

2012

# Analysis of Information and Communications Technology Adoption between Small Businesses in China and the United States

Jie Xiong

*University of Nebraska at Omaha, [jxiong@unomaha.edu](mailto:jxiong@unomaha.edu)*

Sajda Qureshi

*University of Nebraska at Omaha, [squreshi@unomaha.edu](mailto:squreshi@unomaha.edu)*

Follow this and additional works at: <https://digitalcommons.unomaha.edu/isqafacproc>

 Part of the [Databases and Information Systems Commons](#)

## Recommended Citation

Xiong, Jie and Qureshi, Sajda, "Analysis of Information and Communications Technology Adoption between Small Businesses in China and the United States" (2012). *Information Systems and Quantitative Analysis Faculty Proceedings & Presentations*. 51.  
<https://digitalcommons.unomaha.edu/isqafacproc/51>

This Conference Proceeding is brought to you for free and open access by the Department of Information Systems and Quantitative Analysis at DigitalCommons@UNO. It has been accepted for inclusion in Information Systems and Quantitative Analysis Faculty Proceedings & Presentations by an authorized administrator of DigitalCommons@UNO. For more information, please contact [unodigitalcommons@unomaha.edu](mailto:unodigitalcommons@unomaha.edu).



# **Analysis of Information and Communications Technology Adoption between Small Businesses in China and the United States**

**Jie Xiong**

Department of Information Systems and  
Quantitative Analysis  
College of Information Systems & Technology  
University of Nebraska at Omaha  
jxiong@unomaha.edu

**Sajda Qureshi**

Department of Information Systems and  
Quantitative Analysis  
College of Information Systems & Technology  
University of Nebraska at Omaha  
squireshi@unomaha.edu

## **ABSTRACT**

This paper reports on two case studies, the Information and Communications Technology (ICT) adoption among small businesses conducted in both United States and China. One small business from Nebraska (United States of America) and one small business from Sichuan (China) were chosen for comparison. The purpose of this paper is to conduct a comparative case study based on the ICT adoption among small businesses in China and the United States. This paper will: (i) build an understanding of small business ICT in both areas, (ii) explore the relationship between the ICT development in less cutting-edge areas of China and the United States. The result shows that small business in the United States use more advanced ICT than China due to several factors. This study paves the way for the future comparisons to be conducted between California and Zhejiang. Also, this study contributes to and extends the understanding of how information is the driving force behind economic growth in both developing and developed countries.

## **Keywords**

Small Business, IT for Development, TOE, TAM, ICT, China, United States.

## **INTRODUCTION**

Technology is a central ingredient in economic development (Malecki, 1997), that shapes the world for years. Information Technology is also a driving force behind economic growth, which has fundamentally changed the way people live, not only in developed countries, but also in developing countries. Information and Communications Technology (ICT) is used by many private enterprises to improve their performance, productivity, and competitiveness in the marketplace (UNCTAD, 2011). However, the use of ICT is a challenge in both developed and developing countries (Wolcott, et al. 2008; Schreiner and Woller, 2003). While the definition varies between countries and industries, a small business is a business that is privately owned and operated with a small number of employees and relatively low volume of sales. In United States, a small business is generally defined as having fewer than 500 employees with less than \$7 million in average annual receipts (Summary, 2011). In contrast China defines a small business as one with employees ranging from 10 to 100 (The Standard, 2011). Table 4 provides a comparison of the classification of small business in China and the United States. In the United States, small businesses currently represent 99.7 percent of all businesses. They have generated nearly 64 percent of all new jobs in the country over the past 17 years while creating more than half of the nonfarm private GDP (USSBA, 2011; Kobe, 2007; CHI Research, 2003). China's economic performance over the past 30 years has been remarkable due to the development of the small and medium enterprises (SMEs). In China, small businesses represent 99 percent of all businesses, and they generate 75 percent of all new jobs in the country (Small Business, 2011).

Small businesses are critical to economic development in China and have been for a long time (Yu et al., 2001). Their survival and growth contributes to the creation of jobs and wealth in the economy. If small businesses are able to use information systems effectively, they can grow from the added benefits that technology provides, and become quite profitable (Qureshi & York, 2008). Small businesses play an important role in all countries. The use of Information and Communications Technology provides new opportunities for small businesses in both developed countries and emerging countries.

