Mobile application adoption in business by the unorganized retailers and expanding the constructs by using TAM, DOI, TOE theories

M. Karthik Ram[a*], S. Selvabaskar[b], K. Rajarathi[a] and R. Guhan[a]

[a]*Research Assistant, SASTRA deemed to be University, Thanjavur, Tamil Nadu, India*
[b]*Professor, SASTRA deemed to be University, Thanjavur, Tamil Nadu, India*

CHRONICLE	ABSTRACT
	In this paper, the authors proposed a new framework for Mobile application adoption by unorganized retailers. Unorganized retail is a renowned retail business in India. Unorganized retail is a so-called low-cost retail format where some of the retail stores are Kirana store, Grocery store, provisional store, ready to eat store, mom & pop store, peddlers, Hawkers, and stationery store. Retailers face stiff competition from omnichannel, multi-channel retailers, and e-tailers. To counter this competition, unorganized retailers adopt some Mobile applications which are relevant to their business. While some of the Mobile Applications are WhatsApp business, Facebook page, telegram, blogs, google maps Mandi app, Udaan app, Katha book app, OK credit, Dukan app, and just dial. This paper explains a deep discussion about unorganized retailers, unorganized retailers' contributions to the economy, the Digital India program, and Mobile Application. A new comprehensive framework has been proposed for mobile application adoption by the unorganized retailer after getting insights from theories like Technology Adoption Model (TAM), Extension of Technology Adoption Model (TAM), Technology, Organization and Environment (TOE), and Diffusion of Innovation (DOI). In this research, the author segments three major clusters which influence mobile technology adoption. The three major clusters are Technology, Organization, and Environment. These clusters had 10 constructs that influence mobile technology adoption. This research elaborately discussed the drivers of technology adoption in an unorganized retail context. We close by concluding that mobile application adoption by the unorganized retailer and reshaped the unorganized retail.

1. Introduction

Unorganized retailing is a form of a low-cost business model that predominantly dominates the Indian retail market. This business generates employment opportunities in the nation that is merely a source of livelihood in many semi-urban and rural villages. Planet retail and technopak study report (2012) unveil the unorganized retail market share in Japan is 34 percent, China is 80 percent, Russia is 67 percent, Indonesia is 70 percent, Thailand is 60 percent, the Philippines is 65 percent, Malaysia is 45 percent, and Vietnam is 78 percent. Unorganized retailers are dominant in Asian markets that are an integral part of the economy. In India, unorganized retail dominates 75 percent of the market (IBEF Retail Industry analysis, 2020). This business model plays a significant role in the distribution channel and acts as a building block of the Indian economy. An unorganized retail business is classified into two types of formats in India. Those are fixed shop retailing and mobile retailing (Rama Krishna Prasad, 2011). Some of the examples for shop retailing format are Kirana store, Provisional store,

Ready-made stores, General merchandise store, and Stationery store. Some of the examples of mobile retailing are Hawkers, Peddlers, Street vendors, and Hand cart vendors.

Unorganized retail formats have many advantages like they are easy to start, require lesser documentation procedures, easy to operate, flexible in operations and require fewer procedures for winding up. Of late, these players are facing several competitions from e-commerce players and organized retailers. To cater to this competition, unorganized retailers deliver value-added services to their consumers. However, it is not sufficient in the current retail environment, particularly after the launch of the "Digital India" (Power to Empower) campaign in 2015 in India, which led to the enormous development in Digital technologies that significantly affect the consumption behaviour. The Digital India campaign led to the development of technologies like smartphones, digital infrastructure, and services that exponentially increased the user penetration in India.

 As per the IAMAI and Nielsen study report (2019), in India, there were 504 million internet users in the year 2019 (Sengupta, 2020). Another research result shows a 45 percent growth in internet penetration in rural areas and Jumped up to 264 million internet users in India. The total population in India is currently more than 1.4 billion and it has 70 percent, active users, in social media. Hence, it is evident that the internet, mobile phone and social media technologies are significantly penetrated in India. Amid the various sectors that benefited from the technology penetration, one such avenue is retail is also to be considered. Several studies have stated that the adoption of internet technologies is gaining momentum in the Retail scenario.

Retail is an established business model in India. Only very few studies concentrated on unorganized retailers, where most of the research was undertaken to assess the impact of organized retailers on unorganized retailers and changes in consumer behaviour. The services and contribution of unorganized retailers towards the economy are inevitable. Hence, there is room for technology adoption studies in an unorganized retail context. If unorganized retailers lack in technology adoption, that will ultimately affect their survival. Despite the significance of digital technologies, relatively few studies attempted to explore the technology adoption among unorganized retailers. Erstwhile research studies focused on consumer technology adoption, but this study focuses on technology adoption in an unorganized retailer's context. The existing theories provide an insightful understanding of Technology adoption. Therefore, this study is going to address the gaps by enlarging the variables of the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI), and Technology-Organization-environment (TOE) frameworks, and its effect on internet technology adoption by unorganized retailer. The main objective of this study is to propose a comprehensive model by using the above-mentioned theories for mobile application adoption by the unorganized retailer.

