



What makes export manufacturers pursue functional upgrading in an emerging market? A study of Chinese technology new ventures[☆]



Ruey Jer “Bryan” Jean^{*}

National Chengchi University, Taiwan

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ABSTRACT

This study examines unique factors causing emerging market firms to pursue functional upgrading. Our analysis draws on the resource-based view and learning theory, and our study sample consisted of Chinese new technology ventures. We test the effect of governance mechanisms and internal resources on the functional upgrading of firms. The results indicate that trade shows and quality advantage facilitated the functional upgrading of firms. However, contrary to our expectations, electronic markets and technological advancement do not emerge as significant variables. The implications of the results are discussed in consideration of the existing literature, and future research opportunities are described.

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1. Introduction

Globalization has prompted firms to enter the global value chain (GVC) by serving as contracting suppliers for multinational enterprise (MNE) buyers. The majority of suppliers are operating in emerging markets such as China, Vietnam, and India. Profit margins of contract manufacturers conducting original equipment manufacturing, (OEM) services for global buyers have recently been decreasing. For example, Foxconn gained a profit margin of only approximately 2–3% by manufacturing iPhones for Apple Inc. Accordingly, export manufacturers have strived to upgrade and provide high value-added services, such as design and branding, in the GVC (Alcacer & Oxley, 2014). However, industrial upgrading is not an easy task for emerging-market firms, which tend to lack international experience and relevant resources. Furthermore, MNEs may leverage their strong bargaining power to inhibit the upgrading of emerging-market firms, thereby appropriating higher rent in the GVC. The manner in which an emerging-market firm achieves industrial upgrading and develops its innovative capability to capture value in the GVC is thus critical for that firm's success. This is particularly salient for Chinese firms because of their traditional “world factory” position in the global supply

chain. Because labor and production costs in China have recently increased, determining how Chinese firms can become more innovative and upgrade their capabilities to appropriate more value in the GVC has become a critical subject.

International business studies have investigated the internationalization of emerging-market firms, particularly Chinese firms (e.g., Deng, 2012). A recent review indicates that most previous studies have focused on patterns and process of Chinese firms' internationalization such as location and entry modes choice (Deng, 2012). However, few studies have addressed factors influencing the upgrading of Chinese firms such as the transformation of value-added activities through integration with the GVC. Previous studies (Deng, 2012; Yamakawa, Peng, & Deeds, 2008) have revealed that Chinese firms have unique characteristics for participation in the global market. Extending this perspective, we assert that the upgrading and catch-up strategies that Chinese firms use to gain value in the GVC also have unique characteristics and warrant further examination.

The GVC literature contains reports on topics related to the GVC and industrial upgrading (Gereffi, 1999; Gereffi, Humphrey, Kaplinsky, & Sturgeon, 2001). Governance has been a central topic for GVC scholars. According to transaction cost theory, governance mechanisms are particular mechanisms that support economic transactions in exchange relationships (Heide, 1994; Williamson, 1975). The GVC literature extends this notion and defines GVC governance as comprising elements for establishing and structuring exchange relationships between global buyers (lead firms) and local supplying firms. Various forms of governance mechanism, such as the arm's-length market, quasi-integration,

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^{*} Correspondence to: Department of International Business, National Chengchi University, Taiwan. Tel.: +886 2 29393091x81224; fax: +886 2 2938 7699.

E-mail address: bryan@nccu.edu.tw

and hierarchical governance mechanisms employed by lead firms in the GVC, have been discussed in previous studies (Humphrey & Schmitz, 2000). Gereffi, Humphrey, and Sturgeon (2005) analyze the factors driving various governance mechanisms, including transaction complexity, information complexity, and supplier capabilities. In addition, research has addressed various types of upgrading, such as product, process, functional, and intersectoral upgrading (Giuliani, Pietrobelli, & Rabellotti, 2005). Despite this interest in governance in the GVC and upgrading, empirical work is limited on this issue. Although the relationship between governance mechanisms and upgrading in the GVC has been discussed, the exact effects of various governance mechanisms on upgrading continue to be debated. Humphrey and Schmitz (2002) argued that a quasi-hierarchical chain offers favorable conditions for process and product upgrading, but hinders functional upgrading. By contrast, chains characterized by arm's-length market relationships tend to be associated with slow upgrading of processes and products, whereas functional upgrading is more feasible. However, the various arguments presented in the literature are not supported by sufficient empirical evidence.