The process of information technology adoption and use is critical to deriving the benefits of information technology (Karahanna et al., 1999). The use of Information and Communications Technology continues to grow worldwide

(United Nations, 2010). In the Asia-Pacific region, China hosts the fastest-growing ICT markets. Additionally, the long period of rapid development of the United States economy over the past ten years coincides with significant investment in and the diffusion of Information and Communication Technologies and their applications (Schreyer, 2000). It appears that when businesses adopt Information and Communications Technologies in their business process, their ability to grow increases.

This research examines the relationships between Information and Communications Technology (ICT) adoption and contextual factors. It examines how these relationships vary across different economic environments. The research questions being investigated are:

- 1) *What are the factors that affect ICT adoption in less technologically advanced areas of China and the United States of America?*
- 2) *How do these factors vary between the two countries?*

Additionally, real time data will be gathered in China and the United States through the integration and translation of database information and interviews with small businesses. First, this study understands current processes of technology diffusion and adoption, especially ICT adoption, in small businesses from developed and developing regions. Then, the paper identifies the potential development opportunities for the emerging regions both in China and the United States. Two states, California and Nebraska, and two representative provinces, Zhejiang and Sichuan in China, serve as a basis for comparison. This research project uses Nebraska and Sichuan as its basis for comparison. In the future, a second stage of research will be conducted to analyze the data from Nebraska, California, Zhejiang, and Sichuan in order to better identify the factors that affect the ICT adoption and better display the differences between less technologically advanced areas and areas that are more technologically advanced.

## LITERATURE REVIEW

Two main research trends intersected recently. They are: the growing role of micro- and small enterprises (MSEs) and the advancement of information and communication technologies (ICT) (Duncombe and Heeks, 2002). However, little attention has been paid to the research of the relationship between ICT and the development of small businesses, especially on the individual-level (Walsham and Sahay, 2010). This research paper fills the gap between the two by comparative analysis. In order to research the adoption of ICT in the United States and China, and examine how these relationships vary across different environments, there are some models of Information Technology Adoption and Acceptance and Information Technology for Development that this research draws upon. The Information Technology for Development combines the implementation, use and management of Information Technology infrastructures to stimulate human, social and economic development (Qureshi, 2005). There are several existing models illustrating Information Technology Adoption and Acceptance. 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).

On the individual level, Dai and Palvia (2009) conducted a study on 190 individual mobile commerce users in China and the United States of America. Dai and Palvia (2008) also identified nine factors that affect mobile commerce adoption by consumers in China and the USA based on the TAM. The Technology Organization Environment (TOE) framework contains three aspects that explain the process of adopting and implementing a technological innovation: technological context, organizational context, and environmental context (Xu et al., 2004).

There is a diversity of development theories and practices (Willis, 2011). Some scholars define development as the diffusion of modernity (Habermas and Ben-Habib, 1981). Some scholars define development as economic growth (Sachs 1999; Greig et al. 2007). The United Nations Development Program defines development as human progress. The Millennium Development Report (2011) breaks development into eight goals: 1. Eradicate extreme poverty and hunger. 2. Achieve universal primary education 3. Promote gender equality and empower women 4. Reduce child mortality 5. Improve maternal health 6. Combat HIV/AIDS, malaria and other diseases 7. Ensure environmental sustainability and 8. Develop a global partnership for development.

Technology is a central ingredient in economic development (Malecki, 1997). Information Technology is a driving force behind economic growth and has fundamentally changed the way people live, not only in developed countries, but also in developing countries. Information and communications technology (ICT) are used by many private enterprises to improve the performance, productivity and competitiveness in the marketplace (UNCTAD, 2011). However, the use of ICT is a challenge in both developed and developing countries (Wolcott, et al., 2008; Schreiner and Woller, 2003;). The world is increasingly interconnected through high-speed mobile communications. Growing demand for information and

communications services, combined with technological advances, growing infrastructure and falling prices, are allowing more and more people across the globe to join the information society.

## RESEARCH MODEL

In order to investigate the research question, this paper examines the relationships between Information and Communications Technology (ICT) adoption and contextual factors. The theories on ICT adoption using constructs of individual acceptance appear to be most influential in information systems research. While these theories are influential and are being considered in this research they have to be put in the context of broader concepts that enable an understanding of the environment in which the technology is adopted to arrive at. In order to examine ICT adoption within the broader organizational and business environment, we develop an integrative research model that combines the TOE framework with the TAM in this section. Figure 1 shows the relationship between the factors affecting the ICT adoption.