2. Mobile Applications

Mobile Applications allow the user to install the program and utilize the features of the applications (Drake, 2017). A mobile application has been used along with the internet for free of cost. It allows the user to send a message, register & track their inventories, post images in groups, and access a wide range of business information. Technology adoption in business has transformed business-to-business communication, improved customer relationship marketing, and improved internal efficiency (Barnes, 2012; Harrigan, 2010). Mobile applications assist unorganized retailers to practice digital marketing strategies and enhance their presence in the market. Technology adoption by the organization has gained momentum and earned benefits in areas including marketing, procurement, customer service, reducing search cost and inventory holding cost (Federici, 2009).

Inevitably, several technology adoption studies assessed the technology adoption among the informal labour, general consumers, and formal organization. The sectoral reports, articles, and various sources indicate that mobile application adoption is increasing among the unorganized, and more than one million users have been registering in the WhatsApp business (Singh, 2019). In the retail ecosystem, mobile applications paved the way for technology adoption. Generally, consumers adopt technologies like WhatsApp, Google Maps, Just Dial, Telegram. Further, organized retailers adopt paid software to attract new consumers, retain their existing consumers, and build brand image. To counter this situation unorganized retailer, embrace Mobile Applications like WhatsApp business, Facebook page, telegram, blogs, google maps, just dial, Mandi app, Udaan app, Katha book app, OK credit, Dukan app, etc.

Unorganized retailers use these technologies to attract new consumers, retain their existing customers, and assist the retailers to remain competitive in the market. Many fixed shop retailers adopt various Mobile Applications and run their business efficiently. They adopt WhatsApp business and Facebook platform, which helps to engage customers.

Using this technology as a digital channel to run their businesses efficiently. They post their merchandise to their consumers and induce their sense to purchase the merchandise.

Unorganized retailers managed their supply chain through the mandi app and Udaan app. Thus, it ensures their efficiency in their supply chain management. Katha book and OK credit app to calculate their daily turnover and it generates bills for the unorganized retailer. These applications allow the retailers to add their customers, record transactions, send payment reminders, and receive payments. Further, it acts as a digital ledger book and reminds the retailer to collect their dues from their customer.

Dukan app allows retailers to create a digital channel and sells their products through this channel. An unorganized retailer needs to do register his business which helps to list their merchandise online. The store identity is shared through WhatsApp to their customers and get direct orders from the app. This mobile application enables the retailers to market their merchandise in digital channels and it helps to attract new consumers. Adoption of these technologies provides better sales, revenue, gain market share, attract new customers, boost store image and finally get a better competitive position in the market.

Studies pertaining to unorganized retailer's technology adoption is relatively less. Further, research studies related to mobile application adoption are limited and this study aims to bridge the gap between unorganized retailers and determinants of technology adoption. Inevitably, by using these theories to identify the determinants of Mobile application adoption by unorganized retailers and theories are technology acceptance model (TAM), diffusion of innovation (DOI), and technology-organization-environment (TOE) frameworks.

3. Theoretical Review

3.1 Technology Acceptance Model

Fred Davis et al. (1989) introduced information systems theory. It is one of the most influential models in the field of information systems. It is popularly known as the Technology Acceptance Model (TAM). This theory adopts TRA that was proposed by Ajzen and Fishbein in (2004) and they created this model through experimental study. This theory explicates the antecedents of technology acceptance that influence the user's behaviour over a wide range of technologies. TAM aims to expound on the association among individual technology acceptance, adoption, and behavioural intention to use a particular technology (Autry, 2010). It posits the perceived usefulness (PU) and perceived ease of use (PEOU) as the foremost determinants of system use (Chen, 2004; Au, 2008).
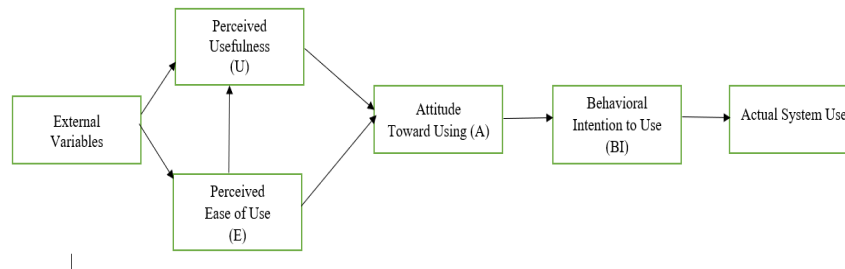
Fig. 1. Technology Adoption Model

PU is defined as "the prospective user's subjective probability to use a certain application will increase his or her job performance", and PEOU refers to "the degree to which the ultimate user relies on the technology to be facile". The model also points out that PU is influenced by PEOU because technology usefulness is more dependent on ease of use (Schillewaert, 2005).

