

Digitalization of Unorganised Retail Outlets: A Toe Model

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Abstract

The major objective of this paper is to study the factors related to the Technology-Organisation-Environment (TOE) context that influence the adoption of Digitization in Unorganised Retail Outlets. With this objective, a study of a proposed conceptual model of the TOE framework was taken. To validate the model, a quantitative survey was conducted with unorganized retail outlets in Karnataka, India. The survey generated 75 respondents. AMOS and SPSS were used to access the model. It is observed that the elements related to Technology in the TOE (Technology-Organization-Environment) framework have a major impact on the intention to adopt technology (Digitalisation). However, the mindset of Retailers, which falls under Environment and Organization, needs to be improved to encourage technology adoption intention. The government might utilize the study to promote additional digitalization efforts in rural areas. They can comprehend the needs of rural areas and adapt their work accordingly. Unorganized merchants can utilize this model to expand their customer base and survive in today's highly competitive market.

JEL Classification: M15, M31

Keywords

Unorganised Retailers, TOE framework, Technology, Technology adoption intention.

Introduction

Digitalization is a fundamental and ongoing change in modern civilization that affects all aspects of both business and daily life. This transition is crucial for the retail industry since it has a significant impact on and is influenced by this progress. Retailers offer consumers a range of digital products and services that are designed for use with digital technologies and are influenced by the new patterns of consumption associated with these technologies. Although digitalization has been present in the retail industry for a considerable amount of time, the impact of this shift is becoming more and more apparent. (Salkin, 1964). The development of digitalization is expected to have a profound impact on merchants, consumers, employees, and society as a whole. It is crucial to develop a comprehensive understanding of this phenomenon. (Johan Hagberg et.al., 2016).

The retail industry is highly dynamic and influential worldwide. Moreover, the recent shift in digital technologies remains an exciting opportunity for the Indian retail sector. India is a highly significant retail hub on a global scale, ranking as the fifth-largest destination for retail space worldwide. Indian retail industry has three categories Unorganised retail, Organised retail, and E-Commerce. The Indian retail market is dominated by Unorganised retailers (IBEF, 2021).

The pandemic has driven unorganized retailers to understand the relevance of digital technology usage and their survival in the retail business. The utilization of digital technology improves the consumer experience, minimizes obstacles in the purchasing process, and boosts the profit margin of unorganized businesses. Hence, digital technologies will revolutionize the traditional brick-and-mortar business paradigm into a hybrid physical model. This business strategy improves the user experience beyond the scope of digital payments. (Selvabaskar, 2022).

Regarding declining market share and increasing competition, can these small retail outlets in India effectively manage the growing challenge of digitalization? Traditional retailers, especially small retail establishments, tend to neglect technology and are typically slow in adopting information technologies. (J Hagberg et.al., 2016)

Lastly, small merchants must capitalize on digital payment systems and other digital technologies, such as mobile, social media, and analytics. They also need to redirect their attention towards adaptability and innovative methods of client interaction facilitated by these technologies. (Ravi Seetharaju, 2019)

This study examines the implementation of digital applications in small Unorganized retail establishments in a developing nation such as India. The objective is to assess the adoption and adoption intention of digitization for small unorganized retail establishments and to identify the organizational, technological, and environmental obstacles they encounter.

