

Enhancing International Performance of Exporting Firms through E-Business Integration

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Abstract

The growth of information and communication technologies over the past decade has radically transformed the way we communicate, learn and do business. The Internet and e-business solutions have brought many benefits to businesses, especially lowering information and communication costs, gathering intelligence on target market and maintaining collaboration among their internal and external business processes to meet the demands of competition in today's dynamic business environment. Despite the rapidly growing literature on e-business, research on the impact of e-business in the internationalization process of exporting firms is comparatively limited. This study investigates the relationship between organizational use of e-business technologies, composed of communication, intelligence, and collaboration, and international performance of exporting firms by using partial-least squares (PLS) modelling, a second-generation technique in structural equation modelling (SEM), on data drawn from a survey of 70 exporting firms in North Cyprus. The findings show an existing relationship between e-business adoption and international performance of exporting firms.

Keywords: E-Business adoption, International performance, Exporting firms, Internationalization, North Cyprus.

1. Introduction

Globalization made the world smaller because it connects people as if they are right next to each other. The use of today's information technologies has minimized the distance between people as well as markets. With the commencement of globalization in the 21st century, companies now have the chance of going international. Companies are very enthusiastic about investigating new markets and generating profits by charming the customers of foreign markets. Companies are obliged to follow a process if they have the will to explore new markets and seek internationalization (Calof, 1995).

New challenges and opportunities are introduced to firms by globalization. These opportunities include accessing new markets that were previously not accessible due to several reasons including cost, regulation, or indirect barriers, the capability to provide resources such as capital, labor, and knowledge on an international basis as well as and the possibility of taking part in global production networks that are becoming widespread in several major industries such as automotive, electronics, toys and textiles. On the other hand, globalization introduces several challenges such as foreign competitors launching in the local market of a firm as well as the local competitors cutting down cost due to outsourcing, offshore manufacturing and entering new markets. Globalization strengthens firms in order to both streamline and increase their efficiency as well as geographically expand their operations.

In order to respond to the mentioned opportunities and challenges, it is necessary for firms to restructure their organizational strategy and processes (Bradley et al., 1993). Firms expand their products and operations in global marketplaces by using latest technologies to overcome the pressure of competition (Snow et al., 1996). Furthermore the used technology helps firms to succeed in attaining new innovative transnational organizational forms (Sturgeon, 2002).

Elevated amounts of information, knowledge, labor, products, and capital exchange exists between markets. Hence, there is also a high level of interdependency among the related countries. Companies which have seized the chance of expanding business activities into these markets need to keep up their efforts to become internationalized.

The Internet is often accepted as one of the most transforming technological inventions which can fundamentally change the business paradigm by affecting every link in a firm's value chain. Porter (2001) suggests that information technology such as the Internet enables improvements in value chain of firm by increasing speed and ease of real-time information exchange.

The use of the Internet provides the opportunity of reaching both international and local markets by removing barriers of geographic distance. According to Kotler (2000) "clearly, marketers are adding on-line channels to find, reach, communicate, and sell" and that "companies small and large are taking advantages of cyberspace's vanishing national boundaries". Based on the statement of Quelch and Klein (1996), the Internet will increase the speed of the internationalization process for small and medium-size enterprises.

The Internet gives smaller firms the same competitive advantage as larger firms by allowing smaller firms to expand into international markets and providing the opportunity to affordably promote products and services in global markets (Kotler, 2000). Although the Internet provides

essential opportunities both for domestic and international marketing, there is insufficient scholarly research to the area. (Hoffman & Novak, 1996).

The aim of this study is to enhance knowledge on the usage of e-business by exporting firms from the perspective of communication, intelligence and collaboration, and to investigate the effect of e-business adoption on international performance of exporting firms, specifically international commitment and export performance. We propose and test a model of the relationship between e-business adoption and international performance, which are as follows:

Hypothesis 1: Adoption of e-business for communication purpose has a positive significant effect on international performance of exporting firm.

Hypothesis 2: Adoption of e-business for intelligence purpose has a positive significant effect on international performance of exporting firm.

Hypothesis 3: Adoption of e-business for collaboration purpose has a positive significant effect on international performance of exporting firm.

The model and constructs used in our study are directly derived from literature. Our findings show that the use of e-business adoption positively impacts international performance of exporting firms.

2. Theoretical Background

2.1 Internationalization of Firm

A chain of steps need to be taken for internationalization. Companies go through a progressive learning process with internationalization (Johanson & Vahlne, 2009). These companies obtain expertise of doing business in international markets. The chain begins with the intention of entering geographically and culturally different markets, and follows with the elevation of the company's degree of commitment to these markets one step at a time depending on the market knowledge. The first level of commitment is through a representative sales agent (importer) in the foreign market and it is followed by the launch of a sales office and finally a manufacturing facility in the foreign country.

Buckley and Ghauri (1988) put forward that the fruit of an enhanced level of international involvement is internationalization. It is assumed that expanding operations to international markets increases a company's profitability. Becoming international gives the company potential benefit as it builds more knowledge and expertise in the internationalization process.

The knowledge-based theory explains the growth of a company undertaking the internationalization process as: Despite the risk involvement of utilizing the company's resources in international activities, these operations give the opportunity of gaining specific knowledge about foreign markets via experience. Consequently, risk will be minimized with growing knowledge of the market and the company will be inspired to dedicate more resources into the experienced market (Cuervo-Cazurra & Genc, 2008; Eriksson, 2000).

The internationalization process theory inhibits four assumptions (Andersen, 1993). The first assumption is that maximizing the return on resources allocated to markets will be realized if

firm allocates these resources into least risky markets. The second assumption is that improved market knowledge reduces the risk of the market. The third assumption is that experience generates learning which results in market knowledge. The final assumption is that learning through experiences is an efficient process.

Literature highlights two crucial concepts as elements of the internationalization process: market knowledge and market commitment. Johanson and Vahlne (2009) considering the part of knowledge for the company as the firm makes decisions based on knowledge of opportunities and problems as well as uses knowledge for the evaluation of alternatives in responding to these opportunities or problems.