3.2 Extension of TAM

To increase the predicting ability, the researcher adds a few more new determinants in the TAM model. TAM model has been modified twice after the original version of the first TAM. In TAM 2 (2000) he adds social influence and cognitive processes. In social influence, he talks about Voluntariness, subjective norm, and image. In the cognitive process, he adjoins job relevance, output quality, and result demonstrability. The TAM 2 suggests that there is a strong relationship between behavioural intention and perceived usefulness. It also suggests voluntariness and subjective norm also had a considerable relationship with behavioural intention. Furthermore, Output quality and Job relevance positively influence Perceived usefulness. This model also indicates perceived ease of use moderately influenced perceived usefulness. The major setback of this model is the lack of consistency, factorial validity, and instability of parameter estimates. This study adopts a longitudinal observation model and employs a self-reported method. The self-reported method leads to controversial problems and it also reduced common method variance in this study.

Venkatesh and Bala (2008) developed an integrated model of technology acceptance known as TAM 3. In TAM 3 the author adds four constructs: Individual differences, System characteristics, Social influence, and Facilitating conditions that are factors of usage behaviour. At one end of the study Subjective norm, Image, Job relevance, Output quality, result demonstrability and Perceived ease of use were the determinants of Perceived usefulness. While on the other side, Computer self-efficacy, External control, Computer anxiety, Computer playfulness, Perceived Enjoyment, and objective usability were the determinants of Perceived ease of use. This model argues Perceived usefulness faces a moderate effect on the determinants of perceived ease of use. It also argues that there is a moderate correlation between Job relevance and output quality. Further, it

suggests experience acts as a moderating variable between computer anxiety and perceived ease of use, perceived ease of use, and behavioural intention. This theory incorporates Longitudinal research studies, and this model was tested in the real world.

3.3 Diffusion of Innovation

Everett Rogers (1962) proposed diffusion of innovation theory in his book diffusion of innovation. This theory explains the penetration factors of new technology or ideas among individuals. It identifies the diffusion of technology that has happened through communication over some time among the participants. In simple terms, DOI is a theory of how, why, and at what rate new ideas and technologies spread through cultures at the individual and the firm level across states. This theory explicates the four variables for the diffusion of technology: technology itself, time, communication channel, and culture. He argues that the technology decision-making process has five stages: Awareness, Relative Advantage, Compatibility, Complexity, Trialability, and Observability. He proposed three types of decisions: Optional innovation-decision, collective innovation-decision, and Authority innovation decision. The optional innovation-decision is made by their innovativeness. The collective innovation decision was taken by the members of the society. The Authority's innovative decision is made by the people who are in power. His characteristics are adopted into five categories: early adopters, innovators, laggards, late majority, and the early majority. One of the limitations in this theory is more focused on social characteristics and technology aspects. When it comes to the healthcare industry, this theory had less explanatory power. This theory never investigates all the relevant resources and situations, so its predicting ability is considerably low.

3.4 Technology organization environment

TOE model was published by Tornatzky et al. (1990) and Tornatzky and Klein (1982). This theory combines organization structure with innovation adoption, based on the contingency theory of organization. It portrays the determinants of technology adoption among the organization. This theory explains the process of technology adoption and implementation of a firm is influenced by the technology, organization, and environment. Technological context refers to the technologies available to an organization. Technological context is focused on how the existing technologies available within the organization along with firms influence the innovation adoption process. The characteristics of an organization demonstrate in the organizational context. It includes the size of the organization, decentralization, complexity of its organization structure, human resources quality, and resource slack internally available.
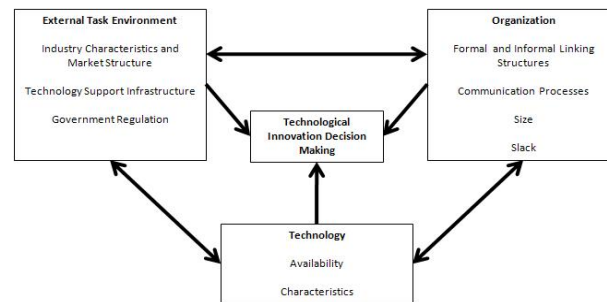

Fig. 4. Technology Organization and Environment

The environmental context is focused on industrial size, the structure of the industry, competition, macroeconomic factors, and government policies. The result shows that there is a significant relationship between technology innovation, decision making and assimilation, trialability, complexity, perceived direct benefits, perceived indirect benefits, and standardization. In this research, significant variables are firm size, top management support, and communication process.

This study also suggests that government incentives will also increase technology adoption among the firms. This framework unveils the limitations of other technology adoption and user acceptance models to narrate technology adoption in organizations. The main drawback of this model is that it does not represent an integrated conceptual framework and it is a framework to study organizational adoption. This theory does not have variables like security concerns, technology infrastructure, culture, sociological variables, and managerial capabilities. If the TOE framework includes these variables, it makes this model comprehensive.

This theory has too many concentrated-on factors affecting technology adoption and it affects the predicting ability. Moreover, too much concentration on negative aspects leads to predicting only the negative aspects of technology adoption.

