Ecommerce Adoption : An Empirical Investigation in Wooden Handicraft SMEs of Saharanpur, Uttar Pradesh

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Abstract

Ecommerce has brought numerous changes to organizations and their businesses along with helping them to achieve excellence in different countries. This study empirically investigated the factors affecting ecommerce adoption by small and medium - sized enterprises of wooden handicrafts located in Saharanpur, Uttar Pradesh. It was motivated by the fact that even though the handicraft sector plays a vital role in the Indian economy in terms of exports and employment, it has not adopted ecommerce as one of the prominent sales channels for their products. The technological, organizational, environmental, and strategy model based on the TOE framework was proposed in this research. This study was conducted with 163 sampled SMEs to identify various factors that influenced ecommerce adoption. The findings revealed that organizational, technological, and strategy factors significantly contributed to initial ecommerce adoption in the wooden handicraft SMEs of Saharanpur. The study can be further extended to other handicraft products manufactured in different parts to the country to understand the factors affecting ecommerce adoption.

Keywords : **ecommerce, small and medium - sized enterprises (SMEs), technology, organization and environment, firm administration, developing country, economic development, growth, technological change**

JEL Classification : L8, M1, O3

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India is a country with cultural diversity and has an enormous range of handicraft items from different states. These items include woodwork, textiles, carved crafts from stones, ivory, bones, jewellery, metalware, leather products, etc. Indian handicrafts represent beauty, dignity, style, and the overall culture of India. The importance of handicrafts lays in their employment potential and export earnings. This sector is one of the biggest employers in rural India, providing employment to more than 6.5 million people (NSDC, 2017). Many artisans work full time, while many work on a part time basis for this sector. The export of handicrafts showed an increase of 11.07% to USD 3.66 billion in FY 2016-17 (EPCH, 2017) and the handloom and handicraft sector is expected to employ upto 17.99 million people by 2022 (NSDC, 2017). Despite of this, it being an unorganized sector faces many hurdles and challenges like lack of raw material and funds, low productivity, unavailability of skilled artisans, lack of conducive environment, and information asymmetry & dissemination (Chamikutty, 2013; Kumar & Rajeev, 2013). Information asymmetry is a state where relevant information is hidden to many or known to only a few parties, but not to all. It makes market functioning inefficient, as all the parties/participants do not possess the correct information required for making business decisions. Although there is a huge demand for

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handicraft items, consumers do not have information about the various forms of crafts products (information dissemination). Also, as most of the artisans are not highly educated, they are unable to identify new sales channels that result in information asymmetry.

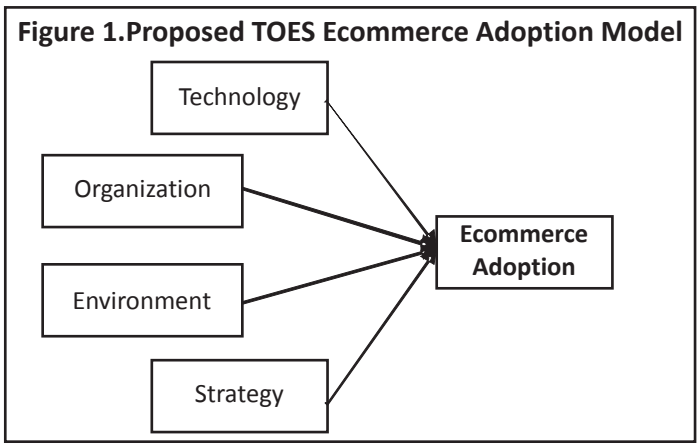
With Internet penetration of 34.8% and approximate 462 million Internet users as of July 2016, the ecommerce industry is showing signs of phenomenal growth (Kulkarni, 2016). Along with China, India is one of the fastest growing ecommerce markets in the Asia-Pacific region ("Handicraft exporters take e-commerce route to tap domestic market," 2015) and is expected to be a USD 80 billion sector by 2020 (KPMG, 2016). Industry experts also believe that global trade now depends more upon ecommerce along with traditional medium for trading. Thus, ecommerce can be used as a potential sales channel for the handicraft items, thereby reducing the information dissemination problem (Al-Somali, Gholami, & Clegg, 2011; Al-Somali, Gholami, & Clegg, 2015). The government is planning and taking various initiatives to promote handicrafts on ecommerce platforms. As a part of this initiative, to provide better marketing reach for handloom products, ecommerce initiatives by the Ministry of Textiles in collaboration with Flipkart have been launched (Ministry of Textiles, 2014). Even the SMEs dealing in different handicraft items are taking a plunge to adopt ecommerce to sustain in their business.

