



Mediating effects of business process for international trade industry on the relationship between information capital and company performance



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ABSTRACT

To explore the relationship of information capital and company performance as mediated by business processes, we sought to establish an analytical framework based on knowledge based view for international trade companies to better develop the innovative capacity of holistic thinking processes of domestic trade enterprises. Using structural equation modeling as part of an analytical research framework, we found that information capital can indirectly affect company performance when mediated by business processes, and that information capital is more critical to the trade industry. This finding reveals that adopting and assimilating information systems form an important channel for companies to provide strategic information and use information capital. We highlighted that the improvement of information capital can significantly enhance a company's competitiveness and that, since business processes play key mediating roles, the timely adjustment of such processes can allow information capital to enhance company performance of the international trade industry.

1. Introduction

Globalization has changed the competitive dynamics of companies (Khaliq et al., 2011; Navarro et al., 2010), industries, and nations, and perhaps is most visible in the changing patterns of international trade (Bernard et al., 2012; Wagner, 2012). Due to such changes, international trade currently faces many challenges, including escalating costs and increased pressure to deliver high-quality products and services to customers. International trade can be conceived as an expansive community with broadly related partners and processes, including suppliers, customers, products and services, and logistical supports (Debaere & Mostashari, 2010). The community is primarily connected by information and knowledge sharing (Tanriverdi, 2005), both of which enable firms to effectively achieve their common goal of customer satisfaction (Hsu & Sabherwal, 2012). As such, a large part of the success of international trade stems from the exchange of commercial information and the supply and sale of process integration (Kefela, 2010), which affect how effectively processes are integrated, how customer relationship processes function within and across organizational boundaries, and how well suppliers, customers, enterprise resource planning systems (Malhotra & Temponi, 2010), and the supply chain are analyzed (Flynn et al., 2010; Engel & Wang, 2011).

Essentially, international trade is strongly associated with knowl-

edge-intensive properties (Engel & Wang, 2011), as the business world has experienced a conceptual shift toward information-based organizations in a knowledge-based society (Huysman & Wulf, 2005; Mehralian et al., 2013). Concerning the long-term profits and performance of such organizations in a knowledge-based economy, information capital is a crucial resource (Malhotra & Temponi, 2010; Stoel & Muhana, 2009). As such, research on information-capital-related issues has attracted considerable attention as knowledge displaces natural resources, capital, and labor as basic economic resources (Kruger & Johnson, 2010; Tanriverdi, 2005). Massive investments in information capital are imperative for maintaining competitiveness (Lian et al., 2010), and the value justification of information capital investments is a major management concern. At the same time, per the knowledge-based view maintained by Alguezaui and Filieri (2014), identifying knowledge assets is fundamental to understanding the potential performance of a firm's information capital investments (Melville, Kraemer, & Gurbaxani, 2004). This capital is available to the organization and can also refer to the raw materials of its value creation processes, which help to create and refresh organizational competencies over time (Lian et al., 2010). Research has demonstrated that intermediate business processes mediate the influence of information technology investments on company performance (Lian et al., 2010; Trkman, 2010; Wu & Hu, 2012).

Although information capital and its relationships to performance

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have been studied by many researchers in many areas, earlier studies were fragmented and lacked either an information capital or a business processes perspective, which affects how company performance is studied. Peng et al. (2016) used current and former master level students of Business School as subjects and proved both internal business process and supply chain management capabilities mediate the effect of information technology capability on firm performance. Some studies integrate information capital and business process effects on company performance in factory (Wagner, 2012) and supply chain management area (Flynn et al., 2010). Rare studies were done in the international trade area. Therefore, we specifically aim to understand the mediating effect of business process on information capital and company performance, particularly in the Taiwanese international trade area context.

The performance of Taiwan's export trade industry has ranked among the top 20 worldwide for years (WTO, 2016 press release). However, few studies have investigated the factors of that success. According to Hung (2015), Taiwan is known as a major procurement center for global information communication technology companies and buyers, as well as ranked first in terms of worldwide market share for more than 10 major information communication technology products which suggests that Taiwan's experience can provide useful insights into global trade markets for other countries. Therefore, we adopted and modified the knowledge based view as the base of the research model and aim to understand the mediating effect of business process on information capital and company performance, specifically in the Taiwanese international trade context. The adjustments were based on related literature review and authors' years of industry experience. The research model is validated using empirical data of a sample of Taiwanese firms in the international trade industry.