Eriksson (1997) considers market knowledge in two categories. The first category concentrates on business related issues which are knowledge of customer, market and rivalries. The second category involves the institutional issues such as knowledge of government, rules and regulations, and the culture.

Market commitment also has two categories. The quantity of resources committed by the company is acknowledged as the first and explained as the economic factors dedicated to the market. The allocation of more resources into foreign operations increases market commitment of the firm. The second category is the level of difficulty in spotting alternative uses for these resources and is identified as the degree of commitment to the market (Johanson & Vahlne, 2009).

Experimental learning theory divides the internationalization process into five stages; company focuses on domestic market only, searches for the possibility of exporting, starts to experience exporting activity, exporting is a regular activity of the company and represents important percentage in total sales and company has high degree of commitment in foreign market and has dependency on exporting.

2.2 E-Business Adoption in Internationalization of Firm

All businesses around the world have been greatly influenced by new technologies such as the Internet and the World Wide Web. Organizations can use e-business to reduce costs, increase demand and build new business models. It reduces prices and improves products and information flows therefore making it possible for all consumers to benefit (Dunt & Harper, 2002). Both small and large businesses can use the Internet to take advantage of practically-zero marginal costs of distribution for their products (Dunt & Harper, 2002). Small and medium sized businesses, in addition to large businesses, may also create value through marketing and providing their goods and services online (Dubish, 2000). Each business is bound by the same amount of graphics and design potential that the Internet can offer, therefore each business begins at the same point with regard to their websites.

Businesses take up e-business models to increase market share, offer better customer service and to expand their target markets to other countries (Singh, 2000). According to Chaffey (2004) and Turban et al (2004) the advantages of e-business are: amplified revenue from improved sales; lowered marketing costs due to online advertising, less time spent in customer service and online sales; decreased supply chain costs due to minimized inventory levels,

elevated competition from suppliers and contracted cycle time in ordering; diminished administrative costs from automated routine business processes, order confirmation, data precision and a more advantageous competitive standing. Further non-measurable improvements obtained from e-business include a better corporate image, enhanced communication with customers and business affiliates through electronic channels, shortened product development times allowing shortened responding times to market demands, enhanced customer service, improved information and knowledge management, the chance to utilize positive feedback from customers to improve sales, implementation of intelligent software for data gathering and forecasting trends and demands (Singh, 2000; Chaffey, 2004; Turban et al, 2004).

A study considers that the 21st century, with its dynamic, quickly growing and ever competitive features will ensure new methods of wealth creation (Amit & Zott, 2001). Each industry and organization adapts its own e-business model, approach and degree of digitization, in accordance with its size, type of business, technology capability and technical expertise. Despite the fact that the importance of employing e-business has been recognized, the definite benefits are yet to be brought to light. A study states that not only improvements in technological infrastructure but business and organizational makeovers are factors steaming much of the value connected with e-business (Grey et al., 2003). The same study also puts forward that a crucial component of constructing business value is determining the relative methods of transformation and choosing the right schemes to permit the transformation. The factors affecting the IT infrastructure capacity, such as speed, flexibility, capacity, efficiency, resilience and security, define both the types of applications that can be run and their performance. The total business performance which is accuracy, speed and productivity of business processes of the entity will be affected by the individual business units using these applications.

E-business benefits are usually evaluated as IT benefits under the topics of metrics, environment, technology and processes (Kohli et al., 2003). A study has shown that success in e-business requires functionality, integration and scalability and also that an evaluation of e-business applications is necessary for further development, management strategies and the utilization of technological developments (Shi & Daniels, 2003).

Deciding on the strategic role of IT as compared to other aspects in an organization is necessary to obtain the overall economic picture (Devaraj & Kohli, 2002). The same study also states that IT projects have less perceptible and longer payoff times. Furthermore, IT metrics incorporates profitability, productivity and customer value whilst e-commerce payoff evaluation considers efficiency, effectiveness and innovation strategy measured along five dimensions of time, distance or geography, relationships, interactions, and product or service. Ashburton and Doherty (2003) put forward that IT appraisal is similar to benefits realization and it should be clearly attentive of the on-going management and course of the project and managing the reaping of payoffs. They also emphasize that appraisal should focus on the assessment of the process of systems development together with its product so that the systems development process can be upgraded over time; additionally evaluation should be an on-going process.

Cronholm and Goldkuhl (2003) categorize the strategies for information systems evaluation as goal-based, goal-free and criteria-based evaluations. Goal-based evaluation assesses the IT system based on clear goals from the organizational context. Goal-free evaluation is an inductive and situational driven strategy, whereas criteria based evaluation focuses on clear and general criteria used as an evaluation benchmark. Another study states that e-business performance evaluation systems should include components on the performance of the website, business processes, customers and the link between e-business performance and business strategy.

3. Methodology

3.1 Conceptual Framework

The internationalization process of a firm is logically a powerful driver for the firm to adopt specific Information and Computer Technologies (ICT) such as the Internet and e-business. There is also empirical evidence supporting the relationship. Researches indicate that countries with more globally oriented economies have higher levels of ICT investment (OECD, 1999). It is reasonable to expect that international firms would be more likely to adopt technologies such as e-business. Other empirical study at the country level supports the argument that the opening of markets to trade and foreign investment leads domestic firms to invest in ICTs to remain competitive (Dedrick et al., 2001). Thus, the process of internationalization is logically and empirically shown to be a driver for firms to adopt e-business.

The analysis in this article is based on a conceptual framework that relates e-business adoption of a firm and its international performance, as shown in Figure 1. The framework argues that the extent and nature of firm's e-business adoption will influence its performance at international level. The key variables in the framework are defined below in the measures section.

We constitute a conceptual model, shown in Figure 1, of the relationship between organizational use of e-business technologies which is composed of communication, intelligence and collaboration, and international performance of the exporting firm.

