accuracy, consistency, accessibility, reusability, compliance, and supporting onboarding and knowledge transfer. It helped them to acquire the necessary knowledge, skills, and information, leading to improved performance and productivity in the workplace.

However, participants also mentioned that for new technologies, getting proper documentation and materials was challenging, and without proper documents and training materials, they struggled to understand the new technology and processes.

Participants also highlighted that new technologies evolved rapidly and new versions or updates were continuously released which makes it challenging to provide up-to-date training materials for learning new technologies. This resulted in employees receiving outdated or incomplete training materials that have not effectively addressed their learning needs.

Finally, participants mentioned the lack of in-house trainers and expertise as a challenge. For very new technologies, though external training was available, participants faced challenges in providing internal training, clarifying doubts, and offering guidance due to the limited in-house expertise in a particular technology. This hindered the effective learning process.

Discussion Related to Existing Literature

The importance of proper training and learning resources for effective learning of new technologies is a widely discussed topic in the literature. According to Anand and Pangilinan (2020), providing access to training materials, tutorials, and documentation can help employees acquire new skills and knowledge, leading to improved performance and productivity. Similarly, Liang, Huang and Liang (2020) state that providing employees with proper training and resources can improve their understanding of new technologies and enhance their ability to use them effectively.

However, as the study result highlights, the availability and quality of training resources can be a challenge. This is consistent with the findings of researchers such as Al-Samarraie and Hur (2019) and Abu-Shanab, Al-Kabi and Masa'deh (2019), who found that the quality of training resources can impact the effectiveness of learning. Furthermore, the rapid evolution of new technologies and the need for up-to-date training materials and expertise are also highlighted in previous literature (Sharma, Jaiswal and Singh, 2020; Liu *et al.*, 2021).

In-house training and expertise have also been recognized as crucial elements of effective learning of new technologies (Oyedele *et al.*, 2020; Khan, Abbasi and Farooqi, 2021). In their study, Han and Lee (2021) emphasized the importance of internal trainers who can provide customized training for specific technologies and the need for continuous learning to keep up with technological advancements.

Overall, the study result aligns with the existing literature, highlighting the importance of proper training and learning resources for effective learning of new technologies.

5.2.5 Motivation

The study discovered that motivation is a crucial component of successful workplace technology learning. Lack of motivation might cause procrastination and failure to set aside time specifically for learning. The perceived relevance of the learning material to participants' employment or career goals, the complexity of the technology, a lack of confidence or self-efficacy, a fear of failure or its repercussions, a lack of resources or

support, and time restraints were among the factors mentioned by participants as being able to lower motivation levels. The perception of the technology as approachable or engaging and a sense of purpose can both have a favorable effect on students' motivation to learn.

Discussion of Results from the Study

The findings of the study show that motivation is a key factor in learning and implementing new technology at work. The results imply that motivated and engaged workers are more likely to pick up new technologies quickly, but unmotivated workers may put off learning, fail to set aside time for it, and have trouble adjusting to new technologies in general.

The study's findings also point out a number of issues that employees' lack of learning motivation is caused by. When the respondents felt that the learning objectives or material were unrelated to their professional aspirations, it demotivated them. This suggests that providing learners with a clear understanding of how the learning content connects with their job responsibilities or performance can improve motivation.

Moreover, the study results suggest that having a sense of purpose, such as career advancement, job opportunities, or personal growth, can positively impact motivation to learn new technologies. Providing learners with clear goals or incentives for learning new technologies can also enhance motivation.

The complexity of technology is another significant factor that impacts motivation to learn. The study results suggest that when learners perceive a technology as too complex or difficult, they feel less motivated to engage in the learning process. Therefore, providing

learners with manageable or interactive technologies can enhance motivation and engagement in the learning process.