Literature Review

Customers can make purchases without having to be physically present in a retail store thanks to the current state of internet usage, which provides communication as a mechanism for customers and retailers to communicate with one another. (Nagar K, 2016). A significant amount of demand for technological applications, such as business software packages, has been observed in the field of information systems. To streamline organizational activities, these information systems were initially implemented. (AL-Shboul, 2019). The technology-organization-environment (TOE) framework has been extensively used in various studies of technology application adoption, such as e-commerce (Abualrob, 2016), e-supply and chain (Lin H F, 2014), and e-procurement (Tran et.al., 2014). The retail industry has been forced to supply a varied variety of technological platforms at all levels, which were previously exclusively utilized by large locations in major cities. This is due to the increasing attention that technology developers have been paying to the retail sector. In a developing nation like India, where the service industry is the most prevailing, the retail sector serves as an essential stimulant for economic growth and provides a firm foundation for employment at the national, regional, and local levels. Because of this, the implementation of technological applications in the organized retail sector is something that cannot be ignored, and the development of these applications ought to be a subject of academic investigation in every demographic condition. As a result, the purpose of this research is to address this vacuum by gaining an understanding of how organized retail businesses see their intentions regarding the adoption of innovative technologies. The attention of technology innovators has moved the retail sector to offer them a varied range of advanced platforms at every level, which was previously adopted by large outlets only in metro cities. In a developing economy like India, where the service industry shows dominance, the retail sector acts as a key catalyst for economic growth and forms a strong basis for national, regional, and local employment. Thus, the adoption of technology applications in the organized retail sector cannot be ignored and its development should be an academic point of exploration in all demographic contexts. Hence, this research proposes to

fill this gap by understanding the perceptual level of intention for innovative technology adoption by organized retail outlets. (Anil Kumar, Rohit Singh and swapanrag Swain, 2022).

To gain a better understanding of how businesses embrace new technologies, the research community has made substantial use of the TOE framework. (Albar, 2019) In addition, there has been a presence in the literature concerning the role that the government plays in the adoption of websites for businesses. (Osakwe, 2016) The purpose of these studies was to evaluate the impact that the adoption of technology or any new technology will have on businesses. Both good and negative assessments of the adoption of technology may be found in the literature. (Lin H F, 2014). The implementation of technology that is based on the Internet can confer a variety of advantages on a business (Perez-Gonzalez, 2018). Based on the results of the cost-benefit analysis, businesses can determine whether or not the adoption of Technology 4 Global Business Review is beneficial, and they are motivated to embrace it if it is beneficial. (Raymond F, 2008). The threat from its competitors is also the reason to adopt technology because of its potential to make business operations better (Teo T S et.al., 2009) In underdeveloped countries, the government has a crucial role in promoting the adoption of technology by implementing uncomplicated and favorable laws and regulations for businesses. (Chatzoglou D Chatzoudes P, 2016).

There have been numerous academics who have investigated the ramifications of the TOE framework about various digital applications; however, just a few of them have been emphasized here. The effects of TOE variables on accounting information systems were the subject of research that Lutfi and colleagues carried out in the year 2020. Matias and Hernandez conducted research in 2019 on the factors that influence the adoption of cloud computing by micro, small, and medium-sized enterprises (MSME). On the other hand, AlBar and Hoque (2019) researched the adoption of ERP, while Sandu and Gide (2018) investigated the use of cloud-based services by small and medium-sized enterprises (SMEs) in India. During the year 2018, Bhattacharya and Wamba made a significant contribution to the retail business by determining the factors that influence the implementation of Radio Frequency Identification Technology (RFID) in a retail environment. Jia et al. reviewed the elements that had an impact on E2.0 after it was adopted in the year 2017. A study conducted by Karkonasasi (2016) investigated the elements that influence the adoption of cloud computing in enterprises. Gangwar et al. conducted research that led to the discovery of the TOE framework and the technology adoption mode. Between the years 2022 and 2023, Anil Kumar carried out a study on the application of technology in organized retail outlets in India.

Research Gap:

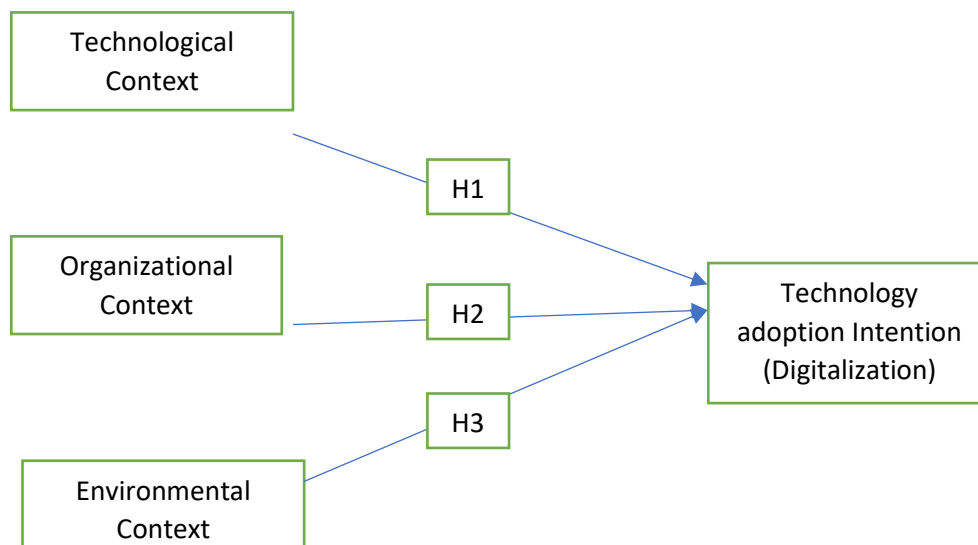
The Present literature states that adaptation of digitalization is important for today's business and focusing on the area of Rural Unorganised Retailing no such study has been taken up.

The Objective of the Study:

1. To study the TOE model with reference to the adoption of digitalization by Rural Unorganised Retailers.

Conceptual Model

The TOE framework was conceptualized based on previous insights. The model consists of Technological Context – where it elaborates on the new and existing technology used for the market by the firm. Organizational Context – IT defines the firm's size and scope of business. Environmental Context – Its related to external factors of the firm such as government, competitors, etc., and Technology adoption Intention – shows the process by which technology is adopted (T Oliveira, 2011)



Source: Tornatzky and Fleischer (1990).

Figure 1: TOE Model for Technology Adoption Intention.

Research Hypothesis

H1: There is a significant and positive relationship between Technological Context and Technology Adoption Intention in unorganized retail outlets in rural areas.

H2: There is a significant and positive relationship between Organizational Context and Technology Adoption Intention in unorganized retail outlets in rural areas.

H3: There is a significant and positive relationship between Environmental Context and Technology Adoption Intention in unorganized retail outlets in rural areas.

Research Methodology

The study aims to explore the relationship between the Technology Adoption Intention of Digitalization and the three Contexts of the TOE framework i.e. Technology, Organisation, and Environment with reference to Unorganised Retailers in Rural Areas. To study the four constructs and their relation SPSS and AMOS were used. AMOS helps to estimate models with small sample sizes and a large number of variables and indicators

Scale

In order to accomplish the objectives, a questionnaire was designed and a survey-based approach was employed. The questionnaire comprised multiple valid instruments. The perception of the respondents was measured using a Five-point Likert Scale. 1 represents Strongly Disagree and 5 represents Strongly Agree. The questionnaire used was pre-validated (Swain, 2022). The questionnaire was validated by the application of Factor Analysis, and the data was further validated by computing the figures using AMOS.

Sample size

Overall 14 variables were taken for the study on technology, organization, and Environment, based on the Tumb rule the required sample size was calculated on 5 times the variables taken for the study which is 70. Therefore, the study's sample consists of 75 retailers. The samples were collected from unorganized retailers in rural areas of North Karnataka, India, with a special focus on Hubli, which is recognized as a major commercial Hub in Karnataka. The Retailers were individually interviewed and the questionnaire was thoroughly discussed and completed by the team. The population was divided into clusters, each city in North Karnataka was considered a cluster, and a Judgmental sampling technique was employed to pick the

respondents. The respondents were judged on the type of retail shops and only shops with Grocery product sales were taken for the study. The participants were guaranteed confidentiality to incentivize their participation in the survey.

