Critical Factors in E-Commerce Adoption by Construction SMEs

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Abstract: Electronic technologies (ET) have changed the corporate environment and its competitiveness. It has also made many companies pay attention to e-commerce approaches, and some have been able to benefit from them. To compete with large organisations and gain market share, small and medium-sized businesses (SMEs) must embrace ET. Hence, it's essential to investigate these companies' e-commerce challenges. This study examined the challenges SMEs encounter while using E-commerce. Descriptive survey and correlational data collection approaches are utilized to give practical implications. At Bushehr, Iran's commercial hub, a questionnaire was provided to gather managers' and subject-matter specialists' opinions. Cronbach's alpha was used to determine the content validity and reliability of the questionnaire. The data was analysed using smart PLS and structural equation modelling with a partial least square approach. The results showed that organisational, technical, and environmental barriers to technology affect the two initial variables in the technology acceptance model.

1 INTRODUCTION

E-commerce describes the exchange of goods and services by companies and their customers using electronic networks such as the internet and the World Wide Web. As more company owners use e-commerce in their businesses, the usage of the web for commercial contracts has been regarded as a crucial development (Raharja et al. 2019). SMEs are critical to social transformation, economic status and well-being, economic development, and technology. They also serve as a significant employer (Carnevale et al. 2020). Small e-commerce businesses are beginning to see how e-commerce might assist global growth, but they may still be limited by a lack of resources, regional biases, where customers value locally created goods, and a lack of technical proficiency (Pandey et al. 2022). To enhance and succeed in business competitiveness and sales revenue, e-commerce in the business sector must flourish. E-commerce will be used to show off how easy it is to engage, how expenses can be reduced, and how quickly payments can be processed, all of which improve business and marketing processes

(Rajagopal et al. 2022). When it comes to adopting commerce, SMEs businesses move far more slowly than their larger counterparts in industrialised nations. Iran, one of the developing nations, is preparing to adopt e - commerce and largely uses it as a marketing device. Although there may be a situation where SMEs businesses in Iran would benefit from using e-commerce, these businesses currently tend to use it less frequently than the national average, rely more on internet connections and enterprise software, and only to a limited extent on strategic and operational e-commerce. These investing in small- and medium-sized businesses are not as substantial or appropriate. Despite the fact that SMEs businesses may benefit greatly from e-commerce, there are still a number of barriers preventing its broad adoption and use. The initial and most crucial stage in preparing for success in the technology and e-commerce industries is to determine what the obstacles are to adopting e-commerce (Tolstoy et al. 2022). Organizations should be aware of these challenges in order to develop and enacted proper e-commerce strategy. The factors that influence, obstruct, and complicate the use of communication systems should be taken into account by small and medium-sized businesses. The research

727

paper's goal is to examine several sorts of impediments that SMEs in developing countries face while adopting e-commerce.

2 LITERATURE REVIEW

The study's newly discovered structural and static obstacles are examined in the research. They are separated into four themes: expanded entrepreneurial traits of owner-managers, organization, ecology, and technology. The article establishes a new conceptual framework and provides a comprehensive overview of topics related to contextual barriers for the next years (Nazir et al. 2020). In the study, specific analytical methods will be used to assess obstacles to e-commerce platforms in developing nations. The current economic examination offers an exhaustive analysis of the obstacles preventing people from using e-commerce networks (Yadav et al. 2022). The study discovered that e-commerce ethics, information quality, client trust, user interface value, and client satisfaction were the primary factors influencing e-consumer devotion. To improve client loyalty, businesses are recommended to use e-commerce (Al-Tit et al. 2020). The study examines corporate strategy from the perspective of economic procedures and examines the methodology of e-commerce platform empowerment on SME export growth (Fan, et al., 2023). The study utilizes structural equation modelling to investigate when various e-commerce levels impact a wide variety of competitive edges. (Hu et al. 2019).

3 RESEARCH HYPOTHESIS

Based on the Technological Acceptance Model, this research aims to clarify the obstacles to SMEs adopting e-commerce. The theoretical and empirical literature on the subject was studied, together with the findings of earlier studies, to establish the study hypothesis. These hypotheses were then tested by acquiring primary data using instruments for data collection.

H1: The perceived ease of use of E-commerce is significantly influenced by the organizational impediments to development.

H2: The perceived utility of E-commerce is significantly impacted by organization impediments to development.

H3: The perceived usability of E-commerce is significantly impacted by technical constraints.

H4: The perceived value of E-commerce is significantly impacted by its technical limitations.

H5: E-commerce environment restrictions significantly affect how easy it is to use, according to users.

H6: E-commerce environment obstacles have a significant impact on how helpful it is considered to be.

H7: Perceived utility of E-commerce is significantly and positively influenced by the perceived ease of usage.

H8: The attitude towards using E-commerce is positively and significantly impacted by how easy it is seen to be to use.

H9: The attitude towards using e-commerce is positively and significantly impacted by how beneficial it is seen to be.

H10: A considerable and advantageous influence on intention to use is provided by views regarding the usage of e-commerce.

H11: The degree to which someone intends to engage in e-commerce affects that usage significantly and positively.

4 RESEARCH METHODOLOGY

Research Model: The research model (Figure 1) was produced by Davis using technological development and usage as well as the results of the preceding investigations mentioned above. The perception of the utility of technologies is influenced by outside variables, according to Davis' model of technological acceptance.