The study's findings imply that learners' motivation to participate in learning activities is negatively impacted by their lack of self-efficacy or confidence as well as their fear of failing or suffering negative repercussions. Giving students the right tools and support can help them overcome their lack of confidence or fear of failure and increase their enthusiasm for learning. These tools and support can include learning materials, assistance from teachers or peers, mentorship, or technological support.

The study's findings also suggest that learners' time restraints, conflicting priorities, and outside factors, such the complexity or difficulty of the technology, can lower their desire for learning. To increase motivation and engagement in the learning process, learners should have a flexible learning environment as well as enough time and resources to do so.

Discussion Related to Existing Literature

The findings of this study are consistent with existing literatures. Many studies have shown that motivation is a key factor in determining how well employees learn and use new technologies (Deci and Ryan, 2000b; Wang and Woo, 2011; Yang, 2015). The earlier researches also show that learners are more motivated when they understand how the learning content connects to their job responsibilities or career goals (Van den Bossche *et al.*, 2011; Gegenfurtner and Hagenauer, 2013). Clear goals and incentives for learning have increased learners' motivation and engagement, as per previous literatures (Wouters *et al.*, 2013; Jung, Lee and Song, 2017).

The study's findings that complex or difficult technologies can negatively impact motivation – these are consistent with previous researches. Existing literatures show that learners may avoid learning new technologies if they perceive the technologies as too difficult (Cheng, Chan and Wang, 2013; Lim, Goh and Goo, 2018).

The study's results on the negative impact of lack of confidence or fear of failure on motivation are consistent with previous research showing that learners' self-efficacy and fear of failure can affect their motivation to learn (Bandura, 1997; Wang and Huang, 2016). Previous studies mentioned, providing support and resources to the learners help to overcome these barriers and enhance motivation for learning (Tsai, Chen and Liang, 2017; Hsu and Lin, 2018).

Finally, the study's findings that time constraints, competing priorities, and external pressures can reduce motivation for learning are consistent with previous research showing that these factors can affect learners' motivation and engagement. Providing learners with a flexible learning environment and sufficient time and resources to learn can enhance motivation and engagement in the learning process (Deci and Ryan, 2000b; Jung, Lee and Song, 2017).

5.3 Discussion of Research Question Two

The second research question (RQ2) aims to explore the impact of emerging technologies on the performance of IT employees in the retail industry in India. This question tries to understand how the adoption of emerging technologies impacts the productivity, effectiveness, efficiency of the employees.

RQ2: How are these technologies impacting their performance while learning and adopting these technologies?

As technology evolves continuesly, it is critical to understand how the adoption of these technologies affects employee performance. By adopting the emerging technologies organizations may get many beefits like increased productivity, efficiency, accuracy. However, the implementation of new technologies can also bring challenges, therefore, it is important to investigate how the adoption of emerging technologies is affecting the performance of IT employees in the retail industry in India.

The findings from this research question can provide valuable insights for IT leaders and managers in the retail industry in India. By understanding the impact of emerging technologies on employee performance, organizations can develop strategies to maximize the benefits of technological change while minimizing any negative effects.

The study considered several factors that can affect employee performance and themed as Job performance, Problem solving ability, Innovation and Creativity, Collaboration and Teamwork, Building Confidence. The study considered how the adoption of emerging technologies has impacted work processes, such as whether it has increased efficiency or created new challenges for employees. The results found from this research helped to answer the research question 2. The result found and identified themes are discussed in detailed manner in the following sections.

5.3.1 Productivity

Learning new technologies can impact productivity positively by increasing productivity, efficiency and quality. It can also enhance employees' skills, knowledge, and adaptability leading to career advancement opportunities and higher job satisfaction.

Discussion of Results from the Study

The findings from the study suggest that learning new technologies can bring a significant positive impact on job performance at workplace. Participants reported that acquiring new skills through learning at workplace enabled them to perform their tasks more effectively and efficiently. This is particularly important for IT employees who need to stay updated with latest technologies.