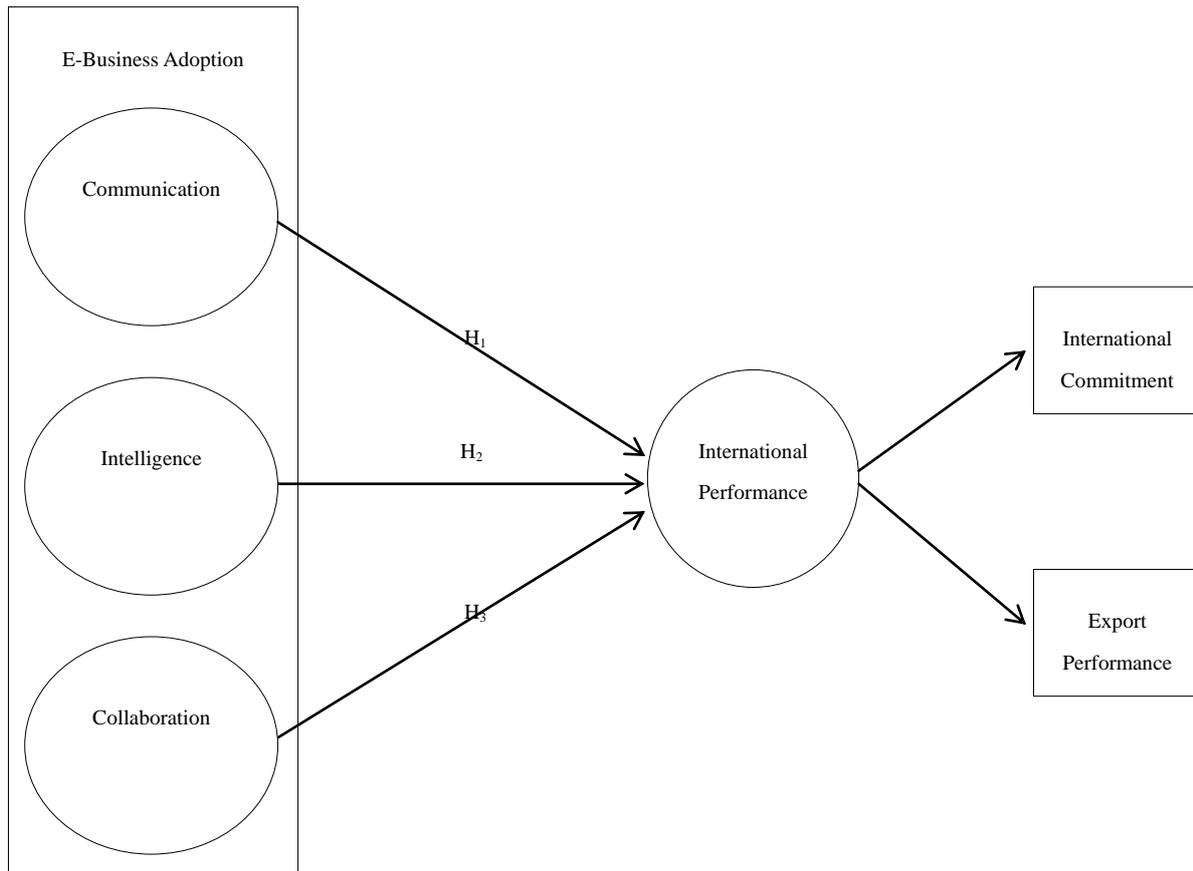


Figure 1. The conceptual model of the study.

3.2 Measures

3.2.1 E-Business Adoption

We define e-business broadly as use of the Internet to buy, sell, or support products and services. We conceptualize adoption of e-business in three dimensions as communication, intelligence and collaboration. These dimensions are widely used in IT and e-business literature, and refer to the scope of e-business use rather than type of IT adopted (Gibbs & Kraemer, 2004). We define scope of use as the extent of e-business use for a number of different activities in the value chain, from advertising and marketing to sales, procurement, service and support, data exchange with customers and suppliers, and integration of business processes. The measures of e-business use were adapted from Wade and Hulland (2004).

Communication dimension represents the use of e-business in establishing efficient flow of information among functional departments as well as stakeholders outside the firm. This dimension was assessed using four items that examined the extent to which the firm uses e-business in promoting the firm and its products, and in sharing information among departments, customers, suppliers and distributors by using 5 point Likert scale ranging from “very low” to “very high”.

Intelligence dimension involves both the collection of information from sources external to the firm as well as the dissemination of a firm's market intelligence across departments through

e-business. Four items were used to measure intelligence dimension of e-business adoption which focus on the degree of e-business use in collecting information on customers, distributors, competitors as well as laws and regulations of host country by using 5 point Likert scale ranging from “very low” to “very high”.

We operationalized the collaboration dimension as the ability of integrating and aligning the processes between firm and stakeholders along supply chain by e-business adoption. We used three items to assess the collaboration dimension of e-business. These items aim to evaluate the extent to which firm uses e-business in selling products or services to customers and in interacting with distributors and suppliers by using 5 point Likert scale ranging from “very low” to “very high”.

3.2.2 International Performance

International performance has been measured in prior researches by both objective and self-reported perceptual measures, and generally defined as the outcomes of a firm's activities in export markets. In this study, we operationalized the international performance measure as a multi-item construct that combines two primary indicators that have been used in prior research (Shoham, 1998). These indicators are international commitment which is the percentage of the firm's total sales contributed by export operations and export performance as perceived performance of firm in export sales compared to competitors by using a 5-point Likert scale ranging from “very low” to “very high” performance.

A summary of the indicators used, together with their scales and labels, is provided in Table 1.