2. Literature review and hypotheses

According to Wu and Hu (2012), information capital refers to the information technology portfolio of infrastructure and applications that support an organization's strategies. This type of capital should be well planned, organized in terms of priorities (Aral & Weill, 2007), and effectively managed to enhance the capabilities of the internal processes most critical to creating value for organizations (Ramezan, 2011). Oppenheim et al. (2004) have added that information capital also refers to all resources that are or should be documented because they promise future economic benefits. Therefore, information capital is the basic infrastructure of information technology capabilities and strategies of application systems, and can include superior information management manpower that supports organizational advantages (Huysman & Wulfs, 2005). As aforementioned, the international trade industry is strongly associated with knowledge-intensive properties and information capital is a crucial resource for long-term profits and performance in a knowledge-based economy, this study focused on the relationship between information capital and the performance of the trading company.

A business process refers to the specific sequence of work activities required to transform input assets into outputs (Trkman, 2010). A business process describes an organization's competence to create market value by using resources in a unique way, and is composed of an outside-in process, an inside-out process, and a spanning process (Trkman, 2010). An outside-in process is an organization's ability to anticipate market requirements, sense the competitiveness of the industrial environment, create long-term relationships with external stockholders, and respond quickly to market changes (Trkman, 2010; Wu & Hu, 2012). As such, any outside-in process tends to be externally focused and emphasize a company's absorptive and responsive capacities to connect internal processes to the external environment (Wu & Hu, 2012). By contrast, an inside-out process refers to an organization's ability to seek operational excellence in internal processes (Trkman, 2010). Inside-out processes are usually activated by

market requirements, competitive challenges, and external opportunities, and are focused on improvements in the development of technology, product or service innovation, logistics and manufacturing processes, customer service, financial management, cost control, and human resource management (Chang & Wang, 2011). As such, inside-out processes tend to be internally focused and emphasize the improvement of infrastructures and more effective operations that help firms or companies to develop differentiated value propositions and sustain their competitive positions (Trkman, 2010). Lastly, a spanning process is an organization's ability to integrate the outside-in and inside-out processes via internal and external analyses. It enables companies to use valuable strengths, avoid potential weaknesses, exploit market opportunities, and neutralize external threats. Strategy development, enterprise resource planning, inter- and intrafirm collaboration, enterprise-wide information integration, and the strategic alignment of information systems planning are critical activities involved in a company's spanning process (Chang & Wang, 2011; Wu & Hu, 2012). As mentioned above, the success of international trade stems from how effectively processes are integrated, how customer relationship processes function within and across organizational boundaries, and how well suppliers, customers, enterprise resource planning systems, and the supply chain are analyzed (Flynn et al., 2010; Engel & Wang, 2011). Therefore, this study measures the business process using the outside-in, inside-out, and spanning perspectives.

Since performance measures traditionally focus on financial terms such as ROI and sales revenue, they can fail to fully reflect the knowledge-intensive properties of an international trade company. Thus, the integrated performance measurement for a company should not only consider financial measures, but also appropriately reflect the organization's actual performance. Scholars have suggested that the simultaneous use of both financial (e.g., revenue growth, ROI, and profitability) and non-financial dimensions can help to assess comprehensive measurements of operational and marketing performance (Cardinaels and Veen-Dorks, 2010; Salehia & Ghorbanib, 2011; Wagner, 2012). Kaplan and Norton (2001) proposed a performance measurement method dubbed the balanced scorecard, which contains financial and non-financial measures (e.g., process quality, process efficiency, delivery dependability, and inventory reduction) and has been widely applied in many enterprises and organizations. Taiwan's export trading companies have also adopted the concept of the balanced scorecard to avoid having to use lag indicators to evaluate their company performance. However, keeping the balanced scorecard updated and effective requires a great deal of time and resources. In response, scholars have suggested that small- and medium-sized enterprises use part of the balanced scorecard (Basuony, 2014; Giannopoulos, Holt, Khansalar, & Cleanthous, 2013), or the balanced scorecard is not entirely suitable for small- and medium-sized enterprises (Rompho, 2011). According to the *Summary of Trends in International Trade 2016* announced by Bureau of Foreign Trade of Taiwan, as most Taiwanese international traders are mainly operated by small- and medium-sized enterprises, they would choose several key indicators to follow the concept of the balanced scorecard without developing the full set of indicators for all four dimensions of the balanced scorecard. From the authors industry experience, most of the trading company paid more attention to financial and customer services indicators and less on competitiveness innovation, learning and growth, or social and environmental issues. As aforementioned, the concept of the balanced scorecard implies that business processes are important drivers of financial and service performance (Basuony, 2014; Giannopoulos et al., 2013). Therefore, this study measures the company performance from financial and services perspectives.

Kruger and Johnson (2010) have argued that information capital can create future value by way of information communication technology and information management manpower. According to the knowledge-based view (Alguezaui & Filieri, 2014; Martín-de, López-

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