

Empirical Research On Electronic Commerce Adoption Decision-making Factors in China SMEs

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Abstract -Based on some theories, seven factors about Electronic Commerce (E-commerce) adoption in Small and Middle Sized Enterprises (SMEs) is determined. Based on the statistic data of 278 companies, a structure equation model is constructed. The result indicates that pressure, top manager support, applicability have direct positive effect on E-commerce adoption in SMEs, and the other factors (staff matching, technology feasibility, environment, organizational security), have positive effect on E-commerce adoption in SMEs via above direct factors. The research provides a system perspective to adopt E-commerce on SMEs.

Keywords -Small and Middle Sized Enterprises; Electronic Commerce; adoption; decision-making; structure equation model

1. Introduction

E-commerce provides SMEs with the platform which can compete fairly with big business, and brings economic benefits, so in the last few years E-commerce in SMEs develops rapidly in China. A lot of decision makers in SMEs is still in the sidelines of whether to develop E-commerce, because of the weakness of their own businesses in the information construction of the scale, capital and management. The majority of SMEs are facing the confusion of the E-commerce application: if it is necessary to adopt E-commerce? Which are the E-commerce adoption decision-making factors? Aiming at these issues, the theoretical and empirical research and exploration is carried in this paper.

2. Review of Related Literature

E-commerce is the information technology innovation from the technical perspective, and from the management perspective it is organization innovation and business model innovation, its adoption will be influenced by many factors. Some experts analyze and study the issue from different perspective.

Summarizing the research results, we can gain the following for reference:

As the Mi Jiacheng^[1] summarized, the current research in the field of E-commerce adoption is mainly based on innovation diffusion theory, organizational behavior assimilation theory, expanding from three perspectives, including individual rationalism, institutionalism, and comprehensive analysis.

Most studies are for all enterprises and not for SMEs. On the other hand, because of the different conditions of each country, its development situation in the E-commerce of SMEs will vary greatly, and thus in accordance with the conclusions of the above-mentioned theories and methods are not the same.

In this study, based on relevant theory and the above review of literature, the adoption decision factors of E-commerce for SMEs in China is proposed, an empirical analysis is taken through a questionnaire survey

3. Exploratory Factor Analysis

Applying multiple theories, the initial measurement of E-commerce adoption decision factors in SMEs is constructed, which consist of external pressure (PRS), environment (ENV), top manager support (TMS), organizational security (ORG), technical condition (TEC), perceived ease of use(EOU). Each variable has a number of items. Scale -5 level Likert Scale measurement is used in the questionnaire, with "completely agree" to "completely disagree" corresponding to the score 5-1.

In this paper, the various dimensions of variables and its corresponding item are adjusted through exploratory factor analysis. The item of four factor variables including PRS,ENV,TMS,ORG remain unchanged , while the item of factor variable TEC and EOU are changed.

After exploratory factor analysis , the factors of adoption decision are adjusted as seven variables, including external pressure (PRS), environment (ENV), top manager support (TMS), organizational security (ORG), staff matching (STM), technical feasibility variables, implement applicability.

4. The Hypothesis

According to innovation diffusion theory (IDT), the company may result in a disadvantage position in the competition if it doesn't adopt the innovation which the competitors adopted^[2]. From the enterprises point of view, competitive market pressures what the external environment generates is the external driving force for enterprises to adopt innovation^[3]. In the theory of planned behavior(TPB), behavior intention are affected by three related factors: "attitude", " subjective norm" and "perceived behavioral control"^[4]. Attitude here can be understood as top manager supports towards E-commerce; subjective norms can be understood as external pressure ; "perceived behavioral control " here can be understood as the degree of difficulty of implementing e-commerce. According to technology acceptance model(TAM), perceived usefulness and perceived ease of use has decided the behavioral intention attitude^[5].

In this paper, it is put forward that the direct factors of the adoption decision E-commerce in SMEs include three aspects, which is the top manager support, the external pressure, the

other factors including implement applicability , the organizational security, technical feasibility, and environment have indirect impact on the adoption decision E-commerce in SMEs. As a result, came to the following hypothesis.

H1,H2,H3: The top manager support , external pressure, implement applicability has significant positive impact on the extent of adoption decision E-commerce in SMEs

H4,H5,H6: Environment, technical feasibility, organizational security, staff matching has significant positive impact on the top manager support of E-commerce in SMEs

H8,H9,H10,H11: Environment, technical feasibility, organizational security, staff matching has significant positive impact on the implement applicability of E-commerce in SMEs

H12: Environment has significant positive impact on the external prssure of E-commerce in SMEs

5. An Empirical Analysis

5.1. The Survey Methods and Sample Overview

In this study, the research object is decision-makers or information and e-commerce sector executives of SMEs in china. A total of 810 questionnaires were sent, 282 recovered, and the recovery percent was 34.8%. Excluding unqualified questionnaires, there were 278 valid questionnaires and valid questionnaires percent was 98.6%.