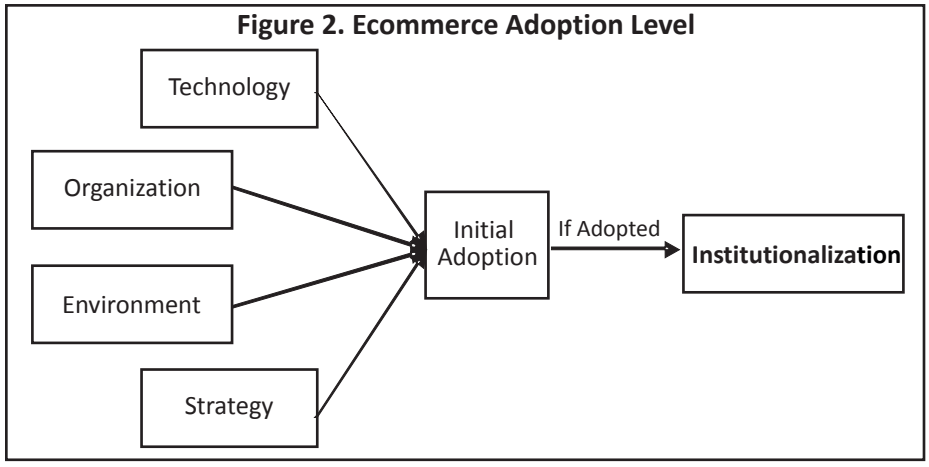
Many studies have been done to find out the factors affecting ecommerce adoption by SMEs in developed countries, but these findings cannot be generalized for a developing country like India. This is attributed to the fact that developing countries have different cultures, business philosophies, and IT developments as compared to developed countries. Moreover, the SMEs in one country face significant and unique challenges to adopt ecommerce (Taylor, Dorothy, & Owusu, 2012) due to managerial, organizational, and environmental limitations (Motwani, Mirchandani, Madan, & Gunasekaran, 2002). One of the studies considered it expensive and disruptive by MSMEs of India (Giyar, 2011). Ganeshan and Suresh (2017) identified problems faced by textile SMEs to improve performance of their supply chain with adoption of new technologies like digital businesses. Tomar (2017) assessed the IT deployment by SMEs of India and Ram, Rangaswamy, and Sundari (2009) assessed B2B procurement in inter organizational systems for corporate purchases. Dhote and Zahoor (2017) assessed feasibility of sustainable ecommerce business models in India through integration of secondary data and expert opinions. Studies identified business to customer online purchase trends for Indian customers (Bagla & Khan, 2017; Joshi & Achuthan, 2016). Tarafdar and Vaidya (2006), on service firms in India, explained the influence of organizational factors on the propensity and challenges to employ ecommerce technologies. Thus, this study assesses the factors that are crucial for adoption of ecommerce by different SMEs engaged in wooden carvings in Saharanpur, Uttar Pradesh, India. The annual value of the wooden handicraft industry of Saharanpur is worth around ₹ 400 crore and it also supports the source of revenue for 50,000 artisans approximately (Yadav & Mahara, 2016), making it one of the important handicraft segments for study.

