Mathematical Statistician and Engineering Applications
ISSN: 2094-0343
2326-9865

Adoption of Technology and the Unorganized Retailers

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Article Info
Page Number: 12887-12903
Publication Issue:
Vol. 71 No. 4 (2022)

Abstract
In this paper, we give several possible interpretations and perspectives on retail technology adoption, all of which are grounded in carefully examining the relevant literature. Analyzing the many forms of retail technology, Global and Indian retailers of structured and Unorganized fashion have quickly incorporated new technologies. The impact of the covid-19 pandemic on India's retail sector saw a dramatic transition due to the introduction of new technologies. The literature review covers various theories and understanding of how technology adoption models depend on available resources, as well as the challenges and objectives of the study, including the gap analysis and the target market of retailers. The customer sentiment will inform the retailers and the development companies of a new research framework. The applied aspects of technology adoption solutions must be understandable to stakeholders such as retailers and customers. These reviews are expected to get insight into the literature about the technology adoption status that underpins the evolution of technology adoption and how they could inform future endeavors in this area.

Article History
Article Received: 25 December 2021
Revised: 30 January 2022
Accepted: 15 February 2022

Keywords: Retail Technology; Unorganized Retail; Technology Adoption

INTRODUCTION

As predicted, the retail sector is much more advanced in IT use than the SME sector. Yet, even though cutting-edge technology may improve service delivery, they seem more concerned with sales strategies [1]. Therefore, retail is a dynamic service business focusing on customer satisfaction. Consumer engagement in service-related procedures can increase the quality of the service provided by including clients' experiences on the list of vital resources as the main components in the service design [2]. Knowing how the market feels about new technologies in terms of how they make people feel, what they can use them for, and how well they work with existing devices is crucial to making informed decisions about which technologies to embrace [3]. Utilizing many strategies and methods, retailers may lessen the complexity of innovation [4]. By defining the various sources of risks with the root node indicating a common risk and breaking them down into increasing degrees of detail, as in the Concern Breakdown Structure, it is possible to analyze the risks involved [5]. The chance-impact grid gives a risk rating based on the probability of occurrence and the impact. This method is preferable for precise risk assessment but has its drawbacks. If the significance of a threat increases as the effect of other risks expands, then the unique graphical approach is useful for measuring these interdependencies [6]. There is a close relationship between technical progress and innovation management, with research focusing

on the steps required to bring a technologically-based invention from concept to market. The introduction of sophisticated technologies at the point of sale has enhanced the mechanism from several stakeholders,' i.e., consumers, vendors, suppliers, etc. viewpoints [7], [8], [9], making it an interesting case study for the study of how to control emerging technologies in retail, i.e., acceptance models, ethnography, usability [10], [11]. The paper conducts an extensive literature review on technology adoption in the retail industry, primarily focusing on the small Unorganized retailers in India.

BACKGROUND

Digitalization has impacted retail [12] [13], [14]. To better manage inventory and serve customers, retailers may now tap into a wide range of resources. Retailers experimenting with new uses for these technologies may have the most success [15], [16], [17]. Recent research has revealed a plethora of consumer-facing and transparent technology designed to enhance the in-store shopping experience [18]; Self-checkout [19], [20] ; virtual reality [21], [22]; fit technologies [23], [24]; retail applications [25], [26].

The current body of literature on developments in retail technology is broken down into the following three sections: offline/online, consumer, and firm perspectives [27]. The focus of offline retailing studies is on how well the market accepts new products and how well known they are among consumers [28]. Mobile devices and software are the primary focus of research into how well web apps are received by their intended users [29]. To probe customers' perceptions of the technologies' usability, usefulness, and attitude, these studies frequently employ the TAM or TAM combined with one or more different theories of adoption [30]. The second line of research concerns omnichannel retail's potential for disruption due to retail management techniques for merging online and offline technologies [31]. Despite the dynamic nature of both technological development and consumer demand, their efforts are concentrated on a small number of promising new developments. Opinions on how quickly the retail industry will adopt new forms of technology for use in stores are all over the map. Some studies have recognized retailers as leaders in technology adoption, while others have criticized them for being slow to implement similar innovations in-store [32]. Given the retail industry's challenges, such as shifting consumer attitudes toward technology and the quick pace of technological growth, monitoring the spread of new ideas in the industry is essential. The next sections of the paper discuss retail technology adoption at global and Indian levels.