Another substantial gap in the GVC literature is the negligence of the firm capabilities perspective to upgrading in the GVC. Morrison, Pietrobelli, and Rabellotti (2008, p. 52) stated that "future studies should explore vertical dimensions of technological capabilities (i.e., different levels of complexity of capabilities) in the GVC and upgrading". Again, the limited empirical evidence provides inconsistent support for the relationship between technological capability and the competitiveness of a firm. In a study of the Indian automobile industry, Kumaraswamy, Mudambi, Saranga, and Tripathy (2012) observe that research and development (R&D) is not associated with the tendency to upgrade. The institutional environment and national innovation systems may influence the development of technological capability (Lall, 1992; Pietrobelli & Rabellotti, 2011). In China, dysfunctional modes of competition have resulted in a situation in which the legal infrastructure (such as laws protecting intellectual property) does not provide a sound environment for innovation. In such circumstances, firms encounter difficulty in transforming their R&D input into innovative upgrading processes. This tendency is reflected in the national innovation data. For example, despite China's considerable investment in R&D, the innovation output measured according to patents granted by the U.S. Patent and Trademark Office has shown little progress (Altenburg, Schmitz, & Stamm, 2008). Hence, the literature contains much debate on "whether and how China [is] progressing from production to innovation" (Altenburg et al., 2008).

Considering the gaps in the literature on upgrading in the GVC, this study examines the key factors driving firms' pursuit of functional upgrades. Our research question is, "How can firms enhance their functional upgrading by participating in the GVC?" Specifically, we query, "How do governance mechanisms and internal capabilities for development jointly contribute to a firm upgrading in the GVC?" We focus on a particular form of functional upgrading, namely the transformation and shifting of emerging-market firms from OEM firms to original design manufacturing (ODM) firms. The OEM model is typically used by technological firms participating in the GVC. In the OEM model, a contracting supplier produces finished products according to the precise specifications of foreign lead firms. By contrast, the ODM model involves designing products and their specifications, and manufacturing these products for lead firms. In the ODM model, suppliers add value through product engineering, designing for manufacture, and product design. Hence, ODM provides a model for functional upgrading in which suppliers play a more innovative role in completing tasks for their lead firms than they do in the OEM model. Compared with OEM, ODM has been considered a

more profitable value-adding business service for contracting suppliers who can capture additional rent in value chains. For example, in the personal computer industry, Taiwanese suppliers have upgraded their statuses as contract manufacturers and currently engage in numerous innovative value-added activities in value chains, such as product design and component design.

Considering firms' internal capabilities that contribute to the functional upgrading of emerging market firms, we focus on technology advancement and quality advantages. Emerging markets have strived to improve their product quality and invest substantially in R&D to upgrade and catch up with their global rivals. Hence, we focused on these two dimensions of internal capabilities as antecedents of functional upgrading.

This study provides several contributions. First, drawing on the resource-based view (RBV) (Barney, 1991) and organizational learning literature (Salomon & Jin, 2008, 2010), we integrate the internal and external factors that influence whether emerging-market firms become ODMs. We focus on the governance mechanism as an external factor and on firms' technological and quality capabilities as internal factors. Specifically, we investigate relational and market governance mechanisms, namely export trade shows and electronic markets, as external factors that cause firms to help new Chinese ventures upgrade to ODM firms. Previous studies have generally discussed the relationship between quasi-hierarchical governance and upgrading, and have provided limited empirical evidence on relational (network) governance and arm's-length market governance, or on the use of trade shows and electronic markets as knowledge spillover channels that contribute to upgrading. This study examines unique characteristics of Chinese firms' leverage of electronic markets and trade shows as governance mechanisms which impact on functional upgrading. This study also examines firms' quality advantage and technological advancement as two dimensions of technological capacity (TC; Lall, 1992) related to functional upgrades. Our study integrated the external GVC and the internal TC perspectives, thus responding to the call for greater theoretical integration between the GVC and studies on upgrading (Morrison et al., 2008). Recent studies have emphasized that a comprehensive framework integrating governance perspectives and the TC of firms must be established to facilitate the analysis of upgrading in the GVC (Morrison et al., 2008). Furthermore, empirical evidence on the manner in which emerging-market firms develop their international competitiveness and achieve industrial upgrading is scarce, but is beginning to accumulate (Kumaraswamy et al., 2012). This study uses new technology ventures in China as the subjects of data collection; thus, our results offer empirical evidence on the internationalization of new ventures in emerging markets. The study context enabled us to enrich the literature by examining the influence of external and internal factors on firms' upgrading in an emerging market context. Emerging-market firms, as latecomers, typically encounter obstacles that limit innovation.

This article is organized as follows. The literature on the GVC and the upgrading of firms is reviewed to provide theoretical support for the links between constructs. In a subsequent section, we discuss our predictions for the relationships amongst external factors, internal capabilities, and firms' functional upgrading. These hypotheses are tested empirically, and we present our research results. The paper concludes with a discussion of the findings and recommendations for future research.

2. Literature review and hypotheses

2.1. GVC upgrading

The term "GVC" refers to the sequence of functional activities required in the process of value creation involving more than one

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