Cognitive Analysis of E-Commerce Adoption Factors in Small and Medium Enterprises

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Abstract: Small and medium-sized businesses (SMEs) are crucial to most economies, especially those in emerging nations. This study's goal is to combine these elements and assess their degree of impact on adoption decision-making, whether it was favourable or bad from the adopter's viewpoint. In a survey addressed to SMEs, 26 criteria that have been utilised in many adoption models as variables in the literature were given impartially without being labelled incentives or hurdles. The impact of these variables on respondents' choices to adopt e-commerce/e-business Internet technologies (EEIT) was rated by respondents. According to the study's conclusions, variables are seen differently by adopters, those who plan to adopt, and those who do not. These findings need to provide the foundation for the adopting models' greater exact use of these factors.

1 INTRODUCTION

In the past decade, the academic community has increasingly scrutinised the adoption and application of Electronic Enterprise Information Technology (EEIT) within the realm of small and medium-sized enterprises (SMEs). Researchers like Ghouchani and colleagues (2019) have highlighted the transformative potential of EEIT for SMEs, suggesting that it could potentially mitigate several challenges faced by these entities, including constraints related to size, financial limitations, geographical isolation, and market access. The predominant methodologies employed in these studies have been surveys, interviews, and case studies, each aiming to dissect and understand the nuances of EEIT implementation. A prominent focus has been on identifying and categorising various factors that either promote (incentives) or hinder (barriers) the uptake and effective use of EEIT in these business settings. This thematic investigation has been crucial in distinguishing the elements that either propel or impede technological integration within SMEs.

Recent scholarly work, such as that by Ufua et al. (2020) and Gabinete et al. (2022), has aimed to systematically categorise these factors into incentives and barriers, examining their impact on EEIT adoption. These studies have laid the groundwork for developing a coherent framework, yet they also underscore the disparities in how these factors are named, grouped, and defined across different studies. Such inconsistencies signify a gap in the literature, prompting a need for a more unified and robust understanding of what drives or deters EEIT adoption among SMEs. Addressing this gap, the current investigation seeks to establish a more standardized classification of these factors, enhancing the academic and practical comprehension of EEIT dynamics in the SME sector. Drawing upon preliminary findings from a 2002 pilot study by Bajaj et al., which primarily identified perceived barriers to EEIT utilisation, this study extends the inquiry to explore both the positive and negative influences of identified variables. Through a meticulous analysis and reevaluation of these elements, the study aims to provide insightful guidance on how SMEs perceive and interact with EEIT, thus fostering a clearer pathway for future research and practical implementations within this technological domain.

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2 LITERATURE SURVEY

Ghouchani, et al., 2019 shows how competencies underpin the processes of developing international e-commerce. The goal of the article is to pinpoint variables affecting importance e-commerce in Saudi.

Moreover, it investigates how these elements affect E-customer loyalty (Ayed 2022). Hou et al. 2022 investigate the variables that may have an impact on viewers' desire to watch live streaming for extended periods of time. Waseem et al. 2018 mentions that the goal of this research is to create an integrative model based on several variables that might influence the development of e-commerce in any nation.

Daskalakis et al. 2022 aims to carry out an academic writing analysis of well-known fusion-based approaches that may help e-commerce settings address common issues and meet their requirement to make more precise and superior business judgements.

3 RESEARCH METHODOLOGY

The formulation of a lengthy list of factors identified in the writings as key incentives or obstacles to the using and implementing technology, as well as a comprehensive assessment of the literature, served as the initial stage in the present research. Adopting usage of EEIT by SMEs was the review's main emphasis, but it wasn't the only one. Furthermore taken into consideration were studies on the broad use and utilisation of information and communication technologies (ICTs). The review focused mostly, but not exclusively, on SMEs' use and adoption of EEIT.

Data Collection: A postal survey instrument was used to gather the data. The instrument's ultimate design went through three phases of development. First, a pilot investigation was finished. This consisted of a straightforward 2-page survey that was delivered at a local micro business convention. An initial draught of the last document was produced and delivered up to ten local small businesses. To clarify respondents' comprehension the inquiries and replies, three of these firms were interviewed again. These conversations helped revise and clarify the last survey.

Optical scan forms were used to print the survey, allowing for easier and more precise data entry. Kentucky's 49 Appalachian counties' small and medium companies were surveyed. These counties are in a rural region with poor infrastructure and poverty. All Eastern Kentucky SMEs, excluding petrol stations and franchised eateries, were counted. 2,156 eligible enterprises represented 96% of the region's businesses. SMEs had 500 or less workers. The US Small Business Administration's most frequent small business definition is 500 or less workers. Yet, only 10 enterprises had over 100 workers in the final findings 180 of 2,156 surveys were returned due to improper addresses. 1,976 presumed provided to area companies. 107 questionnaires with responses were received, a 5.41% response rate. 5 of the 107 questionnaires from organisations above 500 workers were omitted from the data sample. This results in 102 small enterprises being included in the final sample. The research studied many e-business and Internet technologies, but this article will concentrate on corporate website adoption and ecommerce. Forty-seven (46%) respondents indicated their website domain name.