4. Propositions Expanding TAM, DOI, and TOE

Technology adoption involves a high-involvement decision-making process in the unorganized retail sector. In this study, we adopted the Bass diffusion model and reduced the perceived technical, financial, and social risks in unorganized retail. This

study integrates TAM, DOI, and TOE theory constructs and brings the entire construct to 26. TAM and DOI theories are primarily used in examining the user behaviour of technology adoption and TOE theory has widely been assessed the technology adoption at the organization level. This study synthesizes the conceptual models of TAM, DOI, and TOE theories and proposes a new model in the unorganized retail sector, especially for store-based unorganized retailers. It is a pioneer study in the unorganized retail sector. It also brings technology, organization, and environment to the unorganized retail sector. This model posits is like ANT theory (Callon, 1986) and IS security innovation adoption model (2020) it examines the dynamic and mutual interplay of human and non-human networks.
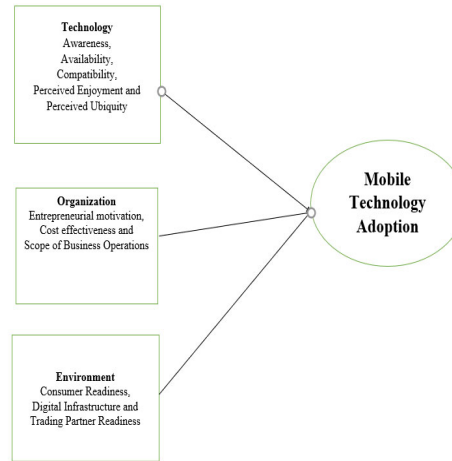
Fig. 5. Mobile application adoption Model

4.1 Technology

Technology adoption allows the business to be more competitive and it also helps the organization to increase its operating efficiency (Kwon, 1987). Adoption of technology is categorized at three levels: individual, group/team, and organization. Successful technology adoption by the retailers depends on the awareness, infrastructure availability, accessibility, entrepreneurial motivation, age, educational qualification, and Business environment. The retail organization with a higher level of technology competence shows more likely to adopt technology and it also generates a competitive advantage for the organization.

4.2 Awareness

Technology adoption, acceptance, and its continuation of use starts with awareness. Awareness is the basic determinant in technology adoption studies. Past studies unveiled that the adoption process consists of five stages and Awareness is the first stage in technology adoption (Lionberger, 1968). Awareness means a certain degree of familiarity with a particular technology among the users, and it has been mentioned as "a degree of attentiveness and ability to depict beliefs in a certain time and space as an object which influences the adoption process" (Islam, 2011). However, very few studies explored the variable awareness in technology adoption studies. More researchers assess the usability, trialability, observability, and relative advantage in the technology adoption. Later the construct Awareness gained momentum in the adoption of 3G mobiles and mobile applications.

In this Mobile application adoption model, Awareness is a key construct in adoption where the users are small and medium retailers. These users adopt technology only when the technology is familiar among their peer group members. In most of the mobile gadget's studies, researchers incorporated Awareness constructs in their work, and it positively affects the behavioural intention to adopt a certain technology. Similarly, this research also studied several mobile applications, and it influences the researcher to study the construct awareness. Awareness was considered as a primary factor that influences the intention to adopt mobile advertising (Khan, 2010). Lack of awareness in technologies would tend to create some ambiguity, anxiety, unawareness about available technologies usage and benefits. Hence, it will affect the penetration of digital technologies. Sudhir et al. (2012) stated that lack of awareness was a hindrance to adopt mobile phones among the Indian consumers. Further, awareness creates a positive impact on technology adoption (Shankar & Kumari, Factors affecting mobile banking adoption behavior in India. , 2016). Finally, Tanakinjal (2012) stressed the importance of awareness in technology adoption studies, and emanated awareness was a very essential component in the innovation. Further, the researcher argued that future research ought to include awareness in technology adoption studies.

P1: A greater level of awareness will positively influence the mobile technology adoption of an unorganized retailer.

4.3 Availability

Availability means checking the degree of mobile application available in the market for unorganized retailers. After the introduction of smartphones and google play store applications created a digital space for several small businesses. Out of these various small businesses, unorganized retail is one such small business also benefited. In google play store applications like Pagar, Poco, Ok credit, Khata book, Mandi app, WhatsApp business, etc., were assisted to perform functions including marketing, accounting, supply chain management, vendor, and customer relationship management. Researchers used TAM theory to study the technology adoption by multinational corporations and consumers. Kurnia et al. (2015) studied the adoption of e-commerce technologies in the Malaysian grocery SME retail sector study. In this study, they assess the technologies like E-mail, Internet, Intranet, Extranet, Electronic Data interchange, and Barcode. Demoulin and Djelassi (2016) studied the adoption of self-service technology in a retail context. In this study, the researcher assessed the availability of barcodes, automatic vending machines, and automatic checkout in a retail context. Further, in this research the availability of technology positively influenced behavioural intention. Arun kumar Kaushik et al. (2015) studied the adoption of self-service technology among street vendors in India. In this research, the researcher assessed the availability of banking technologies like ATM, Internet banking, Mobile banking, and Passbook printing machine. Julien (1994) studied the adoption of new hardware and software technologies in the retail sector. Technology adoption depends on what type of technology is available for the user. It is important, especially in the unorganized retail sector, that the availability of technology will ensure the user would adopt the new technologies.

P2: A greater level of availability will positively influence the mobile technology adoption of the unorganized retailer.