Table 1. The items, scales, labels and constructs of the model

| Constructs and Indicators | N | Mean | Std. |
|--|----|------|-------|
| Communication (COM) - Using e-business; | | | |
| To promote the firm (COM1) | 70 | 3.63 | 0.951 |
| To promote the firm's products (COM2) | 70 | 3.84 | 0.773 |
| To share information within the firm (COM3) | 70 | 3.87 | 0.797 |
| To share information with stakeholders (COM4) | 70 | 3.53 | 0.829 |
| Intelligence (INL) - Using e-business; | | | |
| To identify potential customers (INL1) | 70 | 3.73 | 0.563 |
| To identify potential distribution channels (INL2) | 70 | 4.13 | 0.779 |
| To collect information about laws and regulations of host country (INL3) | 70 | 3.73 | 0.741 |
| To collect information about competitors (INL4) | 70 | 3.73 | 0.679 |
| Collaboration (COL) - Using e-business; | | | |
| To sell products and services (COL1) | 70 | 3.69 | 0.733 |

| | | | |
|---|----|------|-------|
| To interact with suppliers for coordination of operations (COL2) | 70 | 4.19 | 0.572 |
| To interact with distributors for coordination of operations (COL3) | 70 | 3.79 | 0.700 |
| International Performance (IP) | | | |
| Export / total sales of the firm in percentage (IC) | 70 | 2.20 | 0.910 |
| Perceived export performance compared to competitors (EP) | 70 | 3.16 | 0.862 |

3.3 Sampling and Data Collection

We obtained the list of registered exporters in North Cyprus from KOBIGEM, which is a center that aims to improve the performance of small and medium sized firms under the supervision of the Ministry of Economy. 70 companies were identified as the total number of exporters in North Cyprus who had exporting activities in the year 2011. All of these 70 companies were reached by telephone and were found eligible to answer the questionnaire. Eligibility and the identity of the most suitable key informants were obtained during the telephone conversation.

Our study relies on the primary data collected by interviewing a respondent, single key informant, from each one the 70 exporting firms separately. We followed Huber and Power's (1985) guidelines on how to get quality data from a single informant to maximize accuracy and reliability. E-business adoption and international performance of firm are operationalized from the perspective of the top managers who are typically the most knowledgeable persons regarding their companies' strategies and overall business situations. Most of our respondents had titles such as managing director, general manager and export manager, indicating a senior position in the firm.

The questionnaire was designed as undisguised -respondents were informed about the purpose of the study - and structured - the same questions are administered to every respondent, and developed by using five-point Likert scales to minimize response time and effort (Knight & Cavusgil, 2004). Pretests regarding the clarity of the survey items were conducted with ten exporting companies. The survey was conducted by filling the questionnaires in face to face interviews in the summer of 2012. We had asked our respondents to indicate if they had adopted e-business in their business operations while performing export activities. This was important as our research goal is to understand how the international performance of exporting firms will be affected as a result of e-business adoption. At the end of interviews, 70 valid responses were received. Therefore, this research analysis is based on a response rate of 100%, which is fully representing the population of exporters in North Cyprus.

3.4 Data Analysis

We used partial-least squares (PLS) approach, a second-generation technique in structural equation modeling, to analyze the data and examine the hypotheses. PLS follows a component based strategy, makes no prior distributional assumptions about the data, and can work well with small sample sizes. PLS allows researchers to integrate and simultaneously assess both measurement and structural models. The measurement model investigates how well the latent constructs are captured by the mapped set of indicator items. The structural

model estimates the strengths of hypothesized relationships among lateral constructs.

While the main focus of techniques like LISREL is to test a given model and examine the fit between the data and the model, PLS seeks to explain relationships within a model (Fornell & Bookstein, 1982). Therefore, PLS is more suitable for assessing predictive models where explaining relationships among a set of constructs is desired (Chin, 1998).

3.5 Measurement Model

Measurement model is assessed with regard to its reliability and validity. We measured internal consistency by using reliability coefficient of Cronbach's Alpha (Cronbach, 1951) and Composite Reliability (Werts, Linn & Joreskog, 1974). While Cronbach's Alpha provides an estimate for the reliability based on the indicator inter-correlations, the composite reliability takes into account that indicators have different loadings, and can be interpreted in the same way as Cronbach's Alpha. No matter which particular reliability coefficient is used, an internal consistency reliability value above 0.7 is regarded as satisfactory, whereas a value below 0.6 indicates a lack of reliability (Nunnally & Bernstein, 1994). The reliability coefficients given in Table 2 demonstrate that all constructs have acceptable levels of internal consistency reliability.

As the reliability of indicators varies, the reliability of each indicator should be assessed. Researchers argue that a latent variable should explain at least 50% of each indicator's variance and the indicators which have smaller outer standardized loading than 0.4 - the absolute correlations between a construct and each of its manifest variables - recommended to be eliminated from the measurement model (Churchill, 1979). The indicators of our model provide satisfactory level of reliability (see Table 2).

In this study, we examined both convergent and discriminant validity for the assessment of constructs validity. The average variance extracted (AVE) value of at least 0.5 shows sufficient convergent validity which indicates that the latent variable explain more than half of the variance of its indicators on average (Fornell & Larcker, 1981; Gotz et al., 2009).

Table 2. Reliability and Average Variance Extracted (AVE) Measures

| Constructs and Indicators | Loadings | t-values | Composite Reliability | Cronbach's Alpha | Average Variance Extracted (AVE) |
|---------------------------|----------|----------|-----------------------|------------------|----------------------------------|
| COM | | | 0.7766 | 0.6184 | 0.5652 |
| COM1 | 0.6801 | 2.830 | | | |
| COM2 | 0.7168 | 3.670 | | | |
| COM3 | 0.6567 | 3.771 | | | |
| COM4 | 0.6733 | 4.025 | | | |
| INL | | | 0.7939 | 0.6549 | 0.5911 |
| INL1 | 0.6716 | 4.129 | | | |
| INL2 | 0.6716 | 3.639 | | | |
| INL3 | 0.7405 | 5.235 | | | |
| INL4 | 0.7168 | 4.835 | | | |

| | | | | | |
|------------|--------|--------|--------|--------|--------|
| COL | | | 0.8170 | 0.6608 | 0.5999 |
| COL1 | 0.7939 | 5.505 | | | |
| COL2 | 0.8405 | 7.383 | | | |
| COL3 | 0.6805 | 4.486 | | | |
| IP | | | 0.9572 | 0.9107 | 0.9180 |
| IC | 0.9600 | 41.836 | | | |
| PE | 0.9562 | 31.843 | | | |