Participants mentioned about improved technical skills and proficiency in their job after learning new technologies. This resulted better performance in software development, data analysis and other IT-related responsibilities.

Moreover, participants reported increased efficiency in their work after learning and adopting new technology. Automation tools, DevOps practices, and agile methodologies helped IT employees automate repetitive tasks, optimize workflows, and streamline development and deployment processes. This resulted in increased productivity, faster project completion, and improved job performance.

Overall, the study's findings emphasize the significance of in-the-workplace education and the advantages that mastering new technologies can provide for professional development and workplace productivity. In order to continue to be productive in their

professions and support the success of their Organizations, employees must stay current with new technology and pick up new skills and expertise.

Discussion Related to Existing Literature

The study's findings are in line with earlier works of literature that have emphasized the benefits of learning for job performance. The literature claims that workplace learning can improve an employee's job abilities, which improves performance and productivity (Joo and Lim, 2019; Marques-Quinteiro, Curral and Passos, 2020; Smith, Choi and Kim, 2021). The results from the study further suggest that the workplace learning is important for IT employees who need to stay updated with the new technologies to remain effective in their roles (Feng and Huang, 2019; Wang, Cheng and Li, 2021).

The study's finding that learning new technologies can improve job performance and productivity – this is also consistent with previous research. Studies have shown that learning new technologies can increase efficiency, technical skills,and performance (Gokhale, 2016; Kao, Chen and Liang, 2020; Puckett *et al.*, 2021).

Moreover, the study's results are consistent with previous research which shows that new technologies are designed to improve efficiency and productivity (Sarker and Ahmed, 2018; Taran, Boer and Lindgren, 2020). Learning automation tools, DevOps practices, and agile methodologies have been found to help employees automate repetitive tasks, optimize workflows, and streamline development and deployment processes, this results increased productivity and improved job performance (Brink and Paredis, 2019; Puckett *et al.*, 2021).

5.3.2 Problem solving ability

A problem-solving skill is the capacity to identify, weigh, and address complicated issues or challenges that present themselves in a variety of contexts. It entails determining the problem's underlying cause, coming up with potential remedies, assessing each one's efficacy, and choosing the best alternative. Strong problem-solving abilities can result in more sensible choices, increased output, and general success at work.

Discussion of Results from the Study

According to the study's findings, acquiring new technology at work can improve workers' capacity for problem-solving as well as their adaptability and agility. Employees must acquire problem-solving abilities that may be applied to various aspects of their employment because optimising and debugging new technology are frequent requirements. As their technology skills increased, participants reported feeling more assured and capable of solving difficulties in less time.

The ability to swiftly learn, implement, and integrate new technologies into their work processes was also cited by participants as having been improved by learning new technology. Employees' capacity to respond swiftly and effectively to difficulties in rapidly evolving technology environments can be improved by this flexibility and agility.

These results imply that investing in workplace learning and giving staff members the chance to learn new technical skills can enhance job performance, productivity, and problem-solving skills. Employers can gain from having more flexible and agile personnel

who can quickly pick up on new technologies and integrate them into their work processes, resulting in quicker project completion and more efficiency.

Overall, the study's conclusions highlight the value of workplace learning in boosting workers' problem-solving abilities and capacity for technological change. Employees need to build transferable problem-solving skills that they may use in various areas of their work as workplaces continue to change and new technologies are introduced. As a result, the Organization may see an improvement in performance and overall success.

Discussion Related to Existing Literature

The study's findings align with previous research highlighting the positive impact of workplace learning on employees' problem-solving skills, adaptability, and agility. According to Marques-Quinteiro, Curral and Passos (2020) and Smith, Choi and Kim (2021), workplace learning can enhance employees' knowledge and skills, leading to improved job performance and job satisfaction. Similarly, as mentioned in studies by Gokhale (2016), Kao, Chen and Liang (2020) and Puckett et al. (2021), learning new technologies can improve employees' problem-solving skills and job performance.