4.4 Compatibility

Compatibility means technology is perceived as being consistent with past experiences and also meets the business needs of the user. Compatibility is the degree to which a technology is perceived as being consistent with its business needs. Tornatzky and Fleischer (1990) found compatibility is the important determinant in technology adoption in their study. The technology is more compatible means the technology is easily acquired and inducted into their business. To be more compatible, the new technology is needed to blend with the existing process and systems of the unorganized retailer. In this digital era, there are several technologies available for one particular function. For example, WhatsApp is used to maintain customer relations and also it assists to maintain vendor relations. Further, several applications are available to perform accounting functions, Human resource management functions, and Marketing functions. The duty of the unorganized retailer needs to assess various applications and choose the compatible application for their business. If the technology is compatible with the current system, it reduces the uncertainty of the unorganized retailer and the retailer would embrace the technologies in their business (Lee, 2005, 2006).

P3: Compatibility will have a positive effect on the mobile technology adoption of the unorganized retailer.

4.5 Perceived Ubiquity

Perceived Ubiquity has defined "as the user accessing the technology at any time and any place without any restrictions" (Johnson, 2018). The continuous development in digital technologies, play store applications, Internet accessories, and services led to the penetration of digital technologies among unorganized retailers. Mobile phone's ubiquity shares information across all platforms and it enhances the service accessibility among the customers (Chen, 2004). Moreover, mobile applications require fewer restrictions to install and use those applications. The mobile application provides continuity, proximity, transparency, and transferability at the time of using mobile applications. A research study shows that ubiquity assists consumers to access the information in real-time as well as make their purchases from anywhere (Kim, 2013). Another empirical study from Thailand found that consumer behaviour was influenced by mobile application ubiquity (Sajtos, 2009). Hence, it is hypothesized that:

P 4. Perceived ubiquity will have a positive effect on the mobile technology adoption of unorganized retailers.

4.6 Organization

In this research, an unorganized retail store and owner acts as an organization. In unorganized retail owners and organizations are indifferent, where the owner-manager perception about technology is acting as an external factor and in the organizational context, it acts as an internal factor of a retailer which influences the behavioral intention. Apart from this, adoption propensity is influenced by various factors such as the business model of the retail store, business size of the retail store, merchandise offered by the retail store, along with resources and innovativeness of the retail store (Jason Dedrick, 2003). The significant variables in the unorganized retail context include financial resources of the store, business size of the retail store, knowledge capability of the retailer, innovativeness of the retailer, the operational capability of the retailer, trust, technological resources, availability of technical experts, and infrastructure and unorganized retail store readiness are identified as significant (Maikudi Shehu Musawa, 2012). This paper had three constructs in the retail store and owner perspective. Entrepreneurial motivation, Scope of business operations and cost effectiveness were incorporated in the study.

4.7 Entrepreneurial Motivation

Entrepreneurial motivation refers to the process of transforming an entrepreneur into a powerful businessman. It encouraged the entrepreneur to put their best efforts into their business for the achievement of their entrepreneurial goals. Entrepreneurial motivation acts as a moderating variable between Entrepreneurial intention and Behaviour, it also found significance between Entrepreneurial intention and Entrepreneurial behaviour (Alam, 2019). In another study, the empirical evidence shows attitudes, subjective norms, and behavioural control mediate the relationship between entrepreneurial motivation and intention (Solesvik, 2013). Therefore, entrepreneurial motivation influences the retailer to be more goal-oriented. It enhances their prestige and store image among their customers and competitors. Therefore

P 5: Entrepreneurial motivation significantly affects the mobile technology adoption of the unorganized retailer.

4.8 Cost-effectiveness

Firms would like the benefits from the adoption of innovation to be commensurate with the costs associated with the adoption of the innovation. Tornatzky and Klein (1982) state that technologies that are perceived to be low in cost are more likely to be adopted. Suhaiza Zailani et al. (2007) found cost-effectiveness to be an important variable in the context of supply chain performance. Palvia et al. (1999) pointed out that cost is no longer a bottleneck for small businesses to adopt new information technologies due to the advent of powerful PCs, rapidly declining hardware and software prices, and the availability of ready-to-use user-friendly software packages. However, for small businesses, the cost of hardware/software is still a big deterrent to adoption, and therefore evaluate the cost relative to the benefits before adopting new technology.

P6: Firms that perceive greater cost-effectiveness determine the mobile technology adoption of the unorganized retailer.

4.9 Scope of Business operation

Technology adoption of the retail store has significantly influenced the scope of business operations. The greater the scope of a retail store, the more likely it is that a firm invests in technology. Zhu et al. (2002, 2003) describe the role or scope of business operation. Scope of business operation predicts the technology adoption on three stands. Technology adoption led to the digitization of business records. Digitization of business records reduces the internal coordination costs, administrative complexities, and information processing. Second, it relates to external coordination costs such as search costs and inventory costs. It reduces the search costs for both buyers and sellers. Third, technology adoption helps to predict the demand accurately and it also helps to improve inventory management.

P7: The SBOs of an unorganized retail store will significantly determine the determines the mobile technology adoption of the unorganized retailer.