RETAIL TECHNOLOGY ADOPTION

The COVID-19 pandemic has accelerated the rise of technology's significance in the retail sector. Many brick-and-mortar businesses have closed because shelter-in-place and lockdown orders were issued to halt the spread of coronavirus [17]. The businesses have instead turned to more modern means of conducting business, including online ordering and fulfillment, click and collect, and robot-assisted operations. Since consumer behavior is likely to change drastically from week to week, if not day to day, as the epidemic spreads, those with ready access to data may be better able to predict market trends and make sound investment

decisions than others who lack such rapid information. Using mobile global positioning system (GPS) tracking for shop traffic updates, technology is supporting brands and retailers in adjusting to the unprecedented shifts in consumer behavior that have arisen amid this pandemic [33].

Professionals in the retail sector are scrambling to comprehend the extent of the technological shifts impacting their industry. Recent advances in micro-cloud computing, new robots, 5G telecommunication, the Internet of Things (IoT), and virtual reality/augmented reality (VR/AR) have yet to be thoroughly studied in the context of retail [34]. Retailers and their supply chain partners have embraced cloud computing, a dispersed network of computers for hosting, processing, and managing data. Cloud computing is becoming more accessible, scalable, and secure, making it a viable option for merchants of all sizes. A subset of cloud computing, known as micro-cloud computing, brings resources and users together on a smaller scale than traditional public clouds. These technologies hosted in a micro-cloud at the shop or other point of purchase are reducing costs for the business and making it possible to offer resource-intensive and engaging mobile apps [17]. These micro-clouds are useful for managing the "data ocean" created in a retail environment. Low-latency data kept in a store or manufacturer's local micro-cloud might be used, for instance, to offer consumers digital discounts for slow-moving items (lag), depending on their geographic location. Using this tactic should boost sales and patronage of the brand [35].

Global Retail Technology Adoption

The rapid development of digital and automated technologies has aided numerous industries, including retail. From the point of sale (POS) through inventory management (IM), fulfillment by Amazon, and physical shop infrastructure POS, warehouses, and other technologies, retail technology comprises innovations and digital solutions across the retail and e-commerce value chain [17]. Consumers now place a higher premium on stores using cutting-edge technologies. Both brick-and-mortar shops and their digital counterparts frequently invest in various retail technology [36]. Artificial intelligence (AI) is already used in smart mirrors and automated checkout systems in the retail sector [37]. Retail technology has benefited online stores in several ways, including cloud-based inventory management software, customer relationship management (CRM) tools, and the ability to provide a consistent shopping experience across many sales channels [16].

Customer-facing in-store technology (CFIST) is important to the evolution of retail establishments, yet business owners may not realize why to employ them. This study surveys SME decision drivers based on a TOE and TAM-inspired paradigm. The results suggest that senior management's attitude toward technology is the biggest predictor of CFIST adoption [38]. Retail technology influences the consumer experience in omnichannel shopping, and businesses' early adoption of in-store technology generates a durable competitive advantage. The content study shows that shoppers are eager to employ in-store innovations to have richer shopping experiences while merchants get brand loyalty and an updated brand image [39]

Information standards are guidelines for organizing technical interoperability inside enterprises to reduce uncertainty and boost growth. Standards enabling the interchange and cooperation of parts of technological systems are known as “information standards” or “compatibility standards” [40]. Since even small organizations can use standardized technologies to bypass incumbent intermediaries in the market and easily transact with other organizations, information standards could enable better coordination in a value chain and disintermediation [41]. Greater cooperation has been made feasible by removing technology barriers and incompatibilities. In a business setting, information standards may automate, integrate, and streamline various operations, including supply chain management, collaborative forecasting, new product creation, and inventory management [42].