Discriminant validity assesses if two conceptually different concepts exhibit sufficient difference and measured by the Fornell-Larcker criterion and the cross-loadings. The Fornell-Larcker criterion (Fornell & Larcker, 1981) examines if a latent variable shares more variance with its assigned indicators than with any other latent variable. Therefore, the AVE of each latent variable should be greater than the latent variable's highest squared correlation with any other latent variable. This notion is identical to comparing the square root of the AVE with the correlations between the latent constructs. The cross-loadings as second criteria ensure that the loading of each indicator is greater than all of its cross-loadings (Gotz et al., 2009). Although the Fornell-Larcker criterion focuses on the construct level, the cross-loadings evaluate the discriminant validity on the indicator level. The construct validity measures are given in Table 3 and 4.

Table 3. Latent Variables Correlation

| | COL | COM | INL | IP |
|---|----------------|----------------|----------------|----------------|
| COL | 0.7745* | | | |
| COM | 0.1644 | 0.6821* | | |
| INL | 0.1832 | 0.3132 | 0.7008* | |
| IP | 0.4266 | 0.4417 | 0.4709 | 0.9581* |
| * Square root of construct's AVE value. | | | | |

Table 4. Cross-loadings of Indicators

| | COM | INL | COL | IP |
|------|---------------|---------------|---------------|--------|
| COM1 | 0.6801 | 0.5064 | -0.0005 | 0.2531 |
| COM2 | 0.7168 | 0.4607 | 0.1022 | 0.3527 |
| COM3 | 0.6567 | 0.6168 | 0.1748 | 0.2620 |
| COM4 | 0.6733 | 0.5697 | 0.1624 | 0.3183 |
| INL1 | 0.4441 | 0.6716 | 0.0685 | 0.3280 |
| INL2 | 0.6136 | 0.6716 | -0.0069 | 0.3280 |
| INL3 | 0.5813 | 0.7405 | 0.2648 | 0.3804 |
| INL4 | 0.6567 | 0.7168 | 0.1748 | 0.2620 |
| COL1 | 0.0868 | 0.0439 | 0.7939 | 0.3061 |
| COL2 | 0.1144 | 0.1371 | 0.8405 | 0.3370 |
| COL3 | 0.1747 | 0.2325 | 0.6805 | 0.3409 |

| | | | | |
|----|--------|--------|--------|---------------|
| IC | 0.4109 | 0.4840 | 0.4090 | 0.9600 |
| PE | 0.4361 | 0.4168 | 0.4086 | 0.9562 |

4. Results

The research hypotheses are tested by examining the direction, strength and level of significance of the path coefficients calculated by the PLS method.

The structural model presents information on the path coefficients (β) and the squared R (R^2). The strength of the relationship is indicated by β . The R^2 highlights the percentage of variance in the model to give an indication of its predictive power. The SmartPLS 2.0 (Ringle et al., 2005) results for the β s and R^2 are shown in Figure 2. The path significance levels (t-values) are estimated by the bootstrapping method.

Chin (1998) notes that R^2 values of 0.67, 0.33, and 0.19 for the percentage of variance in a model are substantial, moderate, and weak, respectively. Thus, the obtained R^2 in this study with a value of 0.35 suggests that the percentage of variance in the research model is above moderate levels.

Additionally, Cohen (1988) suggests that the PLS structural model can be assessed by effect sizes, f^2 . Also, Tenenhaus et al. (2005) note that tests for predictive relevance of a model can be gauged from the Stone-Geiser q-square (q^2) indicators.

Effect sizes of single predictors (f^2) are obtained by comparing the explained amount of variance when a predictor is either included or not included in the model. According to Cohen (1988), f^2 values of 0.02, 0.15, and 0.35 signify small, medium, and large effects, respectively.

The q^2 statistic measures the predictive relevance of the model. A q^2 greater than 0 means that the model has predictive relevance, and values less than 0 indicate a lack of predictive relevance (Fornell & Cha, 1994). In SmartPLS 2.0, cross-validated redundancy is obtained from the blindfolding procedure from which the q^2 is obtained. The cross-validated redundancy indicator measures the capacity of the path model to predict the endogenous MVs indirectly from their own LV using the related structural relation. Table 5 presents the data's β s, R^2 , f^2 , t-values, and q^2 . The results obtained in this study indicate that the research model is structurally sound as it possesses adequate predictive relevance and performance.

Table 5. Relevant Indicators for the Structural Model

| Path | R^2 | Q^2 | β | t-Value | f^2 |
|--------------|-------|-------|---------|---------|-------|
| Model | 0.35 | 0.29 | | | |
| COM → IP | | | 0.16 | 1.977 | 0.01 |
| INL → IP | | | 0.28 | 2.780 | 0.04 |
| COL → IP | | | 0.35 | 3.069 | 0.18 |

All of the hypotheses were supported by the findings of this study. The results indicate that:

H₁: Adopting e-business for communication purpose has positive significant effect on international performance of exporting firm since t-value (1.977) confirms the effect at 0.05 significance level while effect size is given as small ($q^2=0.01$). H₁ is accepted.

H₂: Adopting e-business for intelligence purpose has positive significant effect on international performance of exporting firm since t-value (2.780) confirms the effect at 0.01 significance level while effect size is given as small ($q^2=0.04$). H₂ accepted.

H₃: Adopting e-business for collaboration purpose has positive significant effect on international performance of exporting firm since t-value (3.069) confirms the effect at 0.01 significance level while effect size is given as medium ($q^2=0.18$). H₃ is accepted.

The percentage of variance explained in the dependent construct with independent constructs is 35% which is accepted as moderate. Further discussion on the results is presented in the next section.