The organization, technological, and ecological constraints that had been previously discovered in the research were taken into consideration as outside variables in this study. With the collection of relevant data, this study aims to evaluate theoretical frameworks and research hypotheses.
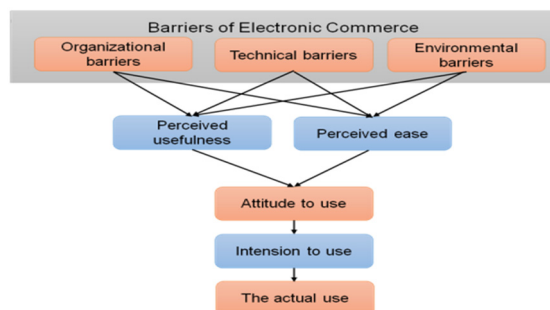

Figure 1: External Impediments and the Technology Adoption Model.

Perceived ease of use	4	0.862
Actual use	3	0.737
Intention to use	3	0.861
Total questionnaire	58	0.845

To select the necessary sample from the general population and since it was difficult to contact individuals, convenience sampling was used in the study. The information was gathered using a survey. Directors and experts from companies in Bushehr(Iran), an economic hub, participated in the research. Around 86 firms are situated in the industrial city of Bushehr, and these companies employ more than 280 directors and experts, according to information gleaned from Bushehr county organizations. Cochran's estimate of a constrained population, with a 95% probability value and a variation of 5%, indicated that the research sample was greater than 162. In this study, the survey approach was used since it was not feasible to produce a complete list of the population from which to pull the necessary percentages in additional to the difficult-to-find individuals.

The study is organized into three sections, demography, questions on the main survey variables, and an explanation. 58 questions were created by combining questionnaires with the survey's topic to assess the six primary survey factors. The research uses complete five-item variability measurement items. Data about the questionnaire's design process is provided in Table 1. Some 163 surveys were finally gathered after 165 surveys were physically handed to service users. 157 questionnaires were used for analysis after 6 surveys were eliminated because participants had not correctly completed them. The most used technique for evaluating questionnaire reliability, Cronbach's alpha value, was employed to test the questionnaire's dependability. The total response rate to the survey was 84%, and Cronbach's alpha values for each component were all higher than 0.7. This is a sign that the accuracy of the survey is at an acceptable level. The outcomes of the questionnaire's reliabilities are shown in Table1.

Table 1: Research factors, item-extracting resources, and data-collecting technology accuracy consequences.

Variable	Number of questions	Cronbach's alpha coefficients
Technological obstacles	10	0.715
Environmental barriers	18	0.796
Perceived usefulness	12	0.903
Organizational barriers	5	0.763
Attitude	3	0.749

5 RESULT AND ANALYSIS

Demographic Characteristics of Respondents: Descriptive statistical analysis was employed to examine demographic characteristics while assessing study results. Table 2 details the demographic survey factors that were examined using 157 questions. According to Table 2, the majority of participants were men (63.2%), while the majority of participants were young adults (20–30 years old) (50.10%), specialists (80.5%) with the greatest levels of education, and the steel sector (27.5%) accounted for the majority of the businesses in Bushehr's industrial estate.

Table 2: Demographic Details of the Responders.

Demographics component	Levels	Frequency	Proportion of frequency
Gender	Male	97	63.2
	Female	55	37.8
Education	Diploma	7	4.5
	Undergraduate	124	80.5
	Associate	16	10.5
	Graduate and higher	15	8.7
Age	Over 50 years	17	3.9
	41 to 50 years	19	13.2
	30 to 40 years	61	39.3
	20 to 30 years	74	50.1
Type of enterprise activity	Chemical business	28	18.3
	Mining sector	23	15
	Metal industry	44	27.5
	Service industries	18	10.7

Industrial electricity	15	8
Food industry	25	16.4
Fish processing industry	14	9.5

Test of Research Model: Structural equation modelling and smart PLS technology were used to assess the conceptual model and research assumptions. The structural equation modelling test results reveal a considerable strong connection between components of the various levels of the study constructs. The t statistics is used in this method to evaluate all structure and measuring variables. In accordance with this analysis, unit material and route coefficients are substantial at a 95% level of certainty if the value of the t statistic for ways is more than 1.96, and they are not if the values of the t statistic is less than 96.1 for ways. The route coefficient and factor loading are significant at a 99% probability value in this scenario if the value of the t-statistic is larger than 2.58. By extracting data from the structural equation framework, we could verify the major research hypotheses since the overall research model fitness is excellent and supported. With a confidence level between 90% and 99%, we may conclude that factors significantly affect the perceived utility and simplicity of use factors based on the findings from the relevant correlations and normal statistical significance. Also, based on the established coefficients between the variables of Intention and actual usage, we should conclude that, with 99% certainty, overall influence of both the Involved in the decision making just on real use factor is satisfactory and substantial.

6 CONCLUSION

The study made an attempt to account for the difficulties and obstacles that SME adoption of e-commerce in Bushehr, an economic hub, faced. Analysis of the theoretical literature and literature evaluation in this area led to the development of a recommended methodology for the hypotheses and investigation. According to the paper's findings, there are a variety of hypotheses. It was discovered that there was a growing interest in managing digital marketing and e-commerce had an impact on how competitively SME operations performed. The implementation of e-commerce has significant obstacles, as this research has shown. The study aimed to find out more about how SMEs adopted and used e-business technologies.

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