Saharanpur is a city in the state of Uttar Pradesh (Northern India). It is located about 170 kilometres (110 miles) from Delhi (Capital of India). As per Census of 2011, Saharanpur district had a population of 3,464,228 people (MSME Development Institute Agra, 2011), with a population-density of 939 people per square-kilometre. It is renowned for its wooden carving handicraft industry and also as a thriving market of local agricultural produce, which includes mangoes and basmati rice. Today, it is the principal centre for wood carvings. Wooden carvings result in decorated furnitures, furnishings for homes, gifts for all ages, and toys for children. These finished goods are exported to various other countries like America, Germany, France, Spain, U.K., and Canada.

Proposed Framework for Ecommerce Adoption

The technology acceptance model (TAM) (Davis, 1989), theory of planned behaviour (Ajzen, 1985), and TOE framework (Tornatzky & Fleischer, 1990) are the most commonly used theories for technology adoption. The research adopts the TOE framework as it deals with technology adoption at the firm level as contrasted to TAM





and TPB that deal with adoption at the individual level (Stephen & Toubia, 2010) like assessment of e-banking services by Indian consumers with other variables (Chauhan, Choudhary, & Mathur, 2016). Secondly, numerous authors have used TOE to understand different IT adoptions, especially ecommerce (Alshamaila, Papagiannidis, & Li, 2013; Awa, Ukoha, Emecheta, & Liu, 2016; Gangwar, Date, & Ramaswamy, 2015; Oliveira, Thomas, & Espadanal, 2014) adoption in SMEs.

The research is based on the TOE framework, but to check the feasibility of this model in Indian SMEs' context for ecommerce adoption, preliminary qualitative research was undertaken. After studying the secondary data (literature), interviews were conducted with some managers/owners of the SMEs to understand the factors that affect ecommerce adoption in Saharanpur wooden handicraft industry. Technology, organization, and environment factors as consistent with previous research studies were identified, but along with this, an additional factor called strategy was discovered. Strategy refers to the planning done for ecommerce adoption at the organizational level. Level of ecommerce adoption may vary from one SME to another. The adoption level varies due to usage of e-mail to incorporate collaborative platforms to integrate various stakeholders of an organization. To capture this variation, four stages of ecommerce adoption process in an organization are defined (Al-Somali et al., 2015; Molla & Licker, 2005). The initial stage is referred to as "non-interactive ecommerce" or "initial-stage" of ecommerce adoption. It refers to the decision of an SME to invest in various activities of ecommerce that leads to choice of adoption or rejection of technology (Rogers, 1995). It might include a static web presence of an SME without any interactivity. The second stage is termed as "interactive ecommerce" adoption. In this stage, an

Table 1. Constructs of the Proposed Model

Factors/Construct	Description	Items	References
ORGANIZATION			
Awareness of CEO/Manager/ Owner	It is defined as SMEs' perception about benefits and risks of ecommerce adoption.	A1: We are aware of ecommerce implementations by our partner organizations. A2: We are aware of our competitors' ecommerce implementations. A3: We understand the threats of ecommerce. A4: We recognize the opportunities enabled by ecommerce. A5: We have understood the impact of ecommerce on the way business is to be conducted in our industry. A6: We understand ecommerce business models that can be applicable to our business. A7: We understand the potential benefits of ecommerce to our business. A8: We have understood that adoption of ecommerce leads to competitive advantage in our industry.	Molla & Licker (2005)
Human Resources	It refers to the access and availability of staff or employees who have abundant experience and exposure to ICT. This is needed for ecommerce projects and initiatives.	HR1: Most of our employees are computer literate. HR2: IT employees/ staff have unrestricted access to computers. HR3: Our people are open and trust one another. HR4: Communication is very open in our organization. HR5: We have a culture to share information across our organization. HR6: Our employees at all levels support our ecommerce initiatives. HR7: Senior management/owner manages our ecommerce initiatives and implementations.	Molla & Licker (2005) ; Soliman & Janz (2004)
TECHNOLOGY			
Tech Integration	It is defined as the integration of various components along the value chain. This will enhance SMEs' capacity to conduct business electronically.	TI1: Technology has smoothened our service delivery procedures. TI2: Internet and mobile communication network helps to increase sales. TI3: We are ready to integrate new technology to benefit our business.	Oliveira & Martins (2010)
Tech Readiness	It refers to a combination of factors that facilitate and enable the technological capacity of an organization to adopt ecommerce.	TR1: We have sufficient experience with network based applications. TR2: We have sufficient technology resources to implement/manage ecommerce. TR3: We have high connectivity to the Internet.	Iacovou, Benbasat, & Dexter (1995) ; Lin (2006) ; Oliveira & Martins (2010)
ENVIRONMENT			
E - Readiness of Market Forces	It evaluates the readiness of business partners of an organization such as suppliers and customers to conduct business online.	MF1: We believe that our suppliers are ready to support business online. MF2: We believe that our business partners are ready to conduct business on the Internet. MF3: We believe that our customers are ready to buy our products from the Internet.	Molla & Licker (2005)
Government Regulatory and Policy Support	It assesses the support provided by the government and various institutions to encourage, support, sustain, and regulate activities related to ecommerce and its other requirements.	GRP1: The government shows strong commitment to promote ecommerce through agencies like DIC, MSME centre, etc. GRP2: Government has policies for telecom and network operations for reliable services. GRP3: Banks and finance authorities have technology infrastructure to support ecommerce transactions.	Gibbs & Kraemer, (2004) ; Li (2008)

