



The Reflection of Internet's Positive Influence on Export

A QUANTITATIVE RESEARCH REPORT

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Word count:3874

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Abstract

With the rapid development of the information technology and the internet, the economic exchange and cultural exchange from different regions becomes more frequent and convenient nowadays. The structure, scale and trade methods in the international trade has also altered substantially correspondingly. More and more people tend to study the internet's influence on the export activities to cope better with the current trends. The chosen two articles included in the report both study the internet's positive influence to the export in different dimensions, and utilize the quantitative research method as the research method. The report aims to compare the research designs and methodologies between the two articles, seeking possible alternative methods of research approach, research design and methodology to enhance the outcomes of the research and optimize the research practice. Both of the articles have used the mixed analysis method. The first article has applied regression analysis and descriptive analysis, and the second article mainly use the descriptive analysis and factor analysis. The Research Method is well designed, but the data source, questionnaire and the response rate need to be dealt and considered.

1. Introduction

The biggest transformation during the past 15 years would be the process of ‘globalization’ and the revolution of ‘internet’. It showed that the exports volume in the world increased from \$4.1 trillion (19% of the gross world product) to \$8.7 trillion dollars (24% of gross world product) during the period from 1990 to 2003 (World Bank, 2006). The speed of the application of the internet technology has been even more amazing. Taking the figures in USA as the example, the population having access to the internet rose from 3 million in 1990 to more than 185 million in 2004 (International Telecommunication Union, 2005b). (Clarke, G.R., 2008) The two changes exists exactly at the same time spectrum, thus many scholars and economists try to construct the relationship and correlation between international trade and internet, and seek out the influential factors and elements.

The internet’s positive influence for the international trade is evident and obvious, and it has been widely accepted that the internet could spur the growth of the international trade. It also shows the similar effect on the export activities. More specifically, the internet could be treated as an effective marketing tool for exporters in a variety of perspectives. There are plenty of publications and researches carried out in recent years. According to Hamill (1997), a low-cost entry to foreign countries would be a giant incentive to the export companies especially for these small-size or medium size companies. Also, Yeoh (2000) indicated that the internet also offer convenience for the exporters to gain information research and information exchange, well suiting the export planning, strategies and development. Additionally, export companies have more opportunities to get access to the purchasers especially the distant ones at a relatively lower expense.

As a key business partner and member of the global economy, China’s information technology industry also performs well and gained decent room for further development which is consistent to the worldwide trends. Similar results of the positive influence of the internet were also gained in studies in the scope of China. Huang and Chen (2005) claimed that the application of internet technology has the positive influence towards China’s service trade and “commercial existence” mode. Furthermore, in Feng and Liu’s (2010) study, they also agreed Internet’s positive function in export in China.

Thus, the term of “Internet Plus” has been proposed. According to People Newspaper’s report, the notion was introduced by China’s prime minister Li Keqiang in Government Work Report on March 5, 2015, aiming to increase the population of internet technology among Chinese corporations, promoting their production and sales, and keeping up with the Information Trend and Digital Economy. It would be one of the most significant economic key words in 2015, and it has been promoted and pushed by local people’s government at different levels since that time point.

2. Rationale for choice of articles

International trade is a broad topic, and it is necessary to select minor and micro scopes to have further analysis about the influence of internet. The previous research has investigated several different fields in the export fields. Different publication gained various preference of the influential factors or elements, such as the fixed cost, official company website, trade in services, ownership or the size of the corporation, e-commerce platforms, export destinations and so on.

Anderson and van Wincoop considered the internet as an effective cost-reducing tool for firms. In 2004, they comprehensively measured the trade barriers in the export companies, and they estimated from the data in 2002 that the spending of matching supply information and demand information composed more than 6% of the whole annual trade costs. Through observing the data for information exchange cost, they found the fact that ‘the higher the cost of communication, the smaller the scale of trade’. Anderson and van Wincoop (2003, 2004) also claim that cost for sourcing information and exchanging information contributes to the fixed cost in the export activities, and these costs would deduct correspondingly with the introduction of the internet, thus exports would be stimulated. Similarly, Freund, C.L. and Weinhold, D. (2004) also concluded that trade should expand due to the reduction of fixed costs of entering a foreign market.

