

# Level of Internet use by Chinese businesses: A preliminary study

Xibao Zhang <sup>a,\*</sup>, Cynthia Moussi <sup>b</sup>

<sup>a</sup> *Department of International Economics and Trade, Qingdao University, 7 East Hongkong Road, Qingdao 266071, China*

<sup>b</sup> *Department of Accounting and Information Systems, University of Melbourne, Parkville 3010, Australia*

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## Abstract

A preliminary study of the level of Internet use by Chinese firms was carried out. Data were collected by a questionnaire survey of a convenience sample of Chinese managers. The major finding is that firm size plays a role only in influencing a firm's decision regarding whether or not to have Internet access. Within the Internet-using sub-sample, firm size is not significantly related to the overall level of Internet use, or to the use of individual Internet features. In addition, the data reveal that there are a high proportion of Chinese businesses that have Internet access. Chinese Internet using firms use an average of three features, with e-mail and buying and selling online being the two most widely used features. The results are also compared to similar studies in other countries. The limitations of this study and future research are discussed.

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**Keywords:** E-commerce; Level of Internet use; Chinese businesses; Internet use index; Internet development in China

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## 1. Introduction

In line with the worldwide trend, Internet use in China has experienced rapid growth in recent years. On the research front, there have been a number of studies by international scholars on Internet diffusion in China (e.g., [1–3]). However, these studies are of a general nature, covering the general diffusion and use of the Internet in China. Press et al. [3] and Fan [4], for example, both used the Mosaic Group's Global Internet Diffusion Framework [5], which includes six dimensions (pervasiveness, geographic dispersion, sectoral absorption, connectivity infrastructure, organizational infrastructure, and sophistication of use), in analyzing China's Internet development. In addition, since both studies used survey data collected by China Internet Network Information Center (or CNNIC, <http://www.cnnic.net.cn>), their analyses undoubtedly are limited to the general situation of Internet diffusion and

use in China, with little or no discussion of Internet use by Chinese businesses.

Inside China, CNNIC [6] publishes a series of semi-annual reports on China's Internet diffusion and use, which is primarily based on online surveys of Internet users. In addition, Guo and Bu [7] also studied Internet use and its influences in five major Chinese cities. However, these studies primarily focused on individual Internet users, and as a result the issue of Internet use by Chinese businesses has not been explored.

Therefore, it is the purpose of this paper to study the level of Internet use by Chinese businesses. This paper is part one of a two-part project aimed at investigating Chinese firms' Internet use and related issues. Part two of the project examines respondents' perceptions of the benefits of and impediments to e-commerce uptake, the results of which will be published in a second paper.

## 2. Level of Internet use

There have been different definitions of electronic commerce by various scholars, international organizations, and commercial entities. (For a synopsis of such

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\* Corresponding author. Tel.: +86 532 8595 3733; fax: +86 532 8595 0018.

E-mail address: [xibao.zhang@qdu.edu.cn](mailto:xibao.zhang@qdu.edu.cn) (X. Zhang).

definitions, please see [8,9].) In this research we use the definition by Zwass [10], i.e., it is “the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks”, including both inter-organizational relationships and transactions and intra-organizational processes that support these activities. This is a more inclusive definition in that, first, it includes both inter-organizational and intra-organizational activities, and second, it includes not only online transactions but also other activities, such as information sharing and maintaining business relationships, that will eventually lead to online and offline transactions.

There are two questions concerning a business’ use of the Internet: first, does it use the Internet at all? And second, if the answer to the first question is yes, to what extent does it use the Internet? These are the two questions that this paper attempts to answer in the context of Chinese firms.

Businesses can use the Internet in many different ways and to serve myriad purposes, and different scholars use different terms and concepts to refer to these uses. Abell and Lim [11], for example, found in their empirical study the top eight uses of the Internet by New Zealand firms to be communication within or outside the company, getting information from suppliers, providing customer information, R&D and sharing of software and information, to be seen at the forefront of technology, market and product research, sending orders to suppliers, and receiving orders from customers. Moussi and Davey [8], in their study of Internet use by Victorian manufacturing firms, proposed a five-feature set that measures a business’ level of Internet use to conduct e-commerce, which includes e-mail, homepage, obtaining research information, gathering customer information, and buying and selling online.

On the theoretical side, Poon and Swatman [12] proposed seven business activities by small firms on the Internet: consumer prospecting and advertising, involvement in specialized groups for knowledge and intelligence exchange, research and development ideas/opportunities, efficient communications, preparation for the global marketplace, on-demand linkage with customers and suppliers, and geographic reach/general accessibility. Cronin [13] pointed out three areas of Internet use by businesses: customer relations, dealing with customers, and internal company operations. Zwass [14] identified an exhaustive list of potential uses in his 5Cs aspects–opportunities conceptual framework, which categorizes Internet uses into five domains: commerce, collaboration, communication, connection, and computation.

Such diversity in both the empirical measures and conceptual constructs of Internet use by businesses reflects the overwhelming impact of the Internet in transforming business activities and processes. For the sake of empirical research, however, there needs to be a simple yet comprehensive set of Internet use measures to gauge their uptake of e-commerce. For this reason the feature-based set of

Internet use measures proposed by Moussi and Davey [8] is used in this study, because it essentially covers all aspects of electronic commerce, and is relatively easy to use in conducting a survey.

Regarding the first question, factors need to be identified that influence a firm’s decision to use the Internet for electronic commerce. It has been suggested by early IS scholars that firm size is an important determinant of business IS adoption, and the level of IS adoption is directly related to firm size [16–18]. Firm size, according to Ling [15], is also one of the factors that influence business use of the Internet. In this preliminary study, therefore, only firm size is tested for its influence on Internet use because it can be easily and objectively measured.

Empirically, however, there has been somewhat contradictory evidence regarding the influence of firm size on Internet use. The Internet-using sample of Abell and Lim [11] consisted of more smaller firms (those with 49 employees or fewer) than larger ones, suggesting that there may be an inverse relationship between firm size and Internet use. Results from Moussi and Davey’s study [8], however, indicate that there seems to be a direct relationship between firm size and Internet use, i.e., the larger the firm, the more likely it uses the Internet in conducting business. (It should be noted that no statistical tests were performed on the relationship between firm size and Internet use in either Moussi and Davey’s study [8] or Abell and Lim’s [11].) The discrepancy can be explained by the fact that, first, New Zealand firms are predominantly small ones, and second, in the sample of Abell and Lim [11], the majority of smaller firms are those with an IT focus (45% IT focus vs. 28% non-IT focus), while IT firms constitute only a minority in the larger firm group (8% IT focus vs. 22% non-IT focus). The direct relationship between firm size and Internet use as suggested by Moussi and Davey [8] is intuitive in that a smaller firm is more likely to lack the necessary financial resources, knowledge, or personnel to use the Internet. We expect that such a relationship should also hold true for Chinese firms. Therefore:

*H1: For Chinese businesses, Internet use is directly related to firm size.*

In order to answer the second question, both the use of each of the five features and the overall level of Internet use need to be explored. Again for the same reason as discussed above, firm size is tested as a potential determinant of such uses.

In their study, Moussi and Davey [8] devised an Internet use index, which is an un-weighted sum of all the features of the Internet used by a firm:

$$\text{Use Index} = \sum_{n=1}^5 \text{Features.}$$

The value of the above use index ranges from 0 (no use) to 5 (all five features used), and as a result it provides a meaningful measure for analyzing the overall level of

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