		GRP4: We believe that the legal environment is conducive to conduct business on the Internet.	
STRATEGY			
Strategy	This factor depicts the importance of planning required for effective deployment of ecommerce. Planning is guided by strategic vision for ecommerce.	S1: We have a policy that encourages grass root ecommerce initiatives. S2: Our business has a clear vision on ecommerce. S3: Our ecommerce implementations are well planned. S4: We thoroughly analyzed the possible changes to be caused in our organization, suppliers, and partners as result of each ecommerce implementation. S5: Our vision of ecommerce activities is widely communicated and understood throughout our company.	Al-Somali et al., (2015) ; Molla & Licker (2005)

organization has two-way communication with the consumers like accepting queries, emails, form entries, etc. The third level is termed as "transactive ecommerce" adoption, wherein actual selling and buying of products with customer service is supported. Finally, "integrated ecommerce" adoption occurs when technology is integrated with suppliers, customers, and all organizational core activities.

Interactive ecommerce is considered as the beginning of ecommerce adoption as per literature (Molla & Licker, 2005) and is considered the same in this research. All the constructs of the proposed TOES (technology, organization, environment, and strategy) model are explained in the Table 1, and the research model is depicted in the Figure 1. The Figure 2 depicts the level at which an SME had adopted ecommerce. Here, the term "institutionalization" refers to the extent of ecommerce adoption and it can be interactive, transactive, or integrated (Molla & Licker, 2005).

Research Methodology

A questionnaire based survey method was adopted for the study. The questionnaire was developed by taking references from the previous studies and was checked for fit in the Indian context.

Table 2. Proposed Hypotheses

Initial Adoption of Ecommerce	Institutionalization of Ecommerce
• **H1a:** Awareness contributes significantly to initial adoption of ecommerce.	• **H1b:** Awareness contributes significantly to institutionalization of ecommerce.
• **H2a:** Human resources contribute significantly to initial adoption of ecommerce.	• **H2b:** Human resources contribute significantly to institutionalization of ecommerce.
• **H3a:** Technological integration contributes significantly to initial adoption of ecommerce.	• **H3b:** Technological integration contributes significantly to institutionalization of ecommerce.
• **H4a:** Technological readiness contributes significantly to initial adoption of ecommerce.	• **H4b:** Technological readiness contributes significantly to institutionalization of ecommerce.
• **H5a:** Market forces' e-readiness contributes significantly to initial adoption of ecommerce.	• **H5b:** Market forces' e-readiness contributes significantly to institutionalization of ecommerce.
• **H6a:** Government regulatory and policy support contribute significantly to initial adoption of ecommerce.	• **H6b:** Government regulatory and policy support contribute significantly to institutionalization of ecommerce.
• **H7a:** Strategy contributes significantly to initial adoption of ecommerce.	• **H7b:** Strategy contributes significantly to institutionalization of ecommerce.