Some scholars focus more on the crucial influence of the company’s official website or firm’s homepage. Li. B. and R. Li.’s (2017) revealed that the application of the official website of the company – the usage of the internet could promote the value of export by 40 percent. Dou, W. and Tan, C.M. (2002) concluded that the internet could function as a communication medium but also a direct-marketing channel. As the intermediate tool, the website could well present the

potential customers with different categories of products and corporate images and general information to gain the potential business relationship and enhance competitive advantages. As the direct-marketing channel, the official websites have the ability to generate online orders, lead the payment and finish the transactions. The transaction index and communication index are the key factors discussed in the paper.

The selected two articles also have their research priorities. The first article, *Does “Internet Plus” Promote New Export Space for Firms? Evidence from China* is published in *China & World Economy* in 2018, which is rated at 1* at Academic Journal Guide 2018. According to Helpman et al. (2008), exporting firms are not only multi-product based as the previous research usually studied, but also multi-destination based. This paper claimed that exporting is about both product and destination mix, studying the function or influence of internet in the scope of destination mix, providing proofs and empirical evidence for the firms to enlarge their export propensity and extensive margins. The destination’s internet access, destination numbers, destination’s characteristics are studied in the article. The article contributes a relative new dimension: destination dimension: extensive margin, intensive margin and structural margin, generating its practical meaning for China.

The second article, *The Adoption of the Internet by Export Firms in Transitional Markets* is published in 2006 from *Asia Pacific Journal of Marketing and Logistics* rated at 0* at Academic Journal Guide 2018. The article tried to address the factors influencing the intention of applying internet in the transitional markets. The key word is about the export activities in transitional markets, and we all know China also belongs to the category, transferring from state socialism to market coordination. Besides the nation of Vietnam referred in the article, the similar regions also include these countries in Eastern Europe. This just trigger my interest to select this article to get to know the internet’s significant effect in these markets.

3. Methodology and Research Design of Article 1

3.1 Research Aims

The article tried to illustrate the Internet’s positive influence on the international trade in China, and to be more specifically, it is about the trade destination mix. In the past, the research method

usually focused on purely extensive and intensive dimensions, however, the article supplemented a third dimension of destination structural margins.

The relevant data in the case should be consist of three different categories to answer the questions proposed by the writer. In the extensive perspective, the number of export destinations should be included; In the intensive perspective, average value of exports for each destination should be covered; In the structural margins perspective, structural distribution of export shares need to be presented.

3.2 Data Source

The data is all about the Chinese corporations, and are mainly collected from three databases. Secondary data and the authority of these databases significantly ensure the reliability and validity of the data in this paper.

The major source for the firm-level data is from Chinese Industrial Enterprises Database during the period from 2004 to 2007, which is collected and organized by the National Bureau of Statistics. The database contains all the corporations including state-owned and non-state-owned enterprises in China whose sales revenue surpass 5m (RMB) each year.

The data about firm-level exports was collected from the China Customs Database. According to matching method cited from Huang et al. (2015), the writer compared the company's name, zip code and phone number between the China Customs Database and Chinese Industrial Enterprises Database to calculate firms' export and destination indexes. The matched numbers constitute 48.9% and the matched export values is also approximately 50%. The overlaps between the two database is quite significant.

Other sources for destination data is from World Development Indicators and Centre d'Études Prospectives et d'Informations Internationales (CEPII), including internet development, contiguity, common language and so on.

3.3 Methods of Analysis

The paper applied regression model to construct the relationship among variables and make use of the data from the database to process the descriptive analysis. Before the data analyzing, the data preparation also includes the matches between two main databases to draft a whole view of the export in China, and also excludes records which do not conform with the accounting logic.

3.4 Justification of the Methodology Choice

The author has referred that an accurate index of internet development has not yet achieved. Usually we would measure this variable with the number of computer facilities or LAN, or if the company has built an official corporation website. However, this cannot gain the consensus in the academic field. In this way, the results may have some deviation due to the different criteria.

