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ABSTRACT

Small businesses in China and United States generate the largest share of economic activity and employment. As the driving force behind the economic growth of both countries, Information and Communications Technologies (ICTs) have fundamentally shaped the two countries. This research-in-progress paper reports the research model we conduct to analyze the factors that will affect ICTs adoption of small businesses in both countries. The purpose of the paper is to (1) report proposals of the current status of the research project (2) build an understanding of ICTs adoption in both countries (3) build the framework to explore the relationship between ICTs adoption in four areas of China and United States that we identify. Four small businesses in Nebraska, California, Zhejiang and Sichuan are chosen. A quantitative research method will be conducted to test the cases in the next step of the research.

Keywords

Small Business, ICTs, IT Adoption, IT Spillovers, China, United States.

INTRODUCTION

As the driving force behind the economic growth, Information and Communications Technology (ICTs) has fundamentally shaped the form of conducting business in developing and developed countries. Large amount of private companies apply the ICTs to improve their performance, productivity and competitiveness in the marketplace (UNCTAD, 2011). Small businesses represent 99.7 percent of all businesses currently in the United States as the biggest developed country (USSBA, 2011; Kobe, 2007; CHI Research, 2003). While in China, which is the biggest developing country, small businesses currently represent 99 percent of all businesses, and they generated 75 percent of all new jobs in the country (Small Business, 2011). However, the use of ICTs is a challenge in both developed and developing countries (Wolcott et al. 2008; Schreiner and Woller, 2003). As the owners of the small businesses have unique features that are different from the large corporations, it is important to identify the opportunities and threatens when they apply the ICTs to their businesses. Due to the large amount of small businesses existing in countries, the survival and growth of the small business contributes to the creation of jobs and wealth in both countries largely.

The research seeks to study the relationships between Information and Communications Technologies (ICTs) adoption and contextual factors, and examine how these relationships vary across different economic environments. Generally, the goal of this research is to address the questions below**:**

1)   *What are the factors that affect ICTs adoption in less developed and more developed area of China and the USA?*

2)   *How do these vary by countries and by the levels of development?*

and 3)   *What is the relative importance of these factors in different environment?*

Two representative states, California and Nebraska, and two representative provinces, Zhejiang and Sichuan in China, are selected. There are three steps of this research project. First, we already conducted the case studies in Sichuan Province in China and State of Nebraska in United States. Cases in Sichuan and Nebraska are representative based on their level of economic development compared to the rest of their respective countries. The second set of case studies will be conducted in the Zhejiang Province in China. Like the State of California in United States, the Zhejiang Province in China hosts a large number of internet-based companies that have had to weather the economic storms. Cases in Zhejiang and California are comparable in that they represent greater access to technology infrastructure and services. When the case study part finishes, we will gather and analyze data in China and United States through the interrogation and translation of database information and interviews with other small businesses.

The study firstly understands current processes of technology diffusion and adoption, especially ICTs adoption in small businesses from developed and developing regions. By learning from the literature review, we build the own research model. Next step, we will investigate the four cases in four different areas, trying to get the differences and similarities from the cases. After analyzing the cases, a quantitate research method will be conducted. The first part, which is the case study and the analysis, is submitted to the Proceedings of the Eighteenth Americas Conference on Information Systems (AMCIS 2012).

RESEARCH MODEL

In this section, we developed an integrative research model that combines the Technology-Organization-Environment framework with the Technology Acceptance Model. Plus, we apply the Technology Spillovers as another important factor in the research model. Figure 1 shows the relationship between the factors affecting the Information Technology Adoption.

We modified the Technology-Organization-Environment (TOE) framework developed by Tornatzky and Fleischer (1990), which will be comprehensive for identifying factors shaping the IT adoption. Then, to understand the IT adoption, we implicate the Technology Acceptance Model (TAM) (Davis, 1989) to our model.
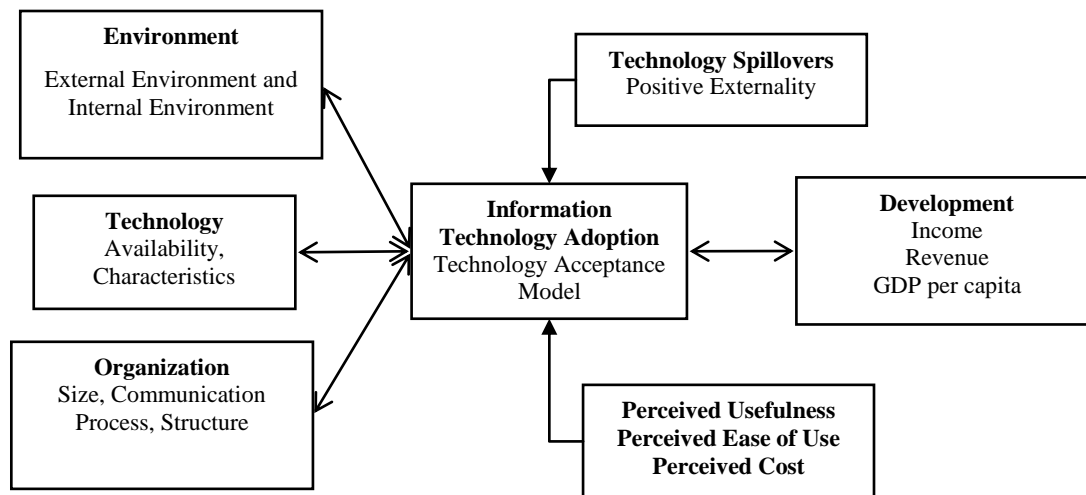