Table 3. Respondents' Characteristics

Measure	Item	Frequency	Percentage (%)
Total		**163**	**100**
Gender	Male	160	98.2
	Female	3	1.8
Age (in Years)	Below 20	1	0.6
	20 - 30	96	58.9
	31 - 40	48	29.4
	Over 40	18	11
Education	Secondary	34	20.9
	Senior Secondary	46	28.2
	Bachelor	83	50.9
Sell Wooden Handicrafts Online	Yes	61	37.4
	No	102	62.6
Size of Firm (No of Employees)	0 - 5	44	27
	6 -10	54	33.1
	11-15	35	21.5
	16 or over	30	18.4
Frequency of Internet Experience	None	65	39.9
	1-3 hours/week	3	1.8
	3-10 hours/week	8	4.9
	10-20 hours/week	22	13.5
	More than 20 hours/week	65	39.9

↳ **Data Collection :** Data were collected from managers/ owners of various wooden handicrafts SMEs located in Saharanpur through field visits from January 2015 to July 2015. In all, 500 SMEs were targeted using the random sampling method. Till the closing stages of the pre-set deadline, 163 responses were completely filled by the respondents with a response rate of 32.6%. The various proposed hypotheses for initial adoption and institutionalization are depicted in the Table 2. The Table 3 describes the brief characteristics of the respondents.

Data Analysis and Results

To investigate the factors important for ecommerce adoption in SMEs of Saharanpur and to find the extent of ecommerce adoption by them, multiple discriminant analysis (MDA) was used. Normality check was done through plots. Skewness and kurtosis were determined to confirm normality using the criteria proposed by George and Mallery (2007), and the results are depicted in the Table 4. Only the kurtosis value of awareness does not satisfy the criteria, but visual inspection of the data reveals almost normal distribution.

The results of principal component analysis (PCA) as ran on 33 items gave 23 valid items set as depicted in the Table 5. As a result of the analysis, seven factors are extracted with the Eigen value greater than 1. This explains 73.768% of the total variance in the sample. All the communality values are found to be above 0.50, which shows that all items do share some level of common variance among each other. The PCA items that were below the cut off value were removed from the questionnaire. These items are A1, A8 from Awareness ; HR1, HR4, HR5, HR6

Table 4. Descriptive Statistics

	N	Mean	Standard Deviation	Skewness	Kurtosis
Awareness	163	3.54	1.15	-.41	-1.214
Human Resources	163	3.02	.63	-.26	-.68
Technology Integration	163	2.64	1.21	.39	-.55
Technology Readiness	163	2.19	.61	-.29	-.61
E - Readiness of Market Forces	163	3.39	.87	-.14	-.28
Government Regulatory and Policy Support	163	2.67	.71	.33	-.22
Strategy	163	2.50	.81	.51	-.34

Table 5. Results of Factor Analysis

Factors	Items	Loadings
Awareness	A2: We are aware of our competitors' ecommerce implementations.	0.777
	A3: We understand the threats of ecommerce.	0.784
	A4: We recognize the opportunities enabled by ecommerce.	0.795
	A5: We have understood the impact of ecommerce on the way business is to be conducted in our industry.	0.779
	A6: We understand ecommerce business models that can be applicable to our business.	0.565
	A7: We understand the potential benefits of ecommerce to our business.	0.802
Human Resources	HR2: IT employees/ staff have unrestricted access to computers.	0.794
	HR3: Our people are open and trust one another.	0.737
	HR7: Senior management/owner manages our ecommerce initiatives and implementations.	0.634
Technology Integration	TI1: Technology has smoothened our service delivery procedures.	0.792
	TI2: Internet and mobile communication network helps to increase sales.	0.889
	TI3: We are ready to integrate new technology to benefit our business.	0.552
Technology Readiness	TR2: We have sufficient technology resources to implement/manage ecommerce.	0.673
	TR3: We have high connectivity to the Internet.	0.796
E-Readiness of Market Forces	MF1: We believe that our suppliers are ready to support business online.	0.514
	MF2: We believe that our business partners are ready to conduct business on the Internet.	0.888
	MF3: We believe that our customers are ready to buy our products on the Internet.	0.914
Government Regulatory and Policy Support	GRP2: Government has policies for telecom and network operations for reliable services.	0.538
	GRP4: We believe that the legal environment is conducive to conduct business on the Internet.	0.548
Strategy	S1: Our business has a clear vision on ecommerce.	0.828
	S2: We have a policy that encourages grass root ecommerce initiatives.	0.774
	S3: Our ecommerce implementations are well - planned.	0.540
	S4: We thoroughly analyze the possible changes to be caused in our organization, suppliers, and partners as a result of each ecommerce implementation.	0.590