3.5 Variables

The author has listed out the characteristics of the main variables in the paper in Table 1. And there are several key variables. The variable of Int_{ijt} indicates whether the company has the access to the internet; the variable of Int_{kt} reveals the internet development in the destination; the variable of Var_{ijt}^I represents the number of destinations; the variable of Var_{ijt}^{II} describes company's average export value; the variable of Var_{ijt}^{III} demonstrates destination's structural margin.

Table 1. Definitions of Major Variables and Statistical Characteristics

Variable	Description	Observations	Mean	Standard deviation	P5	P95
<i>Int</i>	Firm's official website	1,185,327	0.1153	0.3194	0	1
<i>Scale</i>	Size of the firm	1,175,779	10.1043	1.3221	8.5370	12.4624
<i>Capital</i>	Capital per capita	1,176,608	3.6593	1.4114	1.3291	5.8479
<i>M</i>	Intermediate inputs	1,175,079	9.7997	1.3762	8.1542	12.1961
<i>Wage</i>	Wage per capita	1,183,613	2.6526	0.7189	1.6057	3.7680
<i>HHI</i>	Industry competition degree	1,185,327	0.7189	0.6863	-11.9009	-9.9046
<i>Int_k</i>	Internet level of destination	34,912,108	2.9339	1.3942	0.9163	4.5055
<i>Mres</i>	Multi-trade resistance	34,671,746	7.4312	1.3243	5.4710	8.8543
<i>Market</i>	Market scale of destination	34,671,746	21.5516	1.5668	19.8300	23.6197
<i>Comlang</i>	Common language	34,671,746	0.0345	0.1825	0	0
<i>Contig</i>	Contiguity	34,671,746	0.0936	0.2913	0	1

Sources: Data are from the Chinese Industrial Enterprises Database, China Customs Database, *World Development Indicators* and CEPII for 2004–2007.

Notes: *Scale*, *Capital*, *M*, *Wage*, *HHI*, *Int_k*, *Mres*, and *Market* are in logarithmic form. *Int*, *Comlang* and *Contig* are dummy variables.

3.6 Data Analysis

The data analysis included in this paper mainly has two parts, one of them is regression model. The writer introduced the Internet Plus variable in the export participation binary choice model (Roberts and Tybout, 1997; Bernard and Jensen, 2004) to construct the relationship between firms' export tendency and internet. Also, the relevant relationships have been built about the destination's development of the internet, export sunk cost and export competition. Finally, according to Helpman et al. (2008) and Bernard et al. (2011), the author has built the multiple linear model to illustrate the relation between the use of Internet Plus and destination margin (firm, industry, export destination country and year). The writer tried to construct the correlations among these variables with the help of these models, revealing the internet's positive influence on the export in Chinese companies.

The second part of the data analysis is the descriptive analysis. Through the observation and summarized data in the databases, the writer gained several stylized facts about the export in China. The feature of the multi-destination was showed by the average number of destinations; the significance of the firm's official website was showed by the comparison of companies with

website and without website; firms' internet level is more correlated with extensive margin compared with the intensive and structural margins, which was showed by the data. Furthermore, the writer applied a logit model to prevent incoming bias.

Besides, the writer applied Heterogeneity Test to dig more details about the collective data, extending to the categories of ownership- type and trade model, comparing the data among different categories. For the state-owned enterprises, the internet shows less influence on its export compared with private companies. In contrast with normal trade, processing trade is less influenced by the Internet Plus.

3.7 Bias and Ethical Considerations

In all the surveys, bias and errors are inevitable, however, the writer tried to minimize them through several models in the data analysis. First, Heckman Two-step Model was applied to minimize the sample selection bias due to the randomness of installing the internet or creating the website. Then, considering many factors could affect the margin in the export, Seemingly Unrelated Regression is applied to decrease the possible problem of homochromous correlation. Last, Instrumental Variable Method is applied to testify the endogeneity bias, eliminating the interruption of the export destination margin, increasing the representativeness of the analysis results and conclusion.