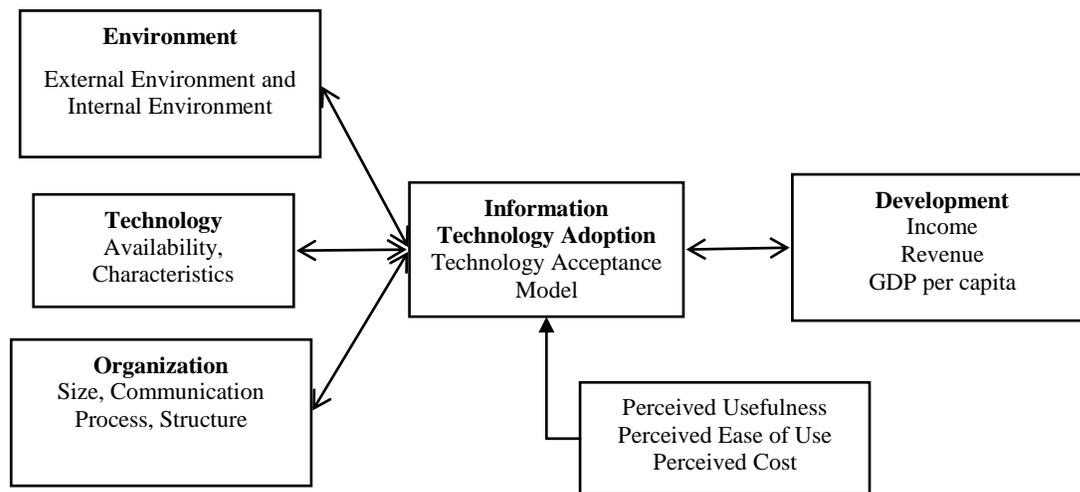


Figure 1, the Research model

ICT is a powerful tool, contributing to three different channels: Social empowerment, Economic empowerment, and Political empowerment (World Bank, 2003). It is hard to estimate political empowerment. The technology-organization-environment (TOE) framework developed by Tornatzky and Fleischer (1990), is modified to be more comprehensive for identifying factors shaping ICT adoption. Then, to understand the ICT adoption, we implicate the Technology Acceptance Model (TAM) (Davis, 1989) to our model.

The TOE framework contains three aspects of context that infer the process by adopting and implementing a technological innovation: technological context, organizational context, and environmental context (Xu, et al., 2004). Tornatzky and Fleischer define the environment as the external environment (Chau and Tam, 1997). Based on this theory, we modify the model to include the internal environment, to optimize the comparative research.

### Environment

Environment is an important construct in that it is defined by Tornatzky and Fleischer (1990), to be “the arena in which an organization conducts its business”. For example, the competitors, the regulations, and the attitude from the government could be the potential environment. To make the environment complete, we add the internal environment e.g. education level of the employees and the relationship between supervisors & subordinates. For the purpose of this research, there is a difference in the external business environment in the US and China. The internal business environment also differs between the two countries due to the culture and economic differences.

## Technology

Technology in this research is defined as Appropriate Technology. According to Schumacher, E. F. (1989) Appropriate Technology is defined as the “The acquisition of technology appropriate for the small businesses’ economic environment”. In this definition, technology is used in a very broad sense. For example, the technology could be something as simple as corded, landline, telephones. It could also include basic mobile phones, and radios in the developing countries. In more advanced areas technology is an online billing system, an iPad ordering system, and a Near field communication (NFC) payment system.

## Organization

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 an “organization”. 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 sizes, different communication processes and different business structures. According to Street and Meister (2004), these businesses operate under significant constraints with respect to capital, managerial time, and expertise. They also found that information systems could improve communication in small business.

## Information Technology Adoption

According to the Technology Acceptance Model, information technology adoption rates are derived from: Perceived usefulness, Perceived Ease of Use and the Perceived Cost. According to the TAM, the perceived usefulness refers to “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”. Dai and Palvia (2008) also employed perceived usefulness and ease of use in their survey of mobile commerce users in China and the US. They found that there were significant differences between users in China and the US in the relationship between perceived usefulness and ease of use and the intention to use mobile commerce.

## Development

The concept of Development has its roots in the economics of the firm. Development is defined as “the interruption of the business cycle” according to Schumpeter (1934) and 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: Increase in income, job creation and clientele (Qureshi et al 2009). These metrics used to assess development in small businesses.