5.2. Reliability and Validity Analysis

In this paper, the reliability and validity analysis of data is divided into the following steps: (1) By SPSS, calculate the Cronbach's α coefficient, determine the scale consistency reliability of each factor > 0.7 , in line with the requirements. (2) By AMOS analysis, the measurement model fit of structural equation modeling meet the requirements at all. (3) By AMOS, the confirmatory factor analysis is executed, the factor loading coefficients are > 0.5 , in line with the requirements.

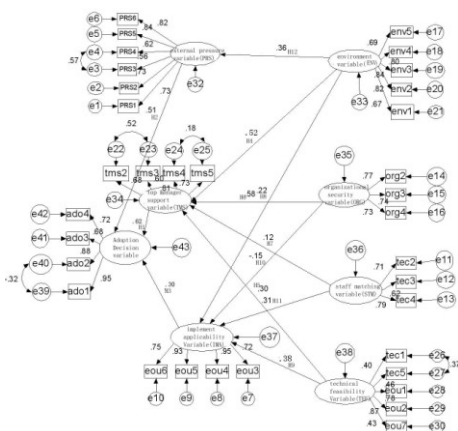


Fig. 1: the structure equation model of e-commerce adoption decision factor in SMEs.

5.3. Structural Equation Model

Figure 1 shows the structural equation model built in the

AMOS software. All the fit indexes meet the basic requirements, which reflecting the model's goodness of fit is acceptable. The standardized factor loading values of Observed variables is > 0.5 , all the p-value of factor loadings is < 0.001 , reaching a statistical significant level.

It is showed that the hypotheses H1 H2, H3, H4, H5, H6, H8, H9, H11, H12 have passed, and H7, H10 have failed.

6. Discussion and Conclusions

6.1. Discussion

The hypothesis H1, H2, H3 has been passed, showing that top manager support , external pressure , implement applicability has a significant positive correlation on the E-commerce adoption in SMEs, which consistent with the related theory and the actual situation. In the relevant theory and literature, the function of the "perceived ease of use" to the E-commerce adoption decision is mostly emphasized. The implement applicability is one mode of the "perceived ease of use". Through exploratory factor analysis, the implement applicability is independent of the "perceived ease of use". This can be associated with the characteristics of SMEs. Before the E-commerce adoption decision, SMEs need to consider if it is suitable to implement E-commerce, from much perspective, including the industry, the company's products, the region, they also need to consider if the industry platform is mature.

The hypothesis H7 has not been passed, while the hypothesis H4,H5,H6 have been passed, showing that the environment, technical feasibility, organizational security has a significant positive correlation on top manager support in SMEs, but the staff matching has not. Top manager in SMEs are generally concerned about the external environment of the E-commerce development, they generally believe that the technology content of E-commerce is high, and the organization need to have a certain financial strength and recognition; but top manager in SMEs do not recognize that their own staff technology need to match with the E-commerce, they take insufficient attention to the introduction and cultivation of talents.

The hypothesis H8,H9,H11 have been passed, while the hypothesis H7 has not been passed, showing that the environment, technical feasibility, the staff matching has a significant positive correlation on implement applicability, but organizational security has not. In this paper, the implement applicability refers to that if the industry, local area, and the product is suitable for the development of E-commerce, which is related to the enterprise objective nature. For example, in the remote mountainous areas, it is lack of network infrastructure, so it is not suitable for the E-commerce development. The variable "organizational security", is a reflection of the enterprise resources, E-commerce planning and E-commerce recognition. Even SMEs put limited financial investment E-commerce, as long as the enterprise properties is suitable for the development of E-commerce, it can also choose the third party platform mode with low cost to develop E-commerce.

The hypothesis H12 has been passed, showing that the environment has a significant positive correlation on external pressure. If the country provides an ideal environment, the SMEs will generally increase the confidence and motivation for development of E-commerce, the trend of E-commerce development will be more and more quickly.

6.2. Conclusions

To sum up, we can draw the following conclusions and countermeasures: (1) The E-commerce development in SMEs needs the support from government. (2) Top manager in SMEs should enhance the understanding of E-commerce, and increase the funding, technology and personnel support towards E-commerce development. (3) Top manager in SMEs should determine if the industry, the products, the region is suitable for the implement of E-commerce before their E-commerce adoption decision. Some small-scale SMEs with limited financial resources, can also adopt E-commerce, as long as the enterprise properties are suitable for the development of E-commerce.

7. References

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