from Human Resources ; TR1 from Technology Readiness ; GRP1 and GRP3 from Government Regulatory and Policy Support ; and finally S5 from Strategy.

To test the initial reliability of each item, item-to-total correlations were computed as shown in Table 6. The

Table 6. Reliability and Validity

Constructs	1	2	3	4	5	6	7	Cronbach's Alpha (α)
1. Awareness	1							0.968
2. Human Resources	0.889	1						0.807
3. Strategy	0.812	0.727	1					0.895
4. E-Readiness of Market Forces	0.671	0.597	0.592	1				0.768
5. Government Regulatory and Policy Support	0.54	0.467	0.36	0.681	1			0.755
6. Technology Readiness	0.887	0.866	0.815	0.702	0.499	1		0.847
7. Technology Integration	0.77	0.723	0.788	0.63	0.353	0.88	1	0.962

items that had correlation less than 0.35 were excluded from analysis (Churchill, 1979). Also, this cut-off value is in consistency with the values used in previous research studies (Molla & Licker, 2005 ; Tan, Tyler, & Manica, 2007). The corrected item-to-total correlations are significant at $p < 0.05$. The Table 6 depicts the validity results using Cronbach's alpha. The results show that all constructs with Cronbach's alpha above 0.7 (acceptable cut-off value for reliability) meet the Nunnally (1978) guidelines.

(1) Model Test : The model was tested using discriminant function analysis (DFA) on data collected from Saharanpur. It measures correlation between predictor variables and extracted discriminant function. Independent variables that had loading greater than or equal to ± 0.40 were identified as significant contributors to the discriminant power of the function at $p < 0.01$ (Hair Jr., Anderson, Tatham, & William, 1995). Discriminant analysis involves two tasks. The first task is to test the significance of the discriminant model as a whole using *F* - test (Wilks' lambda). Secondly, if the *F* test shows significance, independent variables are checked to find out variables that contribute significantly to the model.

To analyze the data, two discriminant models are formed. The first model: Initial adoption of ecommerce determines the readiness factors that are important to discriminate adopters from non-adopters of ecommerce. An adopter is the respondent who has achieved interactive status. The samples included enterprises that had not achieved interactive ecommerce ($n = 106$) and those that had achieved interactive status ($n = 57$). The second model: Institutionalization of ecommerce tests the hypotheses related to levels of ecommerce adoption. Assessment of integrated ecommerce adoption was not conducted as no SME was found to adopt integrated ecommerce level in the Saharanpur wooden handicraft rural cluster. Thus, the samples included organizations that had implemented interactive ecommerce ($n = 32$) and those that had started to adopt transactional ecommerce ($n = 25$).

(2) Initial Adoption of Ecommerce : Here, ecommerce adoption is operationalized as a dichotomy of whether or not an organization has attained an interactive ecommerce status, as interactive ecommerce is considered as initial adoption of ecommerce. The results of the discriminant analysis together with the descriptive statistics are presented in the Table 7. The model is statistically significant (Wilk's Lambda (λ) = 0.459; $x^2 = 124.192$; *d.f.* = 3; $F = 155.367$; canonical correlation = 0.736; $p < 0.01$). The function correctly classifies 85.3% of the organisations in the sample (80.2% of the non-interactive adopters and 94.7% of the interactive adopters). To determine the relative importance of each independent construct and discriminate between the groups, the discriminant loadings and the probabilities of *F*-statistics were examined. The independent variables that are most significant to the discriminant function in descending order are: Awareness, Strategy, Technology Readiness, Human Resources, and Technology Integration. On the other hand, the remaining factors are found to be poor predictors and do not show loadings above the cut-off point. The results for hypotheses testing are depicted in the Table 8, and it