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. The process of Creative Destruction by Tripsas (1997) and Schumpeter (1934) suggests that entrepreneurs drive capitalism with innovation. These innovations, when implemented challenge the status quo and upset the equilibrium. Warschauer (2004), states that the greatest gains to development are not from the adoption of ICT in itself, but from the innovative ways in which technology has been adopted. According to Schumpeter (1934) it is the innovations that enable businesses to survive businesses cycles that would otherwise destroy them. He suggests that innovation is the implementation of a new change that affects and alters a market. Innovations are not just inventions, but can be new processes or new markets. Schumpeter suggests that the Entrepreneur is the agent of innovation whose adoption of the innovations will enable the business to survive and potentially grow.

## RESEARCH METHOD

In order to build a model of IT 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. This research follows the socio-economic definition to illustrate the adoption and development, i.e., development is considered as the improvement of the social system and economic growth. 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 studies of small businesses selected in California and Nebraska compared to those in Zhejiang and Sichuan respectively. California and Zhejiang are famous for the information technology industry and well-

developed small businesses. Nebraska and Sichuan are agriculture-based states/provinces, and represent emerging areas in information technology adoption. The focus of this research will be on Nebraska and Sichuan. The details are provided below:

	<i>Sichuan</i>	<i>Nebraska</i>
<i>Location</i>	Western China	Midwest USA
<i>Area</i>	187,000 sq mi 5th in China	77,354 sq mi 16th in United States
<i>Density</i>	470 /sq mi 22nd in China	24.0/sq mi 43 <sup>rd</sup> in United States
<i>Economic Status</i>	Less Developed in China	Less Developed in USA
<i>GDP Per Capita in 2010</i>	\$3129	\$49778
<i>GDP Per Capita Ranking</i>	25/31	17/50

Source: United States Census Bureau, Population Division (2011)

**Table 1. Comparison of Sichuan and Nebraska**

Two Chinese restaurants, one in Sichuan and the other in Nebraska are small businesses with less than 20 employees. Both of them are local chain stores. The restaurant in Nebraska applies advanced technology to its management. The restaurant in Sichuan does not use Information Technology as frequently as the restaurant in the Nebraska. The results from these cases are analyzed using these questions:

#### Case Study Questions

1. How often do the small businesses use the Information technology?
2. How much do the small businesses invest each year on the development of the Information Technology?
3. How do small businesses decide which technological innovations to adopt and which to avoid or pass on?
4. How do the small businesses select the appropriate technology? Is the technology for the small businesses different from for other businesses? What is lacking or different in the selection of technology?
5. What are the concerns that small businesses use the technology?
6. Does the usage of the technology improve the efficiency of finishing the tasks?
7. How easily it is for the employees in the small businesses to use the technology?
8. What is the revenue of the small businesses?

Data was collected through interviews carried out in person and over the phone.

#### CASE STUDY

Comparisons of comparable small businesses in Sichuan and Nebraska were conducted. Surveys and interviews with small businesses were conducted. The following table describes the basic statistics of the two businesses:

	<b>Small Business in China</b>	<b>Small Business in the United States</b>
<b>Location</b>	Southeast and Southwest part of Chengdu, Sichuan	Southeast Omaha and Bellevue, Nebraska
<b>Number of the restaurant chains</b>	2	2
<b>Number of Chain Stores</b>	2	2
<b>Number of Employees</b>	14	10
<b>Average Age of the Employees</b>	30	27
<b>Number of the Seats</b>	20	30
<b>Annual Investment to the Information Technology Service and</b>	\$500	\$3000

Equipment		
Annual Revenue	\$60000	\$100000
Information Technology	Telephone, Two-way radio, Wi-Fi connection	Telephone, Fax machine, Website, Credit Card Machine, Electronic Ordering System, Wi-Fi connection, Personal Computer, Database Management System, Customer Relationship Management Software. Online Accounting System.

**Table 2 the basic comparison of the two cases in Nebraska and Sichuan**

### Case in China

The small business over which the interview was conducted is in the capital of the Sichuan province, Chengdu. The restaurant is locally owned with two locations. They serve “simmer pot” food. This cooking style has a rich history which dates back to the Qing Dynasty. The location of the main restaurant is in the southeast part of the city, which is very close to Sichuan University. The other location is in the southwest part of the city. The major patrons of the store are students. The owner of the store has a college degree. There are two groups of employees, one group is primarily young people from the rural area of the Sichuan Province, and their ages range from 18-23. The majority of young people for the rural area have their high school diploma; none of them have college degree. The other group of the employees are the people aging from 40-50. The majority of the employees from this age group do not have high school some of them are illiterate.