4.10 Environment

Business Environment is a kind of scenario in business that forces and supports the retailer to adopt a technology. Even though the retailer is successful in business, peer pressure influences the retailer to adopt mobile technology. While at the same time the business environment supports the retailer to adopt technologies and some of the supporting variables consumer readiness to use digital technologies, Trading partner's readiness, and Digital infrastructure. These variables support the retailer to embrace Mobile Technology in their business.

4.11 Consumer readiness

Zhu et al. (2002) define consumer readiness as related to consumer willingness to use technologies in their purchase. Consumer willingness measures their willingness to access online shopping, Internet-associated technologies, internet infrastructures amongst public users and focused on the diffusion of personal computers, mobile, laptop, and palmtops. Emanuele Prandelli (2008) noted that consumer readiness could be improved upon by firms developing a common language or technological networks that enhance learning capability, trust, and motivation to shop online effortlessly. For instance, interactive relationships between firms and their customers through virtual space may reduce consumers' expended time and efforts, as well as their willingness, to obtain and share business knowledge:

P8. The consumer readiness to technology determines the mobile technology adoption of the unorganized retailer.

4.12 Digital infrastructure

Digital infrastructure plays a crucial role in unorganized retailer's technology adoption. Small businesses need digital infrastructure to run their ventures and then only they will be able to achieve success in their business. They do not have corporate funds and technology support like an organized retailer. To create a technology adoption among the unorganized retailers, the government needs to create a digital infrastructure at large. Through that, It can create a societal benefit. The role of the digital infrastructure stimulates the shift of Internet penetration. Government attempts to create a digital environment to thrive the

retailer's willingness to invest in retail technologies (Nabareseh, Oskawe, Klimek, & Chovancova, 2014). Governments' investment in activities like high-speed broadband, subsidies for low-cost smartphones will facilitate technology adoption among the unorganized retailers. It also supports tech startups that can exclusively make applications for unorganized retailers. It would ultimately drive and stimulate retailer's intention towards the use of mobile applications.

P.9 Digital infrastructure will positively affect the mobile technology adoption of the unorganized retailer.

4.13 Trading partners' readiness

Technology adoption transformed the unorganized retail sector, but it requires the support of its trading partners (customers, dealers, and suppliers). The trading partner's supports generate new business opportunities in unorganized retail and downplay the threats of e-commerce. It helps the retailer to gain a competitive advantage in their business. Despite that, most of the technologies are easily adaptable retailers do not have the resources and infrastructure to perfectly adopt the technology. Unorganized retail demands an integrated trading interface that is linked to their retail store, customers, dealers, and suppliers. The trading partner would support the technology adoption of informal retail. It is also assumed if the business volume of the trading partner is big and they can afford the associated costs. Therefore, the trading partner'

P10. Trading partners' (dealers and suppliers) readiness to use technology will significantly impact retailers' mobile technology adoption to adopt it.

5. Research Design

This study adopts quantitative research techniques to assess the determinants of Mobile technology adoption among the retailers. This study adopts exploratory research design and it is conducted to explore the determinants that influence retailer's mobile technology adoption. A mix of open ended and close ended questionnaires were issued to the respondent and collected as primary data. Further, the population of the study which are unorganized retailers of mobile technology users and it incorporates stratified random sampling method for data collection. Out of 320 questionnaires that have been distributed to retailers, 221 valid questionnaires were collected (response rate is 69.0 percentage) and used for data analysis. Descriptive analysis has been conducted to analyze the demographic data of the respondents using SPSS. Structural Equation Modelling using SPSS AMOS has been used for path coefficient modelling due to its capacity of testing the effects of several interaction items.

6. Analysis and Discussion

Based on the demographics and other personal background information obtained from the survey, it shows more than 85 percent of the respondents were male. More than 54.0% of the respondents aged between 41 – 60, Educational qualification ranges in Middle school. One half of the stores have an existence more than 11 years and 90.0% of the stores are owned by an individual. And also, almost 88.0% of the stores have bank accounts.

Table 1
Descriptive analysis

| Gender	Frequency	Percentage
Male	194	87.8
Female	27	12.2
Age	**Frequency**	**Percentage**
20 - 30	20	9.0
31 - 40	55	24.9
41 - 50	57	25.8
51 - 60	64	29.0
Above 60	25	11.3
Educational Qualification	**Frequency**	**Percentage**
Middle school	104	47.1
High School	63	28.5
Graduate	49	22.2
Post graduate	5	2.3
Years of Existence	**Frequency**	**Percentage**
1 year - 5 years	22	10.0
6 years - 10 years	36	16.3
11 years - 15 years	54	24.4
16 years - 20 years	50	22.6
21 years - 25 years	26	11.8
Above 25 years	33	14.9
Ownership	**Frequency**	**Percentage**
Individual ownership	199	90.0
Partnership	11	5.0
Family Business	11	5.0

Confirmatory Factor Analysis was performed on the data, to evaluate the validity of the items and ten underlying constructs in the measurement model. The basic results suggested that some constructs need revision and the revision were incorporated with an objective to improve the model fit. The basic results also recommended deletion of some items in the model. Items recommended for deletion were evaluated from both a statistical and a substantial point of view before deletion. Six items were ultimately deleted. The final measurement was respecified into 48 items and ten constructs of the research model. The factor loadings are shown in table 3. All the retained items have high factor loadings on the constructs it measures.