Also, the literature suggests that to success in the current job, the ability to adapt to technological change is critical for employees (Feng and Huang, 2019; Wang, Cheng and Li, 2021). As workplaces continue to evolve, employees need to develop adaptability and agility to learn and integrate new technologies quickly into their work processes (Lee and Choi, 2019; Taran, Boer and Lindgren, 2020). This is in-line with participants' comments

regarding the benefits of learning new technologies for improving their flexibility and agility and problem-solving ability.

The overall survey findings for this theme emphasize the importance of in-the-workplace learning and the need for firms to spend financially in providing employees with the opportunity to gain new technological skills. Employers can then have more flexible and agile workers who can quickly find solutions to issues and incorporate new technology into their work processes, ultimately resulting in higher production and efficiency.

5.3.3 Innovation and Creativity

Employees who are innovative and creative in the workplace are able to come up with fresh concepts, methods, or answers that enhance operations, goods, or services. It entails the creation of fresh viewpoints and modes of thought in order to boost productivity, effectiveness, and overall Organizational performance.

Discussion of Results from the Study

The outcome from the study suggests that new technology at work can encourage employee creativity and innovation, this is consistent with the existing body of research. Technology may spur innovation by making it possible for people and Organizations to create new goods, systems, and services. As the participants noted, teamwork and experiments are crucial elements in fostering innovation and creativity. According to studies, brainstorming and collaboration can encourage the exchange of various viewpoints and ideas, which can result in the creation of original solutions.

The findings of the research have significant ramifications for Organizations hoping to encourage employee creativity and innovation. Organizations can develop an innovative culture, encourage employee curiosity, and encourage employee experimentation by giving employees the chance to learn about and embrace new technology. As a result, new and enhanced goods, procedures, and services may be created, which will have a favorable effect on corporate outcomes.

Moreover, the study's result highlights the importance of collaboration and teamwork in enhancing creativity and innovation. Organizations can create a collaborative work environment that encourages knowledge sharing and open communication among team members. This may result in the formation of a common knowledge of the objectives and difficulties facing the company as well as a shared vision for the future.

The findings of the study highlight the value of ongoing learning and experimenting in fostering innovation and creativity at work. Organizations can build an innovative culture and promote company success by giving staff the chance to learn and adopt new technology as well as by promoting teamwork and collaboration.

Discussion Related to Existing Literature

The result of the study aligns with recent literature that emphasizes the role of technology and collaboration in driving innovation and creativity in the workplace. Research has shown that the adoption of new technologies and digital tools can improve innovation outcomes by increasing access to information and enhancing the ability to process and analyze data (Stocker, Maffioletti and Parmentola, 2020; Mojtahedi *et al.*,

2021). In addition, studies have highlighted the importance of collaboration and teamwork, which can lead to the development of innovative solutions (Dahlander and Gann, 2010; Shin *et al.*, 2021).

Organizations that seek to foster innovation and creativity should consider providing their employees with opportunities to learn and adopt new technologies and digital tools. This can help to create a culture of innovation and experimentation, which can drive business success (Mojtahedi *et al.*, 2021). Additionally, organizations can promote collaboration and teamwork by encouraging open communication and knowledge sharing among team members, which can lead to the development of a shared vision for the future (Shin *et al.*, 2021).

5.3.4 Collaboration and Teamwork

In the workplace, collaboration and teamwork refer to the coordinated activities of staff members working towards a common purpose or objective. To accomplish common objectives, it entails collaborating on projects, effectively communicating, and sharing knowledge and skills. Collaboration and teamwork can boost productivity, creativity and innovation at workplace.

Discussion of Results from the Study

The study's findings suggest that introducing new technology to the workforce can boost performance by encouraging employee participation and teamwork. This result is in line with earlier studies that claim teamwork and collaboration can boost creativity and

innovation. Organizations can foster a culture of ongoing learning and development by offering learning opportunities, which may boost employee commitment and loyalty to the company.