The owner of the restaurant invested \$500 in Information Technology each year. First, the restaurant acquired a fixed line telephone to attract more customers and maintain the existing customer base. The telephone enables the customers receive important information from the restaurant (e.g. the opening hours, the menu, and the location of the store) thereby improving both attraction of new customers and retention of existing customers. Second, each employee was given a two-way radio to help improve intercommunication. The two-way radio enabled the chef to make quick responses in accordance with the demand of the customers. This system reduces the customers’ waiting time on an average of 10 minutes per ticket. Third, the restaurant provided a free basic Wi-Fi connection available in both the dining area and waiting area. This restaurant does not provide a website or the online ordering service. The restaurant does not accept credit card payments; only cash is accepted.

There are several reasons that small businesses in China do not use Information Technology frequently. First, the employees in the restaurant are afraid of the new technology. Most employees do not know how to operate a computer. Second, the low education level of the employees makes it hard to use information technology. As aforementioned, some workers are illiterate, which makes the process of educating an employee to use technology nearly impossible. Third, the high cost of the application of the information technology discourages small business use services like credit card processors, and high-speed fiber-optic internet connections. In China, the administration of credit card terminals is performed by banks. Small businesses have to pay a higher “administration fee” per transaction than larger companies. Also Internet Service Providers (ISPs) in China charge much more for a business to use a telephone line and Internet connection than they do for personal use. Fourth, credit card use is still much less popular in China than cash due to the culture (especially in the western part of the China). Consumers consider cash a more secured form of payment than a credit card. In summary, the lack of employee knowledge, inability to educate employees and subsequent fear of information technology, high cost of technology, and cultural differences discourage small businesses in China from using information technology to support the business.

### Case in the United States

The small business selected from the United States of American comes from Omaha, Nebraska. This small business is also a locally owned Chinese restaurant with two locations. One in the western part Omaha and the other is in Bellevue, which is a suburb of the Omaha metropolitan area. The two locations are located in more developed in comparison to the rest of the city. The majority of customers do not come from one demographic, but instead come from a diverse background. The owner holds a college degree and an MBA degree from Bellevue University. There are two sets of workers that comprise the restaurant employees: One group is composed of the founders of the restaurant, they work full-time and have advanced degrees from Universities in the United States. The other group is primarily Chinese American and American college students who have a part-time job. All of the employees have previous computer experience.

The restaurant owner invested \$3000 in Information Technology this year. First, the company installed a fixed line telephone and a fax machine to maintain a relationship with existing customers and attract more new customers. A telephone enables customers to order food, book a reservation, and get driving directions and parking information. A fax machine enables the restaurant to connect with other restaurants and other agencies more quickly than the Internet. Second, the owners published a restaurant website to make general information available online. Such items as: menu, location, opening hours, and special offers. Also, a website enables customers to order food and process the payment in advance, online. Third, the restaurant has a credit card terminal, making a wider variety of payment available to customers. Fourth, the restaurant also provides a free Wi-Fi connection for customers who are dining or waiting for carryout. Fourth, the restaurant purchased Customer Relationship Management (CRM) software and the Database Management (DM) software to retain updated information on customers. Fifth, the restaurant purchased online accounting systems to securely retain customer billing and payment information.

There are several reasons that small businesses in the United States use Information Technology more often. First, the employees are willing to use the technology; most of them have experience with the computer systems. Second, the employees are properly educated and this enables them to use ITC more thoroughly. All of the employees have or are in pursuit of a college degree. Some employees have software certifications. Third, the low cost of Information Technology enables more freedom of its usage. Compared to an average income, the cost of software and internet service will be much lower in the United States, especially in Midwest. Fourth, credit card is one of the most popular payment channels in the United States due to the culture and a robust credit card processing system. In summary, the relevant skill require of the job, proper education level, low cost of the Information Technology and the robust credit card processing system encourage small businesses to use ITC more frequently.