Supply and demand-side data have become increasingly crucial in retail, and other competencies and capacities are typically outsourced to the market. In the past, there was closer cooperation and coordination between factories, distributors, and merchants. Retail research needs to be broadened with the scope of the retail literature to include the sector-level implications of information standards, particularly the more elaborate systems of standards currently spearheaded by several standard-setting bodies and consortia consultants and technology providers around the world.

Indian Retailer’s Technology Adoption

As a result of the epidemic, malls rethought their business models and began focusing more on online shopping, speeding up their ability to provide value to clients. “B2B (Business-to-Business) e-commerce enterprises like Udaan & ShopX are reliant on these lower tier cities accounting for 60% of retail spend,” explained Anurag Mathur, partner & head of consumer & retail Business, Strategy, a PwC network firm [43]. Triple-digit growth in online sales was seen in Tier 2 and Tier 3 cities, whereas growth in metro regions was less than 2%. Mathur said at the Phygital Retail Convention 2021 in Mumbai that second and third-tier cities had attracted five times more investment in retail infrastructure than metro cities [44]. By 2025, the market for social commerce in India is projected to reach $18 billion, adding to the country’s total online retail sales of $104 billion [45].

The proliferation of new technologies has revolutionized the retail industry in recent years. As the new economy has grown, it has released massive forces that effectively and swiftly reshape the retail industry. Today’s successful merchants understand the need to make their consumers’ shopping experiences simple and streamlined across all channels or risk losing them. All parts of today’s retail environment rely heavily on cutting-edge technology. Using technology, a company may test out several novel approaches, such as interactive displays, in-store services, smart shelves, home delivery, brand optimization options, supply chain optimization, and logistics automation [46], [7].

Further, customers’ wallets, point-of-sale data, and social media profiles may serve as focal points for complaints and compliments. The shopper’s app usage to virtually examine and interact with merchandise before, during, and after the buying process is under the

merchant's purview [47]. The most successful companies in retail have embraced technological advancements, maximizing their utility to win new clients and keep returning ones. To keep up with the fast-paced changes in the industry and the technical breakthroughs, small merchants, especially those in the Unorganized sector, have been slower to adopt the technology [48]. With eighty percent of the retail sector in India being Unorganized, the adoption of technology by this sector would usher in a new era for the retail industry and give a much-needed boost to the Indian economy. Regarding retail, technology is the hero that will save the day [49].

Structured Retailer's Technology Adoption

Domestic retail sales are anticipated to increase at a CAGR of 10.8 percent between 2017-18 and 2021-22, resulting in a total market value of US$1.2 trillion (approximately INR 87 lakh crore in 2021 and US$1.75 trillion, approximately INR 126 lakh crore in 2026 [45]. The Unorganized retail sector includes small businesses such as mom-and-pop shops and other locally owned firms, while the structured retail sector includes large retailers such as chain stores and e-commerce platforms [50]. Retail accounts for over 10% of India's GDP and employs over 8% of the country's labor force. Despite its size, the retail space is poorly managed since small, locally owned firms dominate and big chains enter the market late [51].

Only a small number of enterprises in India's still-developing structured retail sector are actively working on setting a new benchmark for the industry. There is a critical need for domestic and foreign corporations to invest heavily in India's retail industry if it is to flourish. Moreover, various problems that chain stores face are highlighted [52]. The expansion of India's economy has opened up several opportunities. India has the fourth biggest economy in the world, with a GDP of US $1.50 trillion. Based on purchasing power parity, it is the third largest economy in the world. India is the world's second-fastest-growing major economy, expanding at a pace of 9.4 percent. India has a huge population, yet its per capita income is just $1,089 (PPP) or $4,542 (PPP). India's structured retail industry has been fueled partly by the country's burgeoning economy [53].

The retail industry has leverage in negotiations with its suppliers, which is a benefit. Products are desirable for two reasons: first, their inherent worth, and second, the low prices at which they may be acquired [54]. So, it would be best if cost-effectiveness is prioritized. Big box stores have such low margins and high sales volumes that the only way to acquire better prices is to negotiate with the suppliers. Due to rising investment and the arrival of corporate behemoths, bigger and better stores are springing up. These stores are better positioned to negotiate lower wholesale costs with their suppliers and reap the benefits of economies of scale. Hence, discounting is becoming increasingly common [7] .