The study's conclusions have significant ramifications for businesses hoping to improve staff teamwork and collaboration. Organizations may boost employee engagement and retention rates while also improving staff performance by investing in learning and development opportunities. Learning new technologies together can promote a feeling of community and encourage collaboration and teamwork, which can enhance problem-solving and decision-making processes.

Furthermore, the results of the study indicate that in order to foster a sense of loyalty and belonging within their workforce, Organizations must show that they are dedicated to their growth and development. Access to learning and development opportunities demonstrates to employees that their employer values their continued development, which boosts job happiness and engagement.

In order to promote a culture of collaboration and teamwork at work, the study concludes that it is critical to engage in employee learning and development opportunities. Organizations can increase employee performance, engagement, and retention rates, which will increase business success, by learning new technologies as a group.

Discussion Related to Existing Literature

The study's findings are in line with earlier research that contends that introducing new technologies to the workforce can boost performance by encouraging employee

collaboration and teamwork. According to a study by Hariri, Mahmodi and Alnaser (2020), employees who learn new technology skills have higher levels of self-efficacy, which strengthens their capacity for cooperation and teamwork. In addition, a different study by Wang, Chen and Liang (2017) discovered that using technology to support collaborative learning can improve cooperation and problem-solving abilities in workers.

The research also supports investing in learning and development opportunities as a successful strategy to raise employee engagement and retention levels. According to a Deci and Ryan (2000) study, workers who feel appreciated and supported by their employers are more engaged and dedicated to their jobs. Additionally, a study by Sarker and Ahmed (2018) indicated that workers who have options for training and development are more likely to stick with their company and report greater levels of job satisfaction.

In order to build a culture of collaboration and teamwork at work, literature also supports the idea of fostering a sense of community through studying new technologies together. According to a study by Li et al. (2019), cooperation and collaboration can help people make better decisions and solve problems by fostering a common vision.

The study's findings are consistent with other research, and they emphasize the need of funding employee learning and development opportunities to promote a collaborative and teamwork-oriented workplace culture. Organizations may increase staff productivity, involvement, and retention rates in this way, which will boost their level of company success.

5.3.5 Building Confidence

Learning new technical skills at the workplace can boost confidence and motivation by increasing one's knowledge and abilities. This can lead to greater job satisfaction and better performance.

Discussion of Results from the Study

Learning new technologies at workplace have a positive impact on employees' confidence and motivation, as the result of the study suggests. This helped leading to improved performance and outcomes. These findings are consistent with recent literature and they suggests that providing learning and development opportunities can increase employee engagement and motivation.

By acquiring new technical skills, employees felt empowered and more self-confident in using these technologies in their work. This increased confidence then motivated them to apply their newly acquired skills, resulting in improved performance and outcomes. Additionally, when workers have access to learning opportunities, they build a sense of ownership and involvement in their professional development, which boosts levels of engagement and drive to do a good job in their jobs.

Participants also emphazised how learning new technology helped their performance in their jobs and sectors and gave them a competitive edge, allowing them to stay up to date and relevant in today's harsh business environment. This finding is consistent with previous literature that contends that ongoing education and training are necessary for workers to stay competitive and adjust to shifting market trends.

Additionally, using new technologies at work facilitated individuals' speedier career advancement. The acquisition of new high-level skills made employees feel more qualified and equipped for a variety of high-level demands, which boosted their confidence and motivation to complete their responsibilities more successfully.

In conclusion, the study emphasizes the significance of offering employees learning and development opportunities, which can positively affect their motivation and confidence, resulting in improved performance. Organizations can foster a culture of ongoing learning and development by equipping workers with new technical skills, which will increase employee engagement, motivation, and possibilities for professional advancement.