Figure 1, the Research Model

Technology, Organization, and Environment

The TOE framework contains three aspects of context that infer the process by adopting and implementing a technological innovation: technological context, organizational context, and environment context (Xu et al, 2004).

Technology in this research is seen to be Appropriate Technology in this model. It is defined as the "The acquisition of technology appropriate for the small businesses' economic environment" (Schumacher,1989). Generally, this means a lower level of technology than being marketed. For example, the technology could be telephones, mobile phones, and could be the online billing system, the iPad ordering system, and Near field communication (NFC) payment system.

While an organization is normally defined in the dictionary as "a social group which distributes tasks for a collective goal", this research considers the small business as the main unit of analysis. According to the Small Business Administration, a Small Business is independently owned and operated and not dominant in its field of operation. More specifically, we define each small business in our case study as one organization of up to 500 employees, which has certain communication processes and structures. This means that different organizations could have different size, different communication process and the business structure.

Defined by Tornatzky and Fleischer (1990), environment is "the arena in which an organization conducts its business". To make the environment completed, we add the internal environment to this factor.

Information Technology Adoption

We define the information technology adoption as the Perceived usefulness, Perceived Ease of Use and the Perceived Cost according to the Technology Acceptance Model. The perceived usefulness is defined as "the degree to which a person

believes that using a particular system will enhance his/her job performance" (Davis 1989, pp320). The perceived ease of use is referred as the "the degree of freedom usage of the system and the technology for the users" (Davis 1989, pp320).The perceived cost is defined as the "value of money that has been used to get the service". Venkatesh et al (2003) identify these models: Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1972), Technology Acceptance Model (TAM) (Davis,1989), the Motivational Model (Davis et al. 1992), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT).Also, Venkatesh et al (2003) introduce the UTAUT (Unified Theory of Acceptance and Use of Technology) model, comparing the existing models, and validating the unified model.

Development

Development is defined as "the interruption of the business cycle" according to Schumpeter (1932), which is often used to describe growth in organizations and the regions in which they reside. The outcomes from the adoption of Information and Communications Technology on Development can be assessed in a number of ways. The measures of economic development most often used are in terms of: Increase in income, job creation and clientele (Qureshi et al 2009).

Technology Spillovers

As the important factor in International Trade and Economics, Mun and Nadiri (2002) measure the benefits that accrue to suppliers and customers when a specific industry invests in information technology (IT). Technology is defined as the "economic benefits of Research and Development (R&D) activities accrue to economic agents other than the party that undertakes the research" (Irwin, and Klenow, 1994; Jaffe, 1996). In a more macro point of view, Information Technology Spillovers are also important factor when investigating the ICTs adoption in small businesses, which also provides the theoretical background frameworks to discuss the ICTs adoption (Jaffe, 1996). The Information Technology Spillovers provides unique information set enabling evaluation of technological innovation and ICTs adoption (Gelb et al, 2003).

In this model the arrows are bidirectional because the growth of and development of the businesses can bring about greater IT adoption and lead to more technology being purchased and an improvement in the organization and its environment.

PROPOSED RESEARCH METHOD

We propose an interpretive research strategy to build the concepts in the model and a quantitative strategy to test the model after the case study. This research follows the socio-economic definition to illustrate the adoption and development, which means development is considered as the improvement of the social system and economic growth. Constructs from this research will be used to develop a data collection instrument that will be administered as a survey and case study to a sample of small businesses in the four areas.

In order to build a model of ICTs adoption for small business both in the USA and China, a research strategy is presented to build the concepts in a model and a quantitative strategy to operate the model. The research examines the differences of Information and Communication Technologies adoption by small businesses in the USA and China. Constructs from this research are used to develop a data collection instrument that will be administered as series of case study of small businesses selected in California and Nebraska in the USA and compared to those in Zhejiang and Sichuan provinces in China. By analyzing the data in both countries, two states, California and Nebraska, and two representative provinces, Zhejiang and Sichuan in China, are selected. The results from these cases are being analyzed using the constructs.

CONCLUSION

In this paper, we propose to analyze the ICTs adoption differences when applying that to small businesses between the China and United States. We modify and conduct the research model, which potentially helps scholars from economics, business and information technology get the information of the current status of the Information Technology Development in both areas. Also, we build the framework to explore the relationship between ICTs adoption in less developed and more developed areas in China and United States.

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