Table 7. Discriminant Analysis of Adopters vs. Non-Adopters of Ecommerce

Hypotheses	Constructs	Discriminant Loadings	Wilks' Lambda	*F*	Sig.	Status
H1a	Technology Integration	**0.558**	0.71	65.319	0	Accepted
H2a	Technology Readiness	**0.674**	0.627	95.11	0	Accepted
H3a	Awareness	**0.861**	0.507	155.353	0	Accepted
H4a	Human Resources	**0.645**	0.647	87.259	0	Accepted
H5a	E-Readiness of Market Forces	0.305	0.891	19.532	0	Rejected
H6a	Government Regulatory and Policy Support	0.343	0.867	24.6	0	Rejected
H7a	Strategy	**0.681**	0.622	97.3	0	Accepted

Table 8. Discriminant Analysis for Interactive vs. Transactive Ecommerce Adoption

Hypotheses	Constructs	Discriminant Loadings	Wilks' Lambda	*F*	Sig.	Status
H1b	Technology Integration	-0.089	0.998	0.085	0.771	Rejected
H2b	Technology Readiness	-0.126	0.966	1.917	0.172	Rejected
H3b	Awareness	0.833	0.395	84.31	0	Accepted
H4b	Human Resources	0.105	0.998	0.102	0.751	Rejected
H5b	E-Readiness of Market Forces	-0.118	0.997	0.145	0.705	Rejected
H6b	Government Regulatory and Policy Support	**-0.407**	0.962	2.15	0.048	Accepted
H7b	Strategy	**0.483**	0.85	9.713	0.003	Accepted

supports five hypotheses (H1a, H2a, H3a, H4a, and H7a), linking readiness factors to the adoption of ecommerce. The results do not include discriminant weights or coefficients as they are subjected to greater instability, and it is also considered that smaller weights of variables is a result of multicollinearity (Hair Jr. et al., 1995).

(3) Institutionalization : Institutionalization evaluates the level of ecommerce adoption by SMEs in wooden handicrafts of Saharanpur. After analyzing the data, it was found that none of the SMEs achieved the "integrated ecommerce" adoption status. Thus, institutionalization is hence forth referred to as interactive and transactive ecommerce adoption stages. The Table 8 presents the results of discriminant analysis. The discriminant function analysis produces a statistically significant function (Wilk's Lambda (λ) = 0.311; $x^2 = 62.402$; *d.f.* = 3; $F = 84.310$; canonical correlation = 0.830; $p < 0.01$). This indicates that the model is satisfactorily significant in discriminating interactive and transactive ecommerce adopters. The squared canonical correlation is 0.83, indicating 83% variation in the dependent discriminated by the independents in DA. The function correctly classifies 89.5% of the organizations in the sample (96.9% of interactive ecommerce adoption and 96.0% of the transactive ecommerce adoption). On the basis of analysis, Awareness, Strategy, and Government and Regulatory Support are identified as significant contributors to interactive ecommerce adoption. Conversely, the remaining factors are found to be poor predictors for interactive adoption of ecommerce adoption. This results in acceptance of the three hypotheses (H1b, H6b, and H7b) towards adoption of ecommerce. The results are summarized in the Table 8.