Results

The Demographic Data used for the survey are analysed for the study are mentioned below

GENDER

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Female	11	14.7	14.7	14.7
Male	64	85.3	85.3	100.0
Total	75	100.0	100.0	

Table: 1 – Gender wise distribution of Rural Retailers Respondents

In the study, 85.3% are male respondents and 14.7 % are female.

AGE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid < 20 years	5	6.7	6.7	6.7
> 50 years	12	16.0	16.0	22.7
21 - 35 years	18	24.0	24.0	46.7
36 - 50 years	40	53.3	53.3	100.0
Total	75	100.0	100.0	

Table: 2 – Age-wise distribution of Rural Retailers Respondents

The Age of the respondents was divided into 4 categories of which 6.7% were < 20 years old and looking after the retail outlet. 24% were between 21 to 35. 53.3% were in the age group of 36 –50 and 16% were above 50 years. More than 50% of the respondents fall under the age group of 36 –50 for the study.

EDUCATION

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Graduate	17	22.7	22.7	22.7
High School	39	52.0	52.0	74.7
Primary Schooling	19	25.3	25.3	100.0
Total	75	100.0	100.0	

Table: 3 – Education-wise distribution of Rural Retailers Respondents

The education level of the respondents was also studied for the adoption of digitalization where 25.3% were primary schooling up to 8th standard. 52% had completed till 12th that is PUC and 22.7% were Graduates.

Avg. Monthly Revenue

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid < 10000	40	53.3	53.3	53.3
10000 - <25000	32	42.7	42.7	96.0
25000 - < 50000	3	4.0	4.0	100.0
Total	75	100.0	100.0	

Table: 4 – Income-wise distribution of Rural Retailers Respondents

The average monthly revenue of the respondents taken for the study was 53.3% earning less than 10000. 42.7% fall in the bracket of 10000 to 25000 and only 4% are from 25000 to 50000.

Digital apps in your business

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	27	36.0	36.0	36.0
Yes	48	64.0	64.0	100.0
Total	75	100.0	100.0	

Table: 5 – Digital Apps Used by Rural Retailers Respondents in Business.

Further information, was analyzed if they are using digital apps for their business. of which 64% are already using digital apps for their business and 36% are yet to adopt it.

Apps used in your current business.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Google Pay	1	1.3	1.3	1.3
None	27	36.0	36.0	37.3
PayTM	13	17.3	17.3	54.7
Phone Pe	25	33.3	33.3	88.0
Phone Pe, Google Pay	1	1.3	1.3	89.3
Phone Pe, PayTM	3	4.0	4.0	93.3
Phone Pe, PayTM, Google Pay	5	6.7	6.7	100.0
Total	75	100.0	100.0	

Table: 6 – Payment Apps Used in Business by Rural Retailers Respondents

To know the kind of application used multiple choice was given as few use more than one app for payments. It was found that 1.3% used only Google Pay. 17.3% used Paytm, and 33.3% had PhonePe. A few respondents use more than one app for payments, it was found that 1.3 % use PhonePe and Google Pay, 4% use PhonePe and Paytm, and 6.7% use three applications such as PhonePe, Paytm, and Google Pay.

The measurement model.

To analyze the loading of each contrast Factor analysis was executed. The items that fall below 0.5 in loading have to be discarded. The process was done until all loading fell under the same component and had a value > 0.5 . KMO and Bartlett's test was calculated at 0.875. The cumulative factor analysis stands at 70.198.

Exploratory Factor Analysis

Rotated Component Matrix

	Component			
	1	2	3	4
TAI4	.815	.061	.173	.168
TAI5	.809	.117	.153	.146
TAI1	.801	.148	.155	.230
TAI6	.797	.290	.210	.161
TAI2	.715	.140	.196	.311
TAI3	.689	.138	.109	.380
EC1	.113	.910	-.060	-.017
EC3	.265	.832	.044	.229
EC4	.034	.746	.281	.287
EC2	.104	.595	.246	.488
EC5	.338	.589	.396	.107
OC3	.169	.282	.763	.060
OC1	.347	-.128	.754	.145
OC4	.059	.063	.739	.255
OC6	.446	.378	.547	.081
OC8	.191	.290	.539	.405
TC1	.288	.149	.133	.769
TC4	.469	.199	.243	.669
TC3	.397	.364	.196	.639
TC2	.447	.071	.304	.552

Extraction Method: Principal Component Analysis

Table: 7 – Exploratory Factor Analysis, Factor Loadings.