Unorganized Retailers technology adoption

Kirana's (groceries), footwear stores, ready-to-wear boutiques, and small pharmacies are Unorganized retail companies operating as cash-only, tucked-away corner shops in residential neighborhoods. It is generally accepted that a consumer incurs no risk while purchasing at a store because of the shopper's ability to personally inspect the goods or experience the service before making a final decision [55]. Unorganized shops have been around for a while because they provide services beyond just selling goods, such as providing customers with financing, home delivery, and a more customized shopping experience [56]. Roughly 90% of the retail food market in India is made up of Unorganized retail stores, which are unique companies that are frequently family-run and meet the emergency, fill-in, and stock-up needs [57]. More than 12 million Unorganized shops are already able to the public [45], [58]. But most Indians still prefer Unorganized merchants, the "heart of hyper-local," over supermarkets, hypermarkets, and online food sellers like BigBasket and Grofers [59]. As the market for Unorganized food sellers grows, they may encounter competition from supermarkets and other types of streamlined stores. With traditional retail, represented by Unorganized retailers, expected to reduce to approximately 80% over the next year or two, projections showed that structured retail in India would rise to 20% of total retail by the end of 2020, up from a low point of roughly 8% in 2018. With sales expected to hit INR 22,500 crore (US$3.19 billion) in 2020, up 76% from 2019, the future of millions of small- to medium-sized stores in India is uncertain [60].

Unorganized merchants were pivotal during the COVID-19 closure because they acted as the "new supermarket". Even though more people shopped online due to the lockdown and coronavirus mitigation strategies, e-commerce was severely affected because it was not considered an essential service and thus could not transport goods and other problems, such as last-mile logistics [61]. At least 20% of Indian merchants failed due to COVID-19, and the industry lost more than INR 5.50 lakh crore (about US$75 billion) [62]. It is expected that over 600,000 Unorganized stores will shut down in the first two months of the closure in 2020 [63]. Small businesses may consider transferring their operations online to avoid being a target of hackers. Unorganized shops have difficulty attracting tech-savvy clients since they are not set up to process online orders [64].

More specifically, this research looks at how brick-and-mortar stores might be encouraged to join the online retail revolution. Concerns regarding the broad adoption of new technology are discussed, along with the prominent position of Unorganized retailers and other Unorganized merchants in India's retail market. It also examines government and private businesses' role in digitizing Unorganized retail outlets. Finally, the report recommends that Unorganized retailers adopt digital strategies by collaborating with large retailers, Unorganized retailers, and e-commerce platforms or by adopting the technology adoption models, which combines the physical with the digital and sees brick-and-mortar stores accepting digital payments and other retail technologies managing store operations digitally, and having an online presence [65].

Table 1: Review of Retail Technology Adoption

Sr. No.	Citation	Research Design	Context	The gap in the Literature
1	[66]	Cross-sectional, qualitative, observations	Multiple stores on the same shopping street embrace and spread new technologies.	Focused on structured retail only
2	[67]	Review of Literature	Even though retailers know how important customers are to the process, the market still doesn't understand their role.	Consumer perception toward the adoption of new technology is ignored
3	[68]	Literature review	RFID is being used more and more in developing countries.	Firm-level analysis
4	[10]	Cross-sectional, Quantitative	RFID retail adoption in Taiwan and the effects of innovation, organization, and integration of the supply chain	Firm-level analysis
5	[69]	Longitudinal, (8 years), Quantitative	From the point of view of how innovations spread, retailer cross-channel integration	Firm-level analysis
6	[70]	Cross-sectional, Qualitative	Consumers' thoughts on fashion subscription services and their plans to use them	Customer-centric analysis
7	[71]	Cross-sectional, Quantitative	Uses TAM and DOI theory to propose a new model based on the desire to shop with mobile apps.	Customer-centric analysis
8	[72]	Cross-sectional, Quantitative	Consumers' late adoption of digital innovations and why it happens	Customer Level
9	[19]	Cross-sectional, quantitative	Things that affect early adopters of smartphones	Customer level analysis
10	[73]	Cross-sectional, quantitative	Studied the impact of the new normal business environment	Customer level study
11	[74]	Cross-sectional, Quantitative	Studied the impact of AI on retail business	Farm level study
12	[75]	Cross-sectional, Quantitative	Studies of the new normal distribution channel	Farm level study