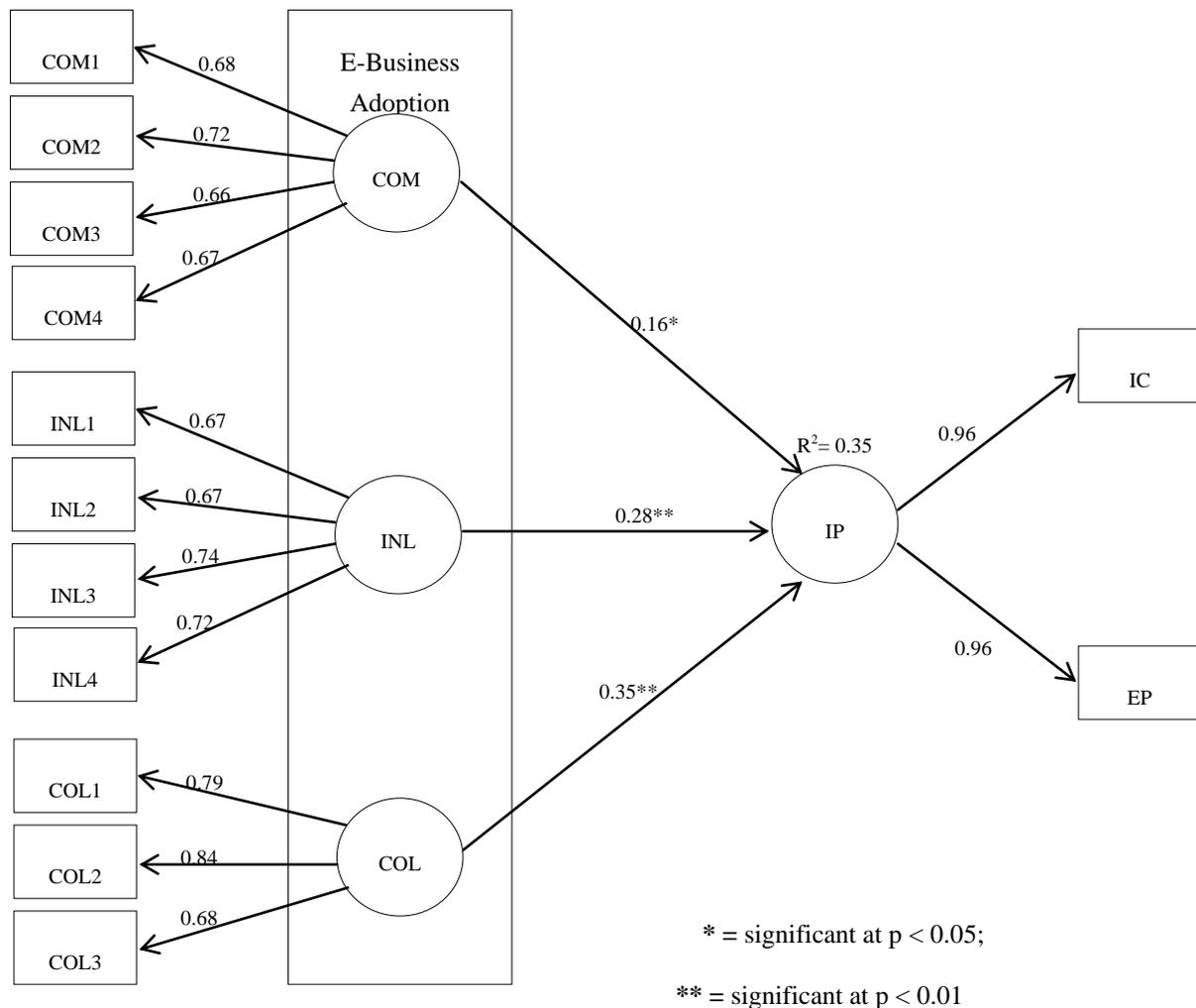


Figure 2. Model Results

5. Discussions and Implications

With the beginning of the twenty-first century, businesses executed over the Internet, also known as ‘e-business’, opens up new possibilities for internationalization of the firm based on its characteristics such as a dynamic, rapidly growing and competitive environment. The Internet allows existing firms to create new online businesses, while giving the opportunity to entrepreneurs to take full advantage of the Internet.

Firms are leaning towards the Internet-based environment due to the advances of information technologies with its respective decrease of communication expenses and as a result, significant productivity gains in the process of internationalization are obtained. As stated in literature, advancements in technology such as the Internet have been the key tool for globalization. Adoption of electronic based business (e-business) which carries out the value chain activities such as sales, customer services, procurement, information sharing and coordination with suppliers together with the combination of the Internet platform and its influences on the international performances of exporting firms is the main focus of this study. Improving e-business capability is a significant task because it incorporates both sell and buy-side as well as internal business processes.

The results of this study has shown that e-business has a positive influence on international performance of the firm as well as providing other possibilities such as to advance customer services, re-organize internal operations and advance coordination within the firm. The detailed findings of the research are discussed below.

- The Internet is a platform with open standards that supports the collaboration of firms along the value chain as well as the appearance of online communities and commercial agreements. Firms from different industries can share business processes even without the knowledge of the end users. Today’s customers can directly receive instant and continuous information flow over the Internet on products and services, thereby removing the need of traditional intermediary businesses and information brokers.
- Differentiation strategies along the value chain create value that will allow buyers to obtain products and services at a lower cost or increase performance. Products can be differentiated through decisions on how to carry out their activities, interconnection with suppliers and channels, scheduling of the activities, location, distribution of activities among business divisions, and learning and integration.
- Using e-business provides companies with competitive advantage where those companies with the best technology and innovation are able to keep and grow their customer base. Although a creative website can attract many people and provide awareness and knowledge regarding products and services as well as creating positive word-of-mouth, this most often does not result in purchase.
- Advantages of e-business include a smaller number of sales force, decrease in paperwork, less data errors, and more efficient transactional processes. This results in companies to gain profit and decrease cost. Online selling allows companies to satisfy customer needs in a time and cost efficient manner. In addition, e-business allows small businesses to compete with larger ones which were not previously possible.