An exploratory factor analysis was performed on the dataset comprising many variables. The variable was examined, and those with a value less than 0.5 were excluded from the study.

Table 7 displays the variables that met the criteria of being more than 0.5 and were selected for further investigation.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.875
Bartlett's Test of Sphericity	Approx. Chi-Square	1042.277
	Df	190
	Sig.	.000

Table: 8 – KMO and Bartlett's Test

Convergent Validity

According to Fornell and Larcker (1981), convergent validity ensures that the components of each construct are exclusively associated with that construct and not with any other constructs. Convergent validity is evaluated using Average Variance Extracted (AVE), Cronbach's alpha, and CR. As per the studies conducted by Hair et al. (2014) and Henseler et al. (2009), it is suggested that the threshold values for CR and Cronbach's Alpha should be >0.70 and >0.5, respectively, for AVE. Given that all of the cut-off values are above the recommended standards, the build reliability has been established.

Convergent Validity

Constructs	Items	Loadings	Cronbach's			AVE	Mean	Std. Deviation
			Alpha	CR				
Environmental Context	EC1	.763	.877	0.879	0.596	2.816	1.2109	
	EC2	.736						
	EC3	.879						
	EC4	.779						
	EC5	.691						
Organisational Context	OC1	.609	.819	0.817	0.476	3.03	1.1536	
	OC3	.759						
	OC4	.566						
	OC6	.787						
	OC8	.704						
Technological Context	TC1	.738	.870	0.874	0.637	3.14	1.234	
	TC2	.717						
	TC3	.854						
	TC4	.872						
Technology Adoption Intention	TAI1	.790	.918	0.898	0.590	3.26	1.2144	
TAI2	.773							
TAI3	.722							
TAI4	.753							
TAI5	.759							
TAI6	.830							

Source: Author

Table: 8 – Convergent Validity

The establishment of convergent validity for the datasets was necessary. The calculation of Cronbach's Alpha was performed. The Cronbach's Alpha values for all four constructs are satisfactory. The EC score is 0.877, the OC score is 0.819, the TC score is 0.870, and the TAI score is 0.918. The dataset's Composite Reliability should exceed 0.7. The Composite Reliability of each construct exceeds the specified threshold. The values for EC, OC, TC, and TAI are 0.879, 0.817, 0.874, and 0.898 respectively. The AVE value must be greater than 0.5. The EC has a value of 0.596, the TC has a value of 0.637, and the TAI has a value of 0.590. Only the OC has a value less than 0.5, specifically 0.476, which is not considered very

low. Mean and Standard Deviation for the data sets were calculated. Therefore, the establishment of convergent validity has been confirmed.

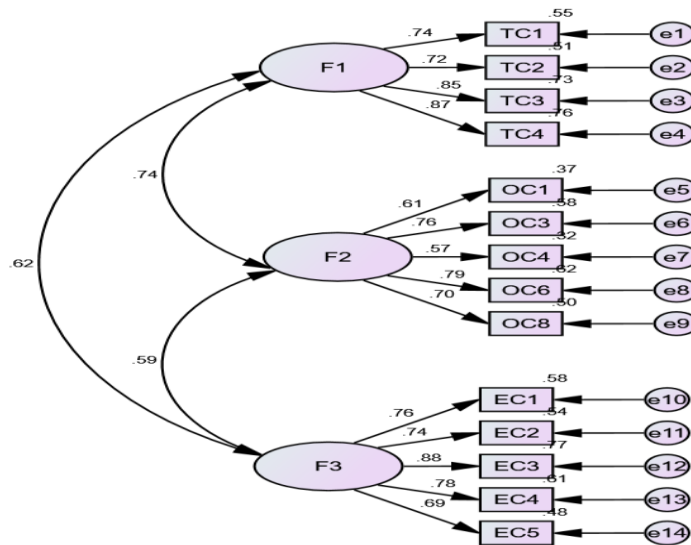


Figure 2: CFA Model

Source: The Author

Divergent validity:

To calculate divergent validity calculations of AVE, ASV, and MSV were done. Consequently, the AVE value is calculated to assess the divergent validity. Divergent validity assesses the extent to which a particular concept is distinct from other concepts (Hulland, 1999). The values were established with the help of AMOS.

	AVE	ASV	MSV	AVE>ASV	AVE >MSV
TC	0.637	0.464	0.5476	AVE > ASV	AVE > MSV
OC	0.476	0.442	0.5476	AVE > ASV	AVE< MSV
EC	0.596	0.366	0.3844	AVE > ASV	AVE > MSV

Table 10: Divergent Validity

Source: Author

The divergent validity has been established in the Technological Context and Environmental Context. Even if divergent validity has not been established in an Organisational Context the results are not that bad. Overall the Divergent validity established among the three contexts is good.

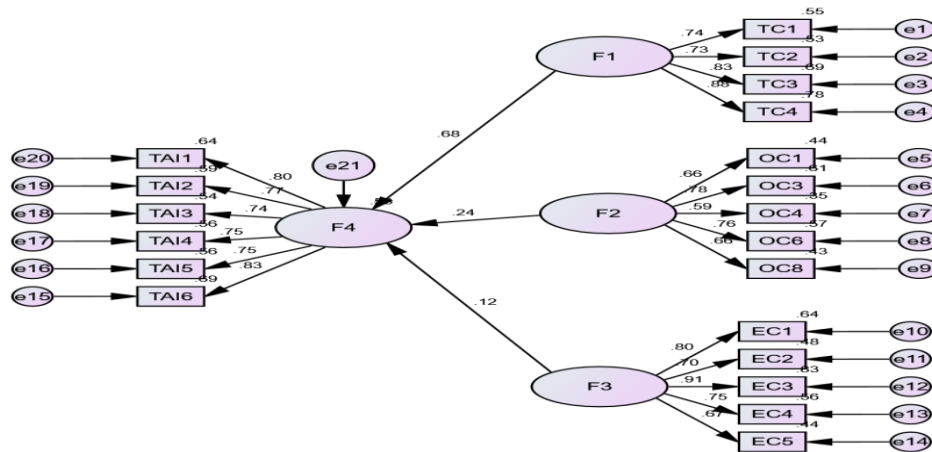


Figure 3 Path Diagram

Source: Author

Hypothesis Results

Hypothesis	Path	Path Coefficients (β)	t-Statistics	p-Values	Results
H1	Technological Context -> Technology adoption intention	0.676	0.138	***	Null Hypothesis is Rejected
H2	Organisational Context -> Technology adoption intention	0.238	0.136	0.029	Null Hypothesis is Rejected
H3	Environmental Context -> Technology adoption intention	0.119	0.101	0.229	Null Hypothesis is not Rejected

Table 11: Hypothesis Path Results

Source: The Author

Discussion

The study investigates how the TOE framework's components affect the intention to adopt technology that is digitalization. The three constructs TOE model that is Technology, Environment, and Organization are utilized to examine the Technology Adoption Intention of digitalization in Unorganized Rural Retailers. There are five variables in the environment context, Four in the technology context, five in the organizational context, and six in the technology adoption intention. Table 11 illustrates how Technology Adoption Intention is significantly and favorably impacted by both Organizational Context and Technological Contexts. Conversely, the intention to adopt technology is not significantly and favorably impacted by the environmental context.