#### ANALYSIS

Small business' ITC adoption in China will be less than that of the United States. Small businesses in Nebraska have access to more advanced technology than small business in Sichuan. There are obvious differences in the factors pertaining to small business ITC adoption. The following table describes these differences as well as some similarities:

	<b>Case in China</b>	<b>Case in the United States</b>
<b>Environment: Internal and External</b>	External costs high and employees paid low wages.  Low education of the employees.  Policy restricts use of credit card machines	External costs are lower and employees paid higher wages.  High education level with certification of particular technology
<b>Technology</b>	Simple Technology	Advanced Technology
<b>Organization</b>	Small size of employees	Small size of employees
<b>Technology adoption-Perceived Usefulness</b>	Telephone is crucial since this is the only way to connect with the external environment.  The two-way radio reduces the waiting time.  The Wi-Fi connection only contributes to the customers, instead the use by the communication of employees.	The telephone servers as the supplement.  Website, and Credit Card Machine and personal computer are the most important technology.  Database Management System, Customer Relationship Management Software, and Online Accounting System provide the potential value in the long term.
<b>Technology adoption-Perceived Ease of Use</b>	The telephone and two-way radio are suitable for the employees with low education.  Wi-Fi is easy for the customers to use.	Telephone, Fax machine, Website, and Credit Card Machine are easy to use.  Electronic Ordering System, Personal Computer, Database Management System, Customer Relationship Management Software, and Online Accounting System are easy to use with knowledge and training.  Wi-Fi is easy for the customers to use.

<b>Technology adoption-Perceived Cost</b>	Comparing to the small business in Nebraska, the cost is low.	Comparing to the small business in Sichuan, the cost is high.
Development Outcome	Lower revenue and income	High revenue and income

**Table 3 the comparison of the two cases in Nebraska and Sichuan in the model**

There are differences in ICT adoption between the two small businesses. These different adoption levels lead the two companies to two different revenue levels. When answering the first research question, one identifies the lack of worker knowledge and education, the fear of the technology, the low salary rate, the high cost of ICT fees, and the regulation on the usage of ICT limits, and detrimentally affects ICT adoption in China. The increased knowledge and skill of the employees, the comparatively high salary, the low cost of the ICT and the freedom of the usage of the ICT encourage and supplement ICT adoption in the United States.

When answering the second research question, one identifies that there are some differences and similarities in both areas considered less technologically advanced. The first important factor is the culture differences in usage of the ICT. Customers from China are more disposed to using cash instead of credit cards. Second is the education level of the employees. In the two cases, the employees in the United States had a greater working knowledge and more adept ICT skills than the employees in China. The third one is the proper choice of technology. In both cases, the small business owners chose the proper ICT to meet their current needs in a low cost way.

### CONCLUSION AND LIMITATIONS

This research explores the relationship between the ICT development in less technologically advanced areas in China and the United States. This paper identifies that the external environment, internal environment, character of technology, organization, usefulness, ease of use, and the cost of the technology will affect the ICT adoption. Entrepreneurs should find the suitable ICT and use them properly, in order to better support their businesses. In less developed areas, small business owners should try to recruit high knowledge employees. In comparison to more developed areas, it will cost much less to pay a worker at a high knowledge level when you are in a less developed area.

Our study yielded meaningful results. However, there are some limitations. The validity of the results strongly depends on two specific cases. In the future, we will analyze more cases, and conduct quantitative research based on the small business database to support the existing research.

In this paper, analyzes the ICT adoption differences applied to small businesses in China and the United States. This research helps scholars from economics, business, and Information Technology understand the current status of the Information Technology Development in both areas. Two case studies are conducted simultaneously, building an understanding of ICT adoption in both areas. This study contributes to and extends an understanding of the driving forces behind the economic growth in these regions as they relate to ICT adoption by small businesses. This research paves the way for the future case studies based on the comparison of more developed areas in China and the United States. .

### FUTURE RESEARCH

This is the first stage of this research project, next step we will conduct the case study in Zhejiang Province and the state of California, to compare the four cases. Also, we will conduct the quantitative research to identify new factors that affect the ICT adoption among small businesses. The future research questions will be *What are the differences in of the ICT adoption among Nebraska, California, Zhejiang, and California? How can emerging area learn from the more developed area in the ICT area?*

## ACKNOWLEDGEMENT

This research is funded by 1) The office of Research and Creative Activity (ORCA) and the Office of Graduate Studies (OGS) of the University of Nebraska at Omaha, under name “Grant Support for Graduate Research and Creative Activity (GRACA)”, and 2) the University of Nebraska Foundation, under the grant title “Strengthening and Elevating International Partnerships across Disciplines: India, China, Germany and Norway”.