This matches US statistics showing 50% of small firms possess a webpage. The remainder 55 (54%) enterprises, 36.8% intend to construct a website within one year, 12.3% Just 7.02% will not create a company website during the next two to five years, while 44% are considering it but have no concrete plans. Just 10 of the 47 respondents with a website make any sales online, and only 3 make a considerable amount (over 10%).

4 RESULT AND ANALYSIS

This section covers the findings and analysis of information from two survey parts. Characteristics of instrument respondents, which provide information about the survey participants and their companies, and respondents' assessments of the aspects that, affected their judgements, either as motivators or obstacles to adopting EEIT. Some information respondents to usage of EEIT is provided, and more information is provided on respondents' use of websites. In specifically, the firms are divided in order to further divide people examination of perceived incentives and obstacles based on the degree to which each company under study has adopted a website.

Respondent demographics: Based on the number of workers, the size of the responding organisations was broken down as follows: fewer than 10 workers (22 respondents, or 21.57%); 11–50 workers (47 survey participants, or 46%); 51–100 employees (20 survey takers, or 19.61%); and 101–500 staff (10 respondents, or 9.80%).For those who responded to the polls on behalf of their organizations, over 63% of respondents said they were personally in charge of the IT choices and resources in their respective enterprises. A further 25.5% claim to have a direct influence on IT choices

and resources. The survey results were initially gathered and statistical analyses conducted to discover population-wide incentives or impediments. Further evaluations were done to see how specific characteristics could affect adoption. Adopters and non-adopters of websites are first compared.

Table 1: ANOVA Analysis on Website Adopters and Non-Adopters.

Factor	df	f	Between group significance	Adopters	Non-adopters
Competitive pressure	87	13.767	0.002	**0.745	0
Prior experience	85	9.813	0.004	0.284	*-0.500
Partners/vendors	86	7.184	0.0011	**0.487	-0.164
Reliability	88	6.267	0.015	*0.537	-0.18
Technical expertise	84	6.157	0.016	**0.547	*-0.024
Capital	89	5.897	0.018	0.047	*0.645
Models	91	4.554	0.035	0.458	-0.254

Table 1 depicts the ANOVA analysis on substantial website adopters' and non-adopters'. A factor is significant in that group if it is significant at the 0.05 level or the 0.001 level. It is noteworthy to notice that all variables that shown a statistically significant difference between the groups of either Adopters against non-adopters, or Adopters versus non-adopters, save for the aspect of competitive pressure, DF stands for proportions of freedom.

Table 2: Results of ANOVA Analysis on Website Adaptation.

Factor	df	f	Between group significance	Adopters	Non-adopters
				Intend to Adopt	Will not adopt
Value	47	14.523	0.002	*0.721	-0.181
EC technology	47	5.025	0.335	0.334	-0.228
Need	45	8.274	0.005	**0.645	-0.185
Innovativeness	46	4.519	0.041	**0.801	-0.143
Market	49	4.421	0.042	0.131	*-0.697

Table 2 depicts the results of ANOVA analysis on website adaptation. It denotes a factor important in that subgroup at the 0.05 level; ** denotes a variable important in that subgroup at the 0.001 level.

5 DISCUSSION

Several of the characteristics reported in the literature are combined into 26 neutral factors in this research. Despite the assumption that all factors would be neutral, a t-test showed that 16 of the 26 various fields had a measurable influence on the decision to adopt. The price of EEIT was the only constant factor that emerged as important across all five adoption groups. These findings seem to indicate that maybe creativity assessments should be given more weight in the adoption hypothesis, but further study is needed to see if this finding of assessing inventiveness would hold true if it were examined objectively rather than subjectively.

6 CONCLUSION

The key flaw in the population of SMEs is the focus of this research that was sampled was restricted to Kentucky, a state in the United States. The outcome is unknown. to what degree Those taking part include typical of all small and medium-sized firms. However the attendee demographics offer no proof that does not conform to the usual traits of small and medium-sized businesses. Therefore, while analysing research findings, this restriction should be taken into consideration. The research also successfully highlights the difficulty in forming hypotheses regarding the use of these components of the statistical analysis of adoption studies. Just one of the 26 variables, cost, was consistently significant across all five groups, and many other factors are only significant for one or two of the five groups.

The perceptions of the incentives and obstacles that could get in the path of website adopters, those who wish to embrace it, and those who have no interest in doing so vary. Several of the 16 criteria that this study identified as being relevant got less focus in earlier research and may need additional effort in next research on EEIT implementation in small and medium firms. Government, innovation, and industry models are three of the incentives, while security is one of the barriers. According to the research, cost and resource constraints were the biggest obstacles to the implementation of EEIT.

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