Discussion Related to Existing Literature

The study's conclusions about the benefits of learning and development opportunities on workers' self-assurance, drive, and productivity are supported by recent literature. Programmes for employee training and development have been shown by Huang et al. (2021) to improve workers' commitment to the company as well as their job happiness. Additionally, a study by Kusumadewi, Rofi'ah and Suyanto (2020) found that continuous learning and development can increase employees' skills and knowledge, leading to improved job performance.

Furthermore, the study's finding on the importance of staying current and relevant in today's competitive business environment aligns with recent literature. A study by Alzahrani, Alotaibi and Alrashidi (2021) found that continuous learning and development

are crucial for employees to remain competitive and adaptable to changing industry trends and technological advancements.

Additionally, the study's finding that learning new technologies can lead to growth opportunities within the organization aligns with a study by Kowske, Rasch and Wiley (2020), which found that learning and development opportunities can increase employees' career advancement and job satisfaction.

Overall, the study's findings are consistent with current literature that highlights the significance of giving workers chances for learning and development. Organizations can do this by fostering a culture of ongoing learning and development, which will increase employee engagement, motivation, and possibilities for progress.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

This study aimed to determine how IT employees in India's retail sector were affected by digital transformation, in terms of leaning and adapting new technologies due to digital transformation. The study focused on understanding the employees' responses about learning and using new technologies, including any challenges they faced. Additionally, the research examined employees' reactions on their job performance after learning and implementing of new technologies.

The study found that IT employees face significant challenges when learning new technologies, primarily due to time constraints and interruptions at work and home. Female employees faced additional challenges in managing both workplace and household responsibilities. Participants reported that learning new technologies required significant focus and concentration, and the complexity of the technologies impacted their learning experience. Inadequate training and learning resources posed challenges for learners in acquiring new technologies. However, motivation and engagement facilitated faster learning of new technologies, and participants reported that their job performance improved after acquiring new technological skills. Workplace learning improved their problem-solving skills, which gave them more confidence to solve problems more quickly. Learning new technologies increased teamwork and collaboration among employees, which improved teamwork and fostered a culture of continual learning. It also stimulated employee invention and creativity. Participants felt more connected to their organization

and coworkers when they perceived that their organizations invested in their learning and future growth. Acquiring new technical skills empowered employees and boosted their self-confidence in using these technologies in their work, which in turn motivated them to apply their newly acquired skills, resulting in improved performance and outcomes.

Overall, the study emphasizes the significance of having the right instruction, materials, and assistance to get over the difficulties of learning new technology. By supporting their employees' learning and development, employers may foster a culture of ongoing learning, which can enhance productivity, problem-solving skills, innovation, and creativity.

6.2 Implications

The study's findings have a number of implications for the IT sector, which primarily relies on technology and requires its staff members to have the most recent technological expertise. The results show the difficulties IT workers experience in learning new technologies and stress the significance of offering appropriate training and learning resources to improve their performance.

The study firstly emphasizes the difficulty of time management, which has an impact on IT personnel' capacity for additional education or the acquisition of new skills. Several studies have explored the challenges of time management in the IT sector, particularly in relation to ongoing learning and skill acquisition (Saini, Mangla and Tripathi, 2018; Ruggieri *et al.*, 2019). The fast-paced nature of the IT sector necessitates ongoing process and technology adaption. Employees, especially female employees who

may have additional domestic and childcare responsibilities to balance with their employment, frequently struggle to find the time and resources to learn new skills. Research has highlighted the need for flexible work schedules and supportive environments to facilitate employees' learning efforts, especially for individuals with additional domestic responsibilities.

The study also emphasizes how interruptions can affect learning. Existing literature also examined the impact of interruptions and distractions on learning and performance (Macdonald, Brown and Teevan, 2018; Kostopoulos, Pratte and Dubé, 2019). These interruptions can be caused by urgent work, impromptu meetings or calls, emails, instant messaging, or interruptions from coworkers or family members. Employee focus and capacity to pick up new skills may be affected by these disruptions, which can lower output and performance. As a result, it is essential for the IT sector to offer a comfortable learning environment with a low level of interruptions and distractions. This could entail setting up designated learning locations, cutting down on unneeded distractions, or urging staff members to turn off their gadgets or notifications while learning is taking place.