Hypothesis 1 states that the technological Context has a significant and positive impact on the adoption of technology that is digitalization in Rural Unorganised Retailers. The Unorganised Rural Retailers are aware of the significant role that technology plays in business and are prepared to embrace it. The variable examined in this research within a technology framework is the identification of new business prospects. Retailers acknowledge the presence of such opportunities. Technology enhances corporate efficiency by reducing costs. The primary variable being enhanced is the customer relationship in business, which is crucial for the longevity of the business. Multiple studies cited in the literature review also support the same conclusion.

Hypothesis 2 the Organisational context has a significant and positive impact on the adoption of technology that is digitalisation in Rural Unorganised Retailers. Retailers are aware of the significance of digitalization in the business sector. The variables tested in the paper with reference to organization are if the rural unorganized retailers have enough funds to adopt technology, it was seen that with funds they also give priority to the adoption of technology. They anticipate government assistance in the implementation of technology. Distributors consistently promote the adoption of digitalization to them. They have come to realize that embracing and incorporating technology is a crucial asset that aids in the sustainability of rural retail businesses. Retailers are actively embracing technology with the assistance of the government and receiving fundamental training. The prior study in the literature review specifically examines the organizational setting in relation to the adoption of digitalization.

Hypothesis 3 It is seen that the Environmental context has no significant and positive impact on the adoption of technology that is digitalization in Rural Unorganised Retailing. Evidence

suggests that the rural environment has no impact on the adoption of digitalization. The variables examined in the study are that Rural Retailers will lose customers if they do not adopt digitalization. Are the technology vendors providing training on the adoption of technology? It also studies if technology is essential in today's business and our customers do go through promotions on social media apps like WhatsApp and Facebook. It has also studied if the additional applications for payments and accounts are helpful. The environmental context does not appear to have an influence on technological adoption (digitalization). The environment is not favorable to the adoption of digitalization concepts.

Thus, the study shows that only technological advantage and retailers' intention to adopt technology have a beneficial impact on adoption, even in surroundings that do not support it. The study also revealed that retailers have a desire to implement new practices, but the current service environment is not conducive to their efforts.

Conclusion

Technology Adoption Intention is a well-informed phenomenon that involves the proposal of numerous models. This research has focused on three specific scenarios for the investigation, utilizing the TOE framework. The results indicate that within the TOE framework, only Technology and Organisation have a positive relationship, while the Environment in which Unorganised Retailers operate their business is not significant.

Previous research indicates that technology is crucial in gaining a competitive advantage. However, the examination of Unorganised retailing has not produced significant outcomes in terms of gaining a competitive edge. The study can assist unorganized retailers in implementing technology in their businesses to ensure their survival. The government can comprehend the challenges encountered by rural unorganized retailers when it comes to embracing technology. The system developers can discern the challenges encountered by rural unorganized retailers and adapt their efforts accordingly. The study demonstrates that unorganized merchants exhibit a strong inclination towards and awareness of integrating technology into their business operations.

Limitations

Every study inevitably has limitations, and one such limitation that can arise is the constraint of time. The study exclusively concentrates on the state of Karnataka, rather than encompassing the entire country. To enhance comprehension of the study, moderating

variables can be employed, such as ensuring accessibility and providing education to shops regarding their utilization. Subsequently, the study can be further pursued. A longitudinal study is particularly favored, particularly in the context of Rural Unorganised Retailing, to cultivate awareness. The preceding study primarily examines the utilization of several applications in the context of Organised Retailing. The study could benefit from a larger sample size or by analyzing samples from different clusters.

Managerial Implications.

The sellers or the manufacturers who are struggling hard to enter the rural market should study the requirements of rural retailers to help them adopt the technology by creating educational programs for retailers and adopting the “Click and Brick” model for the distribution of goods.

The market needs to adopt new ways to reach and promote the goods to rural consumers. The market should not demand more online as consumers believe retailers more than online products.

Retailers should be encouraged to adopt digitalization as it is the need of the hour for survival. Government should provide more training programs and facilities for adoption of digitalisation.

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