4. Methodology and research design of article 2

4.1 Research Aims

This study targets at figuring out the elements contributing to the export companies' tendency of utilizing internet in the transitional markets. The data concerning the influential factors about the export activities in the transitional markets need to be collected in the paper.

4.2 Data Source and Sampling

The primary data were collected in Vietnam. The total sample size in the paper is 144, selecting among the export companies in Ho Chi Minh City. Respondents were senior executives, and the

survey adopted face-to-face interviews to collect the information. The surveyed companies distributed in various types, including stated-owned corporations (more than 50%), limited proprietary (35%), joint stock (4%) and private companies (8%).

The background of the surveyed companies also should be paid attention. About 75% of the surveyed companies' business experience is less than 10 years which means these companies are pretty young and do not have much marketing experience. Furthermore, there were only about 20% of them having more than 300 employees which shows that the most of the companies are small-size or medium-size companies.

4.3 Methods of Analysis

Structural equation modelling and confirmatory factor analysis (CFA) were applied to analyze the data. The Cronbach's alpha and p-value were significant criteria in the research. And before the data collection, the writer also has completed a sum of theoretical work for the preparation. For the measurement of the variables, Learning orientation was measured by the scale developed by Sinkula et al. (1997) in commitment to learning, open-mindedness, and shared vision; Market orientation was measured by Narver and Slater's (1990) scale in customer orientation, competitor orientation and interfunctional coordination; 6 items about perceived usefulness and 4 items about perceived ease of use of the internet were measured by the scales which is developed by Davis (1989).

4.4 Justification of the Methodology Choice

The samples are collected from only one city in one country, and it cannot well represent the whole situation of the transitional market in the world. Besides, the data scale is relatively small compared to the concept of transitional markets. The running years and the corporation scales are also relatively too unitary. All of these elements contribute to the less representativeness of the collective data. And cross-national samples would be a great supplement for the future research to enrich the data source considering the distinct economic development level and cultural background. Last, the bias and errors should also be included.

4.5 Variables

The intention to use the internet in the export activities was treated as the dependent variables, and market orientations, learning orientations, perceived ease of use of the internet, perceived usefulness of use of the internet are treated as the independent variables in the scope of the organizations.

4.6 Hypotheses

The writer composed 8 hypotheses in all. These hypotheses tried to figure out the influential factors of the export companies' intention to adopt the internet.

The first 3 hypotheses focus on organizational anticipated usefulness of internet in the export activities and the difficulties to use the internet.

‘H1. Firms with higher levels of perceived usefulness of the internet will be more likely to adopt the internet.

H2. Firms with higher levels of perceived ease of use of the internet will be more likely to adopt the internet.

H3. Firms with higher levels of perceived ease of use of the internet will be more likely to have higher levels of perceived usefulness of the internet.’

Considering that the firms' usage of IT not only correlates with the beliefs, attitudes, and intentions, but also relates to organization's strategies, policies and actions. In this way, market orientation and learning orientation are introduced. For the market-oriented firms, they tend to better realize the significance of internet and adopt it for the export activities. The next 2 hypotheses are explored in the field of market orientation.

‘H4. Firms with higher levels of market orientation are more likely to have higher levels of perceived usefulness of the internet.

H5. Firms with higher levels of market orientation are more likely to have higher levels of intention to adopt the internet. ‘

Learning orientation is another factor to decide if a company would adopt internet. A learning-oriented firm have more intendancy to learn and gain the ability to adopt internet. The factor of learning orientation is studied in the next 2 hypotheses.

‘H6. Firms with higher levels of learning orientation are more likely to have higher levels of perceived usefulness of the internet.

H7. Firms with higher levels of learning orientation are more likely to have higher levels of perceived ease of use of the internet.’

The writer presumed that a learning-oriented company may lead to form the market-oriented thought. Thus, the relationship was studied in the hypothesis 8.

‘H8. Firms with higher levels of learning orientation are more likely to have higher levels of market orientation.’