- Productivity of the firm has also improved drastically due to the effects of information technology. Two of the strategies are commonly used by exporting firm are just in time (JIT) and total quality management (TQM). In addition distribution process has become more simplified for large firms due to developments in tracking large stock of goods. The computer system tracks stock levels and automatically sends an order to the warehouse when stock levels are low as well as tracks the distribution of goods between warehouses and retail stores. For this reason many businesses today can completely rely on computer system.
- Furthermore decision making has been greatly affected by information technology on business. In our daily life people are being bombarded by high level of information that can be a nuisance, however for decision makers of company same condition can be beneficial as complete information is obtained from all departments prior to a decision. Management Information System (MIS) is the system used to collect information within a company. MIS is one of the most essential tools for decision making in an organization where a manager is able to collect information in a short amount of time and make immediate decision and this results in saving money. Collection of information also ensures correct decision making.
- Applying e-business provides the opportunity for firms to obtain a high amount of needed and valuable data. Processing internal information allows companies to gain business intelligence with the use of database analysis such as data mining, and data marts. Manufacturers and suppliers can obtain market information from statistical aggregation of data by using e-business. This information is crucial for several decisions made by the company including planning and new product development.

6. Conclusions and Limitations

The rapid development in technology as well as growth of e-businesses provides enormous opportunities for the firms which look forward to expand their operations in host countries. In this study, we have attempted to contribute to the international business literature by investigating the foundations of e-business adoption into international firms.

The focus of this paper is on international performance of exporting firms, which has shown to be affected by e-business assimilation. We draw on a wide body of literature in e-business and internationalization, and use partial least square modelling in order to identify common patterns of technology diffusion in international firms. The analysis led to the development of e-business integration model, which is composed of three functions that enhance international performance of exporting firms: communication, intelligence and collaboration.

This study attempts to bridge the e-business and the international business literatures, and make an important contribution by empirically testing the relationship between assimilation of e-business in exporting firm and its performance in internationalization process. The results show that there is an existing relationship between e-business adoption and international performance. Among firms using the Internet to conduct business, international firms could gain benefit of improved performance by using the technology such as e-business in their value chains. However, it is also important to emphasize that adopting e-business into the process of firm's collaboration with customers, suppliers and distributors have higher significant effect

than using technology in gathering intelligence information and establishing communication.

Despite this paper is an important step in attempting to understand the strategic role of e-business adoption faced by international firms, it is limited in several ways. First, the results are based on a cross-sectional survey conducted at one point in time. As such, they cannot establish causality. We rely on the logical argument that the process of internationalization has been occurring longer than the adoption of e-business on firm's operations, so use of information technology such as e-business improves this process. However, we could argue that higher level of internationalization in turn leads to greater assimilation of e-business for more efficient use of information and enhanced knowledge management. Second, due to the methodology used, the model in our study explains a moderate amount of variance. We chose to focus on the effect of e-business use on international performance of exporting firms rather than being explicitly interested in a range of factors explaining different types of impacts. The results indicate that the scope of e-business adopted does have an effect on international performance of exporting firms. Third, our study used a subjective measure of firm's export performance. Although this was a necessity due to firms' resistance in providing their total number of exports, the results would be stronger if objective export performance measures could have been included, especially if both types of measures could have been used in order to examine the correspondence between such measures.

References

- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, 22, 493-520. <http://dx.doi.org/10.1002/smj.187>
- Andersen, O. (1993). On the Internationalization Process of the Firm: A Critical Analysis. *Journal of International Business Studies*. <http://dx.doi.org/10.1057/palgrave.jibs.8490230>
- Ashburton, C., & Doherty, N. F. (2003). Towards the Formulation of a "Best Practice" Framework for Benefits Realisation in IT Projects. *Electronic Journal of Information Systems Evaluation*, 6(2), 1-10.
- Bradley, S. P., Hausman, J. A., & Nolan, R. L. (1993). *Globalization, technology, and competition*. Boston: Harvard Business School Press.
- Buckley, & Ghauri (1988). *Internationalisation of the firm - a theoretical review with implications for business network research*. 18th Annual IMP Conference, Lyon. Competitive Paper.
- Calof, J. (1995). Adapting to foreign markets: explaining internationalization. *International Business Review*. [http://dx.doi.org/10.1016/0969-5931\(95\)00001-G](http://dx.doi.org/10.1016/0969-5931(95)00001-G)
- Chaffey, D. (2004). *E-Business and E-Commerce Management*. (2nd ed.). London: Prentice Hall.
- Chin, W. W. (1998). *The partial least squares approach to structural equation modeling*. In: G. A. Marcoulides (Ed.), *Modern Methods for Business Research* (pp. 295-358). Mahwah, NJ: Lawrence Erlbaum Associates.