## APPENDIX

	Size of the Employees		Size of the Business	
	USA (Fewer than the numbers indicated below )	China (Ranging from the two numbers indicated below)	USA (The maximal size of the company) in million USD	China (operating revenue ranging from the two numbers indicated below) in million CNY
<b>Agriculture</b>			0.4-7.0	0.50 -5
<b>Manufacturing</b>	500-1000	20-300		3 -20
<b>Construction</b>			7-33.5	3-50
<b>Wholesale Trade</b>	1000	5-20		10-50
<b>Retail Trade</b>		10-50	7-35.5	10-50
<b>Transportation</b>	500-1500	20-300	7-28	2-30
<b>Warehousing</b>		20-100	25.5	1-10
<b>Postal Industry</b>		20-300	7	1-20
<b>Accommodation</b>		10-100	7-30	1-20
<b>Restaurants</b>		10-100	7-35.5	1-20
<b>Telecommunications</b>	1500	10-100	15-25	1-10
<b>Software and IT</b>		10-100	25	0.5-10
<b>Real estate</b>			2-25.5	1-20
<b>Property Management</b>		100-300		5-10
<b>Rental and Leasing Service</b>		10-100	7-25.5	1-80
<b>Others</b>		10-100		

**Table 4 The classification of the small businesses in China and the United States**

Sources: The Standard Definition of Small and medium enterprises of China (2011) and U. S. Small Business Administration Table of Small Business Size Standards (2011)

## REFERENCES

1. Ajzen, I., and Fishbein, M. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. *Journal of Personality and Social Psychology*, 21 (1), 1-9.
2. Chau, P.Y.K., and Tam, K.Y. Factors Affecting the Adoption of Open Systems: An Exploratory Study, *MIS Quarterly* (21:1), March 1997, pp. 1-24.
3. CHI Research. (2003) Retrieved 2011-11-13 from <http://www.sba.gov/advo/research/rs225.pdf>
4. China Statistical Yearbook (2010) National Bureau of Statistics of China
5. Dai, H. and Palvia, P.C., (2008) Factors Affecting Mobile Commerce Adoption: A Cross-Cultural Study in China and The United States . *AMCIS 2008 Proceedings*. Paper 204.
6. Dai, H. and Palvia, P.C. (2009) Mobile commerce adoption in China and the United States: a cross-cultural study. *SIGMIS Database* 40, 4 (October 2009), 43-61. DOI=10.1145/1644953.1644958 <http://doi.acm.org/10.1145/1644953.1644958>