The study highlights the impact of complexity on learning, particularly complex technologies that require more time and effort to become proficient in their use. Existing studies also have investigated the challenges associated with learning complex technologies in the IT industry (Kirschner, Sweller and Clark, 2006; Paas and Sweller, 2012). This finding suggests that the IT industry needs to provide adequate support and resources to employees to facilitate learning and overcome the barriers posed by complex technologies. This could involve providing clear and concise training materials, offering

support from technical experts or mentors, or providing access to online communities or forums where employees can exchange knowledge and support each other.

The study emphasizes the necessity of appropriate instruction and learning materials for efficient technology learning. The significance of appropriate instruction and learning materials for effective technology learning aligns with existing literature that emphasizes the importance of high-quality training resources (Sharma, Jaiswal and Singh, 2020; Liu *et al.*, 2021). The IT sector must make sure that staff members have access to resources and training that will help them better comprehend new technologies and boost their performance and productivity. This could be giving students access to current learning resources, updating training materials frequently to keep up with the quick development of new technology, or supplying them with current training materials.

The study highlights the importance of motivation in workplace learning. Motivation is a key factor in promoting engagement in workplace learning activities, as supported by literature on motivation and self-determination theory (Deci and Ryan, 2000b; Wang and Woo, 2011; Yang, 2015). The IT industry needs to create a learning culture that encourages and motivates employees to engage in learning activities. This could involve providing clear goals or incentives for learning new technologies, emphasizing the relevance of the learning content to employees' job or career goals, or creating a sense of purpose, such as career advancement, job opportunities, or personal growth. Additionally, the industry could provide support and resources to enhance employees' confidence and self-efficacy and reduce the fear of failure or consequences.

The study also highlights the beneficial effects of workplace learning on work performance. Numerous studies have demonstrated the positive relationship between workplace learning and job performance (Joo and Lim, 2019; Marques-Quinteiro, Curral and Passos, 2020; Smith, Choi and Kim, 2021). The IT sector needs to acknowledge the importance of in-the-workplace learning and give staff members the chance to pick up new skills and use them in their jobs. This could entail fostering a climate that supports learning and knowledge exchange, giving staff members the chance to attend conferences and training sessions, or praising and awarding staff for their contributions to the Organization and learning successes.

The study's findings have important ramifications for the IT sector, which must establish a welcoming learning environment that supports employees' learning and improves their performance and productivity. The business community must acknowledge the difficulties employees encounter in pursuing higher education or learning new skills and offer sufficient assistance and resources to help them get over these obstacles. The sector also has to develop a culture of learning that encourages and involves workers in educational endeavours and acknowledges the importance of on-the-job training in improving job performance.

6.3 Recommendations for Future Research

The goal of this study was to highlight the experience of the IT employees while learning the new and emerging technologies and also their experience in terms of performance improvement, productivity, innovation, motivation, confidence, after learning and adopting the new technologies. Here are few recommendations for future research:

This study focused on IT employees in India and who are working for retail sector. Future researchers can study on IT employees in other sectors or countries to understand the challenges and opportunities in different contexts.

35 IT employees of different age group (male and female) from 5 different cities of India (Mumbai, Bangalore, Kolkata, Chennai, Hyderabad) have been considered as sample and interviewed them in this study. Future researchers can consider larger size of sample or from other cities.

This research highlighted the challenges faced by the IT employees while learning new technologies. Future researchers can work on how to navigate through these challenges and create some strategy or framework to make learning more effective and a better experience for employees.

This research also highlighted the employee experience in terms of performance improvement, productivity, innovation, motivation, confidence, after learning and adopting the new technologies. Future researchers can work on these factors how these can be utilized to improve the overall performance of the organization.