- Churchill, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64-73. <http://dx.doi.org/10.2307/3150876>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334. <http://dx.doi.org/10.1007/BF02310555>
- Cronholm, S., & Goldkuhl, G. (2003). Strategies for Information Systems Evaluation - Six Generic Types. *Electronic Journal of Information Systems Evaluation*, 6(2), 65-74.
- Cuervo-Cazurra, A., & Genc, M. (2008). Transforming disadvantages into advantages: Developing-country MNEs in the least developed countries. *Journal of International Business Studies*, 39, 957-979. <http://dx.doi.org/10.1057/palgrave.jibs.8400390>
- Dedrick, J., Kraemer, K. L., & Palacios, J. J. (2001). Impacts of liberalization and economic integration on Mexico's computer sector. *The Information Society*, 17(2), 119-132.
- Devaraj, S., & Kohli, R. (2003). Measuring information technology payoff: a meta-analysis of structural variables in firm-level empirical research. *Information Systems Research*, 14(2), 127-145.
- Dublish, S. (2000). *Retailing and the Internet*. Proceedings of the First World Congress on the Management of Electronic Commerce, McMaster University, Hamilton, Canada.
- Dunt, E. S., & Harper, I. R. (2002). E-Commerce and the Australian Economy. *The Economic Record*, 78 (242), 327-342. <http://dx.doi.org/10.1111/1475-4932.00061>
- Eriksson, K. (1997). Experiential Knowledge and Cost in the Internationalization Process. *International Studies of Management and Organization*.
- Eriksson, K. (2000). Path Dependence and Knowledge Development in the Internationalization Process. *Management of International Review*.
- Fornell, C., & Cha, J. (1994). *Partial Least Squares*. In: R. P. Bagozzi (Ed.), *Advanced Methods of Marketing Research* (pp. 52-78). Cambridge, MA: Basil Blackwell.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18 (3), 328-388. <http://dx.doi.org/10.2307/3150980>
- Fornell, C., & Bookstein, F. (1982). *A comparative analysis of two structural equation models: LISREL and PLS applied to market data*. In: C. Fornell (Ed.), *A second generation of multivariate analysis* (Vol. 1, pp.289-323). New York, NY: Praeger.
- Gibbs, J. L., & Kraemer, K. L. (2004). A cross-country investigation of the determinants of scope of e-commerce use: An institutional approach. *Electronic Markets*, 14 (2), 124-137. <http://dx.doi.org/10.1080/10196780410001675077>
- Gotz, O., Liehr-Gobbers, K., & Krafft, M. (2009). *Evaluation of structural equation models*

using the partial least squares (PLS) approach. In: V. Esposito Vinzi, W. W. Chin, J. Henseler & H. Wang (Eds), Handbook of partial least squares: Concepts, methods, and applications. Berlin: Springer. http://dx.doi.org/10.1007/978-3-540-32827-8_30

Grey, W., Katircioglu, K., Bagchi, S., Shi, D., Gallego, G., Seybold, D. & Stefanis, S., (2003). An analytic approach for quantifying the value of e-business initiatives. *IBM Systems Journal*, 42(3), 484-497. <http://dx.doi.org/10.1147/sj.423.0484>

Hoffman, L. D., & Novak, P. T. (1996). Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations. *Journal of Marketing*, 60(3), 50-68. <http://dx.doi.org/10.2307/1251841>

Huber, G. P., & Power, D. J. (1985). Retrospective Reports of Strategic-Level Managers: Guidelines for Increasing Their Accuracy. *Strategic Management Journal*, 6(2), 171-180. <http://dx.doi.org/10.1002/smj.4250060206>

Johanson, J. and Vahlne, J. E. (2009). 'The Uppsala internationalization process model revisited - from liability of foreignness to liability of outsidership'. *Journal of International Business Studies*, 40, Anniversary Issue, 1411-31. <http://dx.doi.org/10.1057/jibs.2009.24>

Knight, G. A., & Cavusgil, S. T. (2004). Innovation, organizational capabilities, and the born-global firm. *Journal of International Business Studies*, 35, 124-141. <http://dx.doi.org/10.1057/palgrave.jibs.8400071>

Kohli, R., Sherer, S. A., & Baron, A. (2003). IT investment payoff in e-business environments: research issues. *Information Systems Frontiers*, 5 (3), 239-247.

Kotler, P. (2000). *Marketing Management*. (10th ed.). Englewood Cliffs, NJ: Prentice Hall.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. (3rd ed.). New York, NY: McGraw-Hill.

Organization for Economic Cooperation and Development (1999). *The economic and social impact of electronic commerce*. Paris: OECD.

Porter, M. (2001). Strategy and the Internet. *Harvard Business Review*, 79(3), 62-78.

Quelch, A. J., & Klein, R. L. (1996). The Internet and International Marketing. *Sloan Management Review*, 38(3), 60-75.

Ringle, C. M., Wende, S., & Will, S. (2005). *SmartPLS 2.0 (M3) Beta*. Hamburg: <http://www.smartpls.de>.

Shi, D., & Daniels, L. (2003). A survey of manufacturing flexibility: implications for e-business flexibility. *IBM Systems Journal*, 42(3), 414-427. <http://dx.doi.org/10.1147/sj.423.0414>

Shoham, A. (1998). Export performance: a conceptualization and empirical assessment. *Journal of International Marketing*, 63, 59 - 81.

Singh, M. (2000). *Electronic Commerce in Australia: Opportunities and Factors Critical for*

Success. Proceedings of the 1st World Congress on the Management of Electronic Commerce, Hamilton, Ontario, Canada.

Snow, C. C., Snell, S. A., Davison, S. C., & Hambrick, D. C. (1996). Use transnational teams to globalize your company. *Organizational Dynamics*, 24, 50-66.
[http://dx.doi.org/10.1016/S0090-2616\(96\)90013-3](http://dx.doi.org/10.1016/S0090-2616(96)90013-3)

Sturgeon, T. J. (2002). Modular production networks: A new American model of industrial organization. *Industrial and Corporate Change*, 11(3), 451-496.
<http://dx.doi.org/10.1093/icc/11.3.451>

Tenenhaus, M., Esposito Vinzi, V., Chatelin, Y.-M., & Lauro, C. (2005). PLS path modeling. *Computational Statistics & Data Analysis*, 48(1), 159-205.
<http://dx.doi.org/10.1016/j.csda.2004.03.005>

Turban, E., King, D., Lee, J., & Viehland, D. (2004). *Electronic Commerce: A managerial Perspective*. New Jersey: Prentice Hall.

Wade, M., & Hulland, J. (2004). The Resource-Based View and Information Systems Research: Review, Extension, and Suggestions for Future Research. *MIS Quarterly*, 28(1), 107-142.

Werts, C. E., Linn, R. L., & Joreskog, K. G. (1974). Intra class reliability estimates: Testing structural assumptions. *Educational and Psychological Measurement*, 34(1), 25-33.

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