Discussion

The results of this study demonstrate that organizational, technological, and strategy factors are vital in initial adoption of ecommerce. Among all the constructs, Awareness (organizational factor) is the most significant. The

results are consistent with the previous findings of ecommerce adoption in developing countries. Without awareness of managers/owners/CEO of an SME, they are least likely to adopt new innovations and technologies (Ramdani & Kawalek, 2007). As noted in various studies, it is the owner/manager/CEO whose awareness helps to motivate and encourage staff to adopt innovations in organizations. It is the risk taking ability of the owner that helps in adoption of any new technology in the organization. It was observed that owners of various SMEs who adopted transactive and interactive ecommerce had prior experience and familiarity with Internet and ecommerce, which later helped in guidance and adoption. Without Technological Readiness and Integration, it will not be feasible to integrate ecommerce into the SMEs' business. The study also suggests that Strategy positively influences initial and institutionalization stages of ecommerce adoption. Strategy reveals the importance of the long-term planning and measures taken by the SMEs for ecommerce adoption. As most of the SMEs in Saharanpur did not have a proper organizational structure, this reveals the planning and measures taken by the owner/ manager. Overall, it can be concluded that the owner's perception, awareness, and planning plays an important role for initial ecommerce adoption.

At the institutionalization stage, along with organizational factors, Government and Regulatory Support are found as supporting factors towards adoption of ecommerce in consistency with earlier studies. Government regulatory processes and policies are necessary to install trust necessary for organizations to convert new innovations into opportunities for them. Without monetary and policy level support from the government, adoption of ecommerce in rural areas of India will not be a huge success.

Managerial Implications

SMEs need to improve understanding of ecommerce platforms for growth and sustainability. SME owners believe that working in the rural environment is not easy. They need to be highly self-motivated because they are the driving forces behind their companies. In the past, SMEs focused their activities on their own domestic markets and on face-to-face interactions. However, with the advent of the Internet, the situation has changed and ecommerce has become a business platform for most of the SMEs. The opportunities for SMEs to engage in ecommerce are numerous and diverse. In order to survive in this competitive and global marketplace, SME managers need to keep on improving themselves and see how ecommerce can be of help. They have to keep reinventing to be competitive, especially with the advent of globalization and borderless trading.

Ecommerce adoption demands change in a company's strategies. Thus, before adoption, SME owners are required to be educated towards the potential of ecommerce and also gain knowledge from others' experiences. SMEs need to identify appropriate ecommerce activities because without adequate information, ecommerce development and its anticipated benefits cannot be attained.

Conclusion

This research made an attempt to find out the factors that affect ecommerce adoption in SMEs at Saharanpur employed in wooden carvings handicrafts. Awareness emerged as a significant factor for ecommerce adoption. As evident in the study, adoption of ecommerce is hampered due to lack of awareness of its potential benefits. Hence, it becomes crucial that various other stakeholders of this sector like vendors, export council, government, etc. make the firms aware about the benefits of ecommerce. Well strategized training programmes with the help of promotional seminars, workshops, on-site visits and presentations should be organized with stress on importance of ecommerce for competitiveness and productivity. This will aid SMEs in getting a wider market for their products. Moreover, ecommerce erases physical boundaries and distances. This will allow SMEs in the rural community of Saharanpur to strengthen their social and economic situation by providing them with a new way to

promote their offerings with ease. Additionally, consumers will benefit by ease in availability of products with more product variety and low prices through ecommerce. The present study shows that much government support is required right now, as it is a critical factor to foster ecommerce adoption. Technology Readiness and Technology Integration are other factors that influence ecommerce adoption in a firm. As evident in this study, firms with a wish to adopt ecommerce are required to have high bandwidth and reliability for Internet access. This acts as a disadvantage in the rural set-up of Saharanpur. Hence, connectivity issues will drastically affect adoption of ecommerce and are found to be vital, especially for SMEs and businesses operating in rural and remote areas.

Limitations of the Study and Scope for Further Research

The study is limited to the city of Saharanpur. In fact, more research is needed to validate the results obtained so far for ecommerce adoption determinants to increase generalizability in different contexts (e.g. within different regions, countries, different cultures) and to understand the role of cross-national differences on organizational adoption in addition to consumer adoption.

As this study only caters to a single cluster, therefore, application of the tool to other clusters and businesses can help generalize the tool. Further cross country or cross cluster comparisons can be conducted to gather more insights on various factors affecting ecommerce adoption by SMEs.

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