4.7 Research Methods

Interview may be the suitable method for the research because the samples all centered in the same city. Based on Sreejesh. S.(2014), the survey research need to consider three scopes: sampling precision, budget, and quality of data. The needy information is about the annual revenue, export amount and some key information about the business in the company, the interviewees should be these people who could get access to the numbers. Thus, the selected samples are targeted at 144 senior executives in the small-size or medium-size companies in Ho Chi Minh City, the sampling size and location convenience made the interview survey possible. Compared with the telephone survey or mail survey, the interview has a direct, face-to-face contact with the interviewee, which means that it can get instant feedback and explanation, which is more appropriate to tackle these complicated and sensitive tasks.

4.8 Data Analysis

According to Davis et al. (1989)’s comparison between two models of computer technology usage- TAM and TRA, and Mathieson (1991)’s comparison between TAM and TPB, the writer

concluded that TAM behaves better in the empirical perspective. Thus, TAM has been chosen as the basis to construct the model in the paper. Considering that the TAM do not include the organizational elements, the writer added 4 organizational factors then.

The writer applied the Cronbach's alpha to testify the correlation among the variables and deleted these unrelated variables. Then the high-correlated variables were tested by confirmatory factor analysis (CFA) and achieved the conclusion that all the items are unidimensional. Thus, the data could be tested by Structural equation modelling (SEM), showing a 37 degrees of freedom.

4.9 Validity and Reliability

Validity and reliability of the data is of great significance. Reliability is also referred as consistency and repeatability, which means that the research design is clear and the results are not manipulated; bias and errors are well controlled and considered. Validity includes internal validity and external validity. The internal validity is about the causality between independent variables and dependent variables. The external validity relates to the generalizability. (Greener, S., 2008) The questionnaire has not been given in the paper, so we have no idea about the question designs. We could know from the inference of the hypotheses that internal validity has been covered in the paper. However, the reliability and external validity is the blank part of this research.

5. Conclusion and recommendations

After reading and comparing the two articles, I have some recommendations and suggestions from the following three dimensions.

Research Method Design

Both of the articles have used the mixed analysis method. The first article has applied regression analysis and descriptive analysis to analyze the secondary data from the databases. The data has been dealt appropriately. The model inference is logical, and regression analysis well revealed the relationship between internet plus and export propensity; bilateral internet and firm-

destination export propensity; internet plus and export destination margin. Also the errors and bias has been considered and tested by four tests.

The second article mainly use the descriptive analysis and factor analysis. Mean value, Standard deviation are used to describe the main feature of the data. Cronbach's alpha is used to test the correlation among variables, P-value has been used to test the proposed hypotheses. confirmatory factor analysis has been applied to test the hypotheses.

Data Source

For the data source, in the first article, the databases used in the article would be better with a brief description about authority or the explanation about why to choose them. When the dataset is decided, the evaluation of the selected dataset is necessary to ensure that if the data source is appropriate for the research topic (Dale et al., 1988; Kiecolt & Nathan, 1985; Smith, 2008; Stewart & Kamins, 1993). The comments and notes are necessary in this way.

In the second article, the sample size is too small to represent the transitional markets. In Vietnam, although different kinds of companies have been covered in the study, the total size is just 144. In the perspective of lacking cross-nation data, the validity and representativeness of the data has been decreased significantly. The sampling method has not been told also. According to Creswell, J.W. (2014), the simple random sampling is the most ideal for the quantitative research. We have no idea that the 144 samples are collected through probability sampling or nonprobability sampling.

Questionnaire and Response Rate

The questionnaire has not been put in the appendix in the article 2, so we cannot get a picture about the question types, question wording, question scales question order, possible response bias and so on. (Krosnick, J.A., 2018) Due to the survey method of interview, face-to-face interview values the guidance and leading of the interviewers. And the sensitive topics about revenues are included in the interview, the question setting and answers are of great significance in the data collection. Also, the response rate was not presented. Baruch, Y. (1999) has pictured out the benchmark for the response rate in the questionnaire to guarantee the comprehensiveness

and representativeness of the data. Maybe it would be better to present the questionnaire to the readers to let them have a better understanding of the data collection and also mark the response rate out.

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