7. Davis, F.D. (1989) Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information. *MIS Quarterly*.(13:3), pp. 319-339
8. Davis, F.D. , Bagozzi, R. P., and Warshaw, P. R. (1992) Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology* (22:14), pp. 1111-1132.
9. Duncombe, R. and Heeks, R. (2002) Enterprise Across The Digital Divide: Information Systems and Rural Microenterprise in Botswana *Journal of International Development* Volume 14, Issue 1
10. Greig, A., Hulme, D., Turner, M. (2007). Challenging global inequality: Development theory and practice in the 21st century. Palgrave Macmillan, New York, NY, USA.
11. Habermas, J and Ben-Habib, S (1981) Modernity versus Postmodernity New German Critique, No. 22, *Special Issue on Modernism* (Winter, 1981), pp. 3-14
12. Karahanna, E., Staub, D.W. ,Chevany, N.L.(1999) Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs *MIS Quarterly* Vol. 23, No. 2 (Jun., 1999), pp. 183-213
13. Kobe, K.(2007). The Small Business Share of GDP, 1998-2004. Advocacy-funded research. Retrieved 2011-11-13 from <http://web.sba.gov/faqs/faqindex.cfm?areaID=24>
14. Malecki, E. J. (1997)Technology and Economic Development: The Dynamics of Local, Regional and National Competitiveness 2nd edition. London and Boston: Addison Wesley Longman, 1997.
15. Qureshi, S., (2005) How does Information technology effect Development? Integrating Theory and Practice into a process model. *Proceedings of the eleventh Americas Conference on Information Systems*, Omaha, NE
16. Qureshi, S., Keen, P. and M. Kamal, (2009). Business Models for Development: The Global Capability Sourcing Model. In S. Kamel eds *E-Strategies for Technological Diffusion and Adoption: National ICT Approaches for Socioeconomic Development*, IGI.
17. Qureshi, S., and York, A. S. (2008). Information Technology Adoption by Small Businesses in Minority and Ethnic Communities. *Hawaii International Conference on System Sciences*, Proceedings of the 41st Annual, 447.
18. Sachs, W. 1999. Planet dialectics: Explorations in environment & development. Zed Books, London, UK.
19. Schreiner, M. and Woller, G. (2003), Micro-enterprise development programs in the United States and in the developing world, *World Development*, Vol. 31 No. 9, pp. 1567-80.
20. Schreyer, P. (2000) The Contribution of Information and Communication Technology to Output Growth A Study of the G7 Countries.Retrieved on 2011.11.06 via [http://www.oecd-ilibrary.org/science-and-technology/the-contribution-of-information-and-communication-technology-to-output-growth\\_151634666253DOI:10.1787/151634666253](http://www.oecd-ilibrary.org/science-and-technology/the-contribution-of-information-and-communication-technology-to-output-growth_151634666253DOI:10.1787/151634666253)
21. Schumacher, E. F. (1989) *Small Is Beautiful: Economics as if People Mattered* NY: Harper Perennial 2<sup>nd</sup> edition
22. Schumpeter, J.A. (1934) *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle* NJ:Transaction Publishers
23. Smallbusiness –Baidu. Retrieved on 2011.11.06 via <http://baike.baidu.com/view/58855.htm>
24. Summary of Size Standards by Industry (2011) Retrieved on 2011.11.06 via <http://www.sba.gov/content/summary-size-standards-industry>
25. Street, C.T. and Meister, D. B. (2004) Small Business Growth and Internal Transparency: The Role of Information Systems *MIS Quarterly* Vol. 28, No. 3, Special Issue on Action Research in Information Systems (Sep., 2004), pp. 473-506
26. The Standard Definition of Small and medium enterprises of China (2011) Retrieved on 2011.11.06 via [http://www.gov.cn/zwggk/2011-07/04/content\\_1898747.htm](http://www.gov.cn/zwggk/2011-07/04/content_1898747.htm) (Chinese)
27. Tonatzky, L.G. and Fleischer, M. (1990) *The processes of Technological Innovation*, Lexington, MA:Lexington Books
28. Tripsas (1997) Unraveling the Process of Creative Destruction: Complementary Assets and Incumbent Survival in the Typesetter Industry. *Strategic Management Journal*, Vol. 18 (Summer Special Issue), 119–142 (1997)
29. UNCTAD, (2011) *Information Economy Report 2011 ICTs as an Enabler for Private Sector Development* Retrieved on 2012. 01. 20 via [http://www.unctad.org/en/docs/ier2011\\_en.pdf](http://www.unctad.org/en/docs/ier2011_en.pdf)
30. United Nations, (2010) *The Millennium Development Goals Report*;New York.Retrieved on 2011.11.06 via <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202010%20En%20r15%20-low%20res%2020100615%20.pdf>

31. United States Census Bureau, Population Division (2011) Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2011
32. USSBA-United States Small Business Administration Advocacy Small Business Statistics and Research. Retrieved 2011-11-14 from <http://web.sba.gov/faqs/faqindex.cfm?areaID=24>
33. Venkatesh, V., Morris, M. G., Davis, G.B. and Davis, F.D. (2003) User Acceptance of Information Technology: Toward a Unified View *MIS Quarterly*, Vol. 27, No. 3 (Sep., 2003), pp. 425-478
34. Walsham, G., and Sahay, S. (2010) Research on information systems in developing countries: Current landscape and future prospects. *Information Technology for Development*, 12:1, 7-24
35. Warschauer, M. (2004) *Technology and Social Inclusion: Rethinking the Digital Divide* 272 pages. The MIT Press, Cambridge.
36. Willis, K. (2011) *Theories and Practices of Development* 2nd ed. T & F Books UK: Brighton, UK
37. Wolcott, P., Kamal, M., and Qureshi, S. (2008) Meeting the challenges of ICT adoption by micro-enterprises. *Journal of Enterprise Information Management*. Vol. 21 No, 6 pp. 616-632 DOI 10.1108/17410390810911212
38. World Bank Group. (2003) *ICT & Development. Enabling the Information Society*.
39. Xu, S., Zhu, K., Gibbs, J., (2004) Global Technology, Local Adoption: A Cross-Country Investigation of Internet Adoption by Companies in the United States and China *Electronic Markets* Volume 14, Number 1, 2004
40. Yu, J., Wang, Y., Wang Y., Song, L., (2011) The research on the China's small business development strategy. *Management World*. 2011 V.2