The above conceptual framework was tested by using SPSS AMOS SEM technique, the structural equation model demonstrated good model fit. The modification indices suggested that a structural path from Entrepreneurial motivation to mobile technology adoption be added to improve the model fit. Further, the modification indices also suggested for Awareness and ubiquity was also added to improve the model fit. Since it is more important that digital infrastructure is likely to make an impact with mobile technology adoption, the path was added to the model. All the fit indices are well within the range of acceptance. Overall, the final model is statistically accepted. The hypotheses about the relationship between the constructs in the model were tested through the significance of the structural coefficient. All of the hypothesis's results were reported in table 3 and Hypotheses H1, H2, H4, H6 and H10 are supported and all of the structural coefficients were significant at 10 percent. The CFA results indicate that all the items in the loadings were greater than 0.700 and there was no issue of cross loading. Further we assessed the reliability and validity of the constructs using Cronbach's alpha, Composite reliability (CR), and average variance extracted (AVE). In this model the Cronbach's alpha value is above 0.800 for all constructs which are greater than the standard benchmark, which is **0.70**. Therefore, we can conclude that the instruments of study were reliable (table 2). Further Composite reliability was evaluated and the past researches recommend CR value should be more than 0.70 or larger is considered for research. In this research all the constructs surpassed the CR value by more than the recommended values. Further the Average Variance Extracted value is more than 0.600, which is more than the recommended values. Thus, we can conclude that the scales used in this study are both reliable and valid.

Table 2
Items loadings, Cronbach's alpha, composite reliability and average variance extracted

Construct	Items	Loadings	Alpha	CR	AVE
Awareness	Awareness_1	0.856	0.901	0.922	0.705
	Awareness_3	0.812			
	Awareness_4	0.845			
	Awareness_5	0.832			
Availability	Availability_1	0.701	0.806	0.843	0.656
	Availability_2	0.855			
	Availability_3	0.812			
Compatibility	Compatibility_1	0.862	0.844	0.866	0.774
	Compatibility_2	0.804			
	Compatibility_3	0.850			
	Compatibility_4	0.875			
	Compatibility_5	0.799			
Ubiquity	Ubiquity_1	0.909	0.933	0.878	0.912
	Ubiquity_2	0.912			
	Ubiquity_3	0.822			
	Ubiquity_4	0.956			
Scope of Business Operations	SBO_1	0.812	0.821	0.856	0.789
	SBO_2	0.805			
	SBO_3	0.864			
	SBO_4	0.835			
	SBO_5	0.894			
Consumer Readiness	CR_1	0.780	0.874	0.723	0.656
	CR_2	0.762			
	CR_3	0.726			
	CR_4	0.712			
	CR_5	0.779			
Entrepreneurial Motivation	EM_1	0.840	0.814	0.824	0.741
	EM_2	0.827			
	EM_3	0.864			
	EM_5	0.871			
Cost Effectiveness	CE_1	0.763	0.884	0.801	0.689
	CE_2	0.771			
	CE_3	0.862			
	CE_4	0.877			
	CE_5	0.789			
Trading Partner Readiness	TPR_1	0.879	0.832	0.847	0.741
	TPR_2	0.823			
	TPR_3	0.856			
	TPR_4	0.889			
	TPR_5	0.821			
Digital Infrastructure	DI_1	0.874	0.874	0.871	0.712
	DI_2	0.825			
	DI_7	0.885			
Mobile Technology adoption	MTA_1	0.936	0.945	0.925	0.796
	MTA_2	0.925			
	MTA_3	0.914			
	MTA_4	0.947			
	MTA_5	0.969			
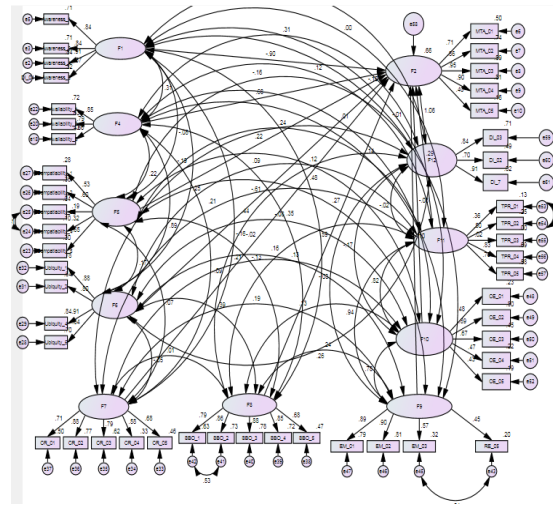
Fig. 2. Measurement Model of Mobile technology adoption

Table 3
Fit indices

Chi-Square	Chi-square/df	GFI	CFI	RMSEA	RMR
2562.778	2.500	.893	.890	.083	.149

The above table indicates the results of Confirmatory factor analysis. The results of the confirmatory factor analysis indicates that the model indices were within the normally recognized range. The chi-square value is 2562.778 and C-MIN value is 2.50, which are within the acceptable range of between 2 and 3 (Kline, 1998). RMSEA is 0.083, which is lower than the suggested value 0.100. Further, the CFI and GFI values more than 0.800, these values were all very near to the recommended range of 0.800 (Chinww, 2003; Dabholkar, 2003). There, the results of the model fit are found satisfactory and hence we can test hypotheses with this model.