13	[76]	Cross-sectional, Quantitative	How far does social distancing affect the physical shopping	Customer level study
14	[77]	Semi-Structural Qualitative interview	Unorganized retailers' technology adoption in India results in non-adoption	Types of Unorganized retailers are not explored
15	[78]	Literature Review	Financial gain with the adoption of POS technology in Unorganized retailers	Other retail technologies not explored
16	[79]	Cross-Sectional Quantitative	E-Payment adoption in Unorganized retailers in India	Need for low-cost retail technologies for small retailers
17	[80]	Literature Review	Technology adoption for Unorganized retail business transformation in India	Only Kirana stores are considered, and other small retailers are neglected
18	[81]	Cross-Sectional Quantitative	E-payment systems adopted by Unorganized retailers in India using the TAM model	Vulnerabilities, risk, and security training towards technology adoption not addressed
19	[45]	Qualitative Literature Review	Technology Adoption in small business Kirana stores vs. online grocery stores explored on the bases of TAM	Only one sector small retailers explored
20	[82]	Qualitative Research with Thematic Analysis	Mapping the emergence of Low-Cost e-commerce technology adopted by small Kirana stores in India	Non-E-commerce low-cost retail technology not explored
21	[83]	Descriptive Statistics	Comparison of Small Kirana stores vs. other small businesses offering E-payment systems during pandemic lockdown across 4 major cities in Inda	Only POS systems were explored; Small towns and small rural retailers not considered
22	[84]	Cross-Sectional Quantitative research analyzed using SEM	Adoption of M-commerce in Indian Suburban small retailers using the UTAUT model	Only M-commerce was explored, and other retail technologies neglected

23	[85]	Literature Review	M-commerce adoption in Structured vs. Unorganized retailers in Inda, Unorganized fall behind	No other retail technologies were considered for comparison
24	[7]	Literature Review	Structured vs. Unorganized retailers' technology transformation based on customer response and product-centric	Practical approach not considered, which may change the outcome of the paper
25	[86]	Cross-Sectional Quantitative	The fast transition of technology adoption for operational purposes in the Indian retail industry	Retailers' perspectives are not considered; only metro cities are considered; Sub Urban and rural retailers not considered

Based on the data in the review table, it is clear that the Indian retail sector has experienced dramatic change since the start of the lockdown pandemic. There is a lack of practical surveying and interviewing techniques and experience with technology adoption within the retail sector. Despite the rapid use of technology in India's metropolises and some of the country's largest cities, the difficulties encountered by independent stores in the country's suburbs and rural areas are not examined. Structured and Unorganized businesses on opposite sides of the digital divide need to use the same digital technologies and e-commerce techniques to grow their customer bases; small-format stores may be more successful [87], [88]. Creditworthiness has improved due to the widespread adoption of digital payment methods such as point-of-sale (POS) terminals, digital payments, and debit and credit card payments. Digital/online payment systems, apps to handle company processes (inventory, billing, financing), and a future merger with the e-commerce sector will all play a role in the digitalization of Unorganized retail businesses [89], [90], [82].

CONCLUSION

Industry expansion is contingent on the prevalence of technological adoption. The structured retail industry has a long history of technology adoption, while the Unorganized retail sector has followed suit to a far lesser level. While the structured retail industry is more likely to adopt new technologies, this is not true for all retail forms. According to the literature mentioned earlier, customer behavior with many elements affects the success and acceptance of new technologies. After the first lockdown of the Covid-19 epidemic appeared, there was a clear increase in the use of retail technology in urban areas. The suggested study would want to look at retail business theories because of the massive Digital Transformations around us.

The future scope of the study will concentrate on surveying the establishments like grocery stores, pharmacies, clothing, and shoe stores in a small retail setup.

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