The study highlights the challenges faced by female employees in managing both workplace and household responsibilities. Future research can explore the gendered

experiences of IT employees in learning new technologies and identify strategies to address gender-based barriers to learning.

The study highlights the impact of interruptions on learning. Future research can examine the types and frequency of interruptions that affect learning and identify strategies to minimize them.

The study emphasizes the importance of motivation in workplace learning. Future research can explore the factors that motivate and demotivate employees in learning new technologies and identify effective motivational strategies.

The study suggests that learning new technologies sparks innovation and creativity among employees and encourages collaboration and teamwork. Future research can investigate how workplace learning can foster a culture of innovation and collaboration and the impact on organizational outcomes.

The study highlights the importance of adequate training and learning resources for effective technology learning. Future research can examine the effectiveness of different training and learning approaches and identify best practices for these.

The study emphasizes the impact of complexity on learning. Future research can investigate how to simplify complex technologies and make them more accessible and user-friendly for employees.

6.4 Conclusion

This study sheds light on the effects of digital transformation on IT workers in India's retail industry, particularly in terms of their capacity to learn and adopt new technology. The study draws attention to the difficulties workers confront learning new technical skills, including time restraints, interruptions, and complexity. The study also highlighted their experience in terms of performance improvement, productivity, innovation, motivation, confidence, after learning and adopting the new technologies. The study has implications for the IT industry in a number of ways, including encouraging a happy work environment, cutting down on interruptions, providing enough support and resources, encouraging a culture of learning, and understanding the value of workplace learning. Future research might focus on exploring these consequences in greater detail and evaluating how the digital transition affects different businesses and countries.

The results of this study will assist IT leaders and upcoming researchers in better comprehending the effects of implementing new technologies on workers and in developing a framework to reduce risks and increase positive effects, such as a smoother learning process, a better learning environment, improved employee productivity and performance, and improved productivity and performance across the board for the Organization.

APPENDIX A

INFORMED CONSENT FOR INTERVIEW

IMPACT OF DIGITAL TRANSFORMATION ON INDIA'S INFORMATION TECHNOLOGY EMPLOYEES IN RETAIL INDUSTRY

I, ……. agree to be interviewed for the research which will be conducted by …… a doctorate student at the Swiss School of Business and Management, Geneva, Switzerland.

I certify that I have been told of the confidentiality of information collected for this research and the anonymity of my participation; that I have been given satisfactory answers to my inquiries concerning research procedures and other matters; and that I have been advised that I am free to withdraw my consent and to discontinue participation in the research or activity at any time without prejudice.

I agree to participate in one or more electronically recorded interviews for this research. I understand that such interviews and related materials will be kept completely anonymous and that the results of this study may be published in any form that may serve its best.

I agree that any information obtained from this research may be used in any way thought best for this study.

…… ……

Signature of Interviewee Date

APPENDIX B

INTERVIEW GUIDE

IMPACT OF DIGITAL TRANSFORMATION ON INDIA'S INFORMATION TECHNOLOGY EMPLOYEES IN RETAIL INDUSTRY

The face-to-face/Vedio/Telephone/Online interviews will begin with introductions and an overview of the topic.

1. Interviewer will address the participants that the interviewer is sensitive to their time and thank them for agreeing to participate in the study.

2. Interviewer will remind the participants of the recorded interview, and the conversation will remain strictly confidential.

3. Interviewer will turn on the recorder, and will announce the participant's dentifying code as well as the date and time of the interview.

4. The interview will last approximately 30 minutes to obtain responses for main interview questions and follow-up questions.

5. Interviewer will also explain the concept and plan for member checking by contracting participants with transcribed data and request verification of the accuracy of collected information as soon as possible.

6. After confirming answers recorded to the participants' satisfaction; the interview will conclude with a sincere thank you for participating in the study

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