Table 4
Results of Path analysis

Path	Significance value	Supported
H1 Awareness →MTA	0.098**	Supported
H2 Availability → MTA	0.013*	Supported
H3 Compatibility → MTA	0.106	Not supported
H4 Ubiquity → MTA	0.025*	Supported
H5 CE → MTA	0.807	Not supported
H6 SBO → MTA	***	Supported
H7 EM → MTA	0.827	Not supported
H8 Consumer Readiness → MTA	0.741	Not supported
H9 TPR →MTA	0.574	Not supported
H10 DI → MTA	0.060**	Supported

** @ 10% significance level, * @ 5% significance level and *** @ 1% significance level.
(MTA Mobile Technology Adoption, SBO Scope of Business Operation, EM Entrepreneurial Motivation, CE Cost Effectiveness, TPR Trading Partner Readiness, DI Digital Infrastructur

The Table 4 results indicate that the relationship between mobile technology adoption and factors related to technologies including Awareness, Availability and Ubiquity are significant. (H1 Beta value = 0.31, $P < 0.100$, H2 Beta value = 0.25, $P < 0.05$, H3 Beta value = 0.22, $P > 0.100$, H4 Beta value = 0.24, $P < 0.05$). However, Compatibility was not significantly related to mobile technology adoption Hence supporting H1 H2 and H4 While H3 was not supported by the data. Factors related to organizational context containing scope of business operations were significantly influenced mobile technology adoption (H5 Beta value = 0.35, $P > 0.05$, H6 Beta value =0.56, $P < 0.001$, H7 Beta value = 0.26, $P > 0.05$) however Cost Effectiveness and Entrepreneurial motivation were not significant to Mobile technology adoption thus accepting H6, H5 and H7 were rejected. With regard to environmental factors, Digital Infrastructure is significant to mobile technology adoption (H8 Beta value = 0.31, $P > 0.05$, H9 Beta value = 0.33, $P > 0.05$, H10 Beta value = 0.37, $P < 0.100$) however, Consumer readiness and Trading partner readiness were not significant to mobile technology adoption hence H10 is supported, H8 and H9 were not supported by the data.

7. Contributions and conclusions

Digital disruption in India paved the way for new sorts of business ideas and ordeals in unorganized retail. Technology adoption helps retailers to achieve a competitive advantage. Mobile Technologies like what's app business, mail, google maps,

digital payments, and social media marketing adopted by the unorganized retailer helps them to run their business effectively. Digital technology also offers an opportunity for unorganized retailers to join their hands with e-commerce players like Amazon, Flipkart, Zomato, and Swiggy. Google's Play store technology centre offers various technologies to unorganized retailers. Some of the technology helps the retailers to get instant credit, online billing and provide support to their logistics and supply chain management. Retailer's technology adoption assists the retailers to overcome their challenges like business size and cost of investment and these technology adoptions that assist the retailers to conduct the business effectively. However, technology adoption among the unorganized retailers is very slow principally on accounts of lack of experience, lack of awareness on technology usage, and lack of understanding of technology benefits.

TAM, DOI, and TOE provide worthy insights into how unorganized retailers adopt internet technologies in their business. This paper states store-based unorganized retailer technology adoption with a better understanding to improve their business. This study proposed a model by integrating TAM, DOI, and TOE constructs and analysing the various factors in unorganized technology adoption. This study covers three aspects of technology adoption that pertain to unorganized retailers. Aspects are technological aspects, environmental aspects, and unorganized retail store aspects. This study considers various aspects from an unorganized retail perspective, and it is enriched with strong theoretical bases for explaining and predicting adoption behaviour. Even though the proposed model had new variables, these new variables bring forth to upgrade the TAM, DOI, and TOE theories. Hence, these variables increase the explanatory and predictive power of technology adoption in unorganized retail. These study variables were complementary in their relationship, with each variable attracting some measure and it enhances the predictive power of technology adoption in unorganized retail. This research model provides realistic assumptions and values. By providing that attitude in the assessment of the factors and led to measuring the adoption behaviour. Technology adoption in unorganized retail is unique behaviour where it needs to measure efficiently by adopting this model. The proposed model is not only assumed to be exhaustive in its constructs, but also it encourages modification and improvement through further studies. It can favourably compare with other relevant models and hopefully adds to the existing knowledge of user acceptance of technology in unorganized retail. The paper integrates technology, environmental, social, and behavioural aspects in unorganized retail and informs their decisions to global markets. Unorganized retailers are adhering to changes and challenges in their environment, which force them to adopt technology to stay competitive in the market.

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