Business Model and Innovation Mix in transition: Evidence from Taiwanese Contract Manufacturers

The successful transition of Taiwanese contract manufacturers is a critical case of business model innovation for the latecomers in emerging Asia. From original equipment manufacturers (OEM) to original brand manufacturers (OBM), the latecomers engage in different innovation practices to coordinate with the transition of value proposition on specific manufacturing business models. According to the second and third Taiwanese industrial innovation surveys, we attempt to depict the innovation practices under different business models as well as the changes in the transition. The results indicate that OEM latecomers have lower engagement in all kinds of innovation practices. Still, original design manufacturers (ODM) and OBM ones actively engage in technological, marketing, and organizational innovation, which follows the value proposition in the market. In the transition of the business model, OEM latecomers have more organizational changes as the preparatory for radical changes on all kinds of innovation practices. Moreover, new ODM entrants would have a stiff challenge in enhancing product innovation and market promotion. Furthermore, new OBM entrants would pay more effort to organizational adjustment and the expansion of marketing practices. The paper concludes that a business model innovation comprises the mix of innovation in production and organizational works to follow the value proposition, and the business model transition is that the firms would pay the efforts to adjust the innovation mix into the new value proposition. Some managerial implications are suggested.

Keywords: Business model transition; Innovation practices; Manufacturing firms; OBM; ODM; OEM

# Introduction

In recent, the transformation of contract manufacturers has become a prevalent issue in emerging countries. By the increase of experience in contracted manufacturing, these manufacturers had accumulated sufficient technological capabilities for in-house R&D to catch up with their customers in the market. It also stimulates the firms to move up to both upstream and downstream of the value chains for pursuing firm growth. The pathway of OEM-ODM-OBM has become a role model for the contract manufacturers to transit their business models, which had many success stories from Taiwan (Chu 2009; Kuo and Minshall 2010; Hobday 1998), Korea (Lee, Song, and Kwak 2015; Hobday 1998), and China (Wan 2015; Zhu, Zhang, and Lin 2017). However, contract manufacturers face substantial challenges not only in the competence building and leveraging but also value proposition reinventing in the existing market when they transited the business model (Johnson, Christensen, and Kagermann 2008; Teece 2010; Amit and Zott 2012).

In the manufacturing sectors, vertical specialization increasingly dominated world trade to encourage the firms to take a specific role in the value chains of the global production network (Hummels, Ishii, and Yi 2001; Hummels, Rapoport, and Yi 1998). Therefore, vertical specialization gives them opportunities that contract manufacturers in late-coming countries develop a specific business model to participate in the competition on the existing market (Jacobides, MacDuffie, and Tae 2016). By the value proposition of the business model, contract manufacturers develop their business activities to create added values on the production network from R&D, manufacturing, and marketing works (Feng-Hsu, Heng-Yih, and Ting-Ling 2008; Jacobides, MacDuffie, and Tae 2016). For sustaining the advantage in the production network, contract manufacturers rely upon keeping create sufficient added values in the existing market through the engagement of different innovation practices under their business model, such as product innovation, process innovation, and marketing innovation (Kuo and Minshall 2010; Chu 2009; Hobday 1998; Matthyssens, Vandenbempt, and Weyns 2009). Furthermore, contract manufacturers also need to engage in active organizational management to run the business model for coordinating internal business activities as well as external relationships with the customers, vendors, and suppliers (Carayannis, Sindakis, and Walter 2015; Wang and Chen 2020; Zott and Amit 2010).

By the growth of contract manufacturing, contract manufacturers have a strong desire to upgrade their business for catching more market value from the existing market (Hobday 1998). With the reposition of value proposition in the production network, contract manufacturers have to reconfigure their innovation practices when they are transiting the business model (Matthyssens, Vandenbempt, and Weyns 2009; Kuo and Minshall 2010; Wang and Wu 2012). Therefore, to understand the configuration of innovation practices in the business models of OEM, ODM, OBM could provide practical instructions to guide the reinventing of the business model of contract manufacturers. Furthermore, examining the reconfiguration of innovation practices in the transition also could give suggestions to new entrants for catching up on the new business model.

This study focuses on Taiwanese manufacturing sectors as the subject since Taiwan is a typical latecomer to develop the business of contracted manufacturing and lots of Taiwanese manufacturers have developed the well-run business model in OEM, ODM, and OBM through the transition of business models (Chu 2009; Kuo and Minshall 2010; Hobday 1998). Through a large scale of the survey in Taiwan manufacturing sectors, we provide detailed observation on the innovation practices under the models of OEM, ODM, OBM. Furthermore, we also examine the reconfiguration of innovation practices in the transition. In the next section, this paper would like to discuss the business model innovation in the manufacturing sectors and the mix of innovation practices on the models in OEM, ODM, and OBM. In the methodology, it would provide more information on data collection, variables compilation, and analytical method. In the results, the paper would show a comprehensive Taiwanese case in the business model transition for contract manufacturers. In the final, we would discuss the findings with the prior studies and provide an insightful conclusion and the implications for research and the practices.

# Business model innovation in manufacturing sectors: Contract Manufacturing in OEM, ODM, OBM

By the vertical specialization of the global production network, the business of contract manufacturing has become a new opportunity for latecomers in the existing market (Hummels, Ishii, and Yi 2001; Hummels, Rapoport, and Yi 1998). The new business opportunity triggers business model innovation in manufacturing sectors, in which the works of the value chains cut into specific but interconnected business models to the firms (Matthyssens, Vandenbempt, and Weyns 2009; Hobday 1998). The business model describes the way of firms to do the business, which is consist of value proposition, business activities, and organizational management (Amit and Zott 2012; Zott and Amit 2010). Contract manufacturing encourages and re-assigns the new business models in manufacturing production works into the original equipment manufacturing (OEM), the original design manufacturing (ODM), and the own-brand manufacturing (OBM). OEM firms refer that the latecomers produce finished goods on precise specifications which subcontracted by the designers or brand companies (Chin, Liu, and Yang 2016; Hobday 1998). ODM firms apply that latecomers develop or co-develop for the outsourcers and provide the finished goods which the brand outsourcers sold (Hobday 1998; Bijarboneh 2015). OBM firms refer that the latecomers design, produce, and sell the finished goods in their own-rand name as new entrants in the existing market (Luo 2011; Kuo and Minshall 2010). These business models have defined the general operation of latecomers as a specialized manufacturer in the production network of the value chains.

On the value proposition for the customers, OEM latecomers posit their value on providing the contracted manufacturing with the advantage of cost, speed, and reliability (Chin, Liu, and Yang 2016; Jacobides, MacDuffie, and Tae 2016). ODM latecomers provide customized product development and contract manufacturing with the coordination of the marketing strategy to brand subcontractors (Bijarboneh 2015; Lee, Song, and Kwak 2015). OBM latecomers sell innovative products to promote the utilization of customers (Chu 2009; Feng-Hsu, Heng-Yih, and Ting-Ling 2008). On the business activities, the latecomers configure their works through the position of production works on the value chains, including R&D, manufacturing, marketing works (Chu 2009; Manzakoğlu and Er 2018). Besides, for sustaining the competitive advantage in their business, the latecomers would engage different activities of value creation in production works. In R&D works, the engagement of product innovation enhances that the latecomers introduce a new product into the market (Huang, Chung, and Lin 2009; Wang and Wu 2012). In manufacturing works, the latecomers invest in process innovation to support the production of new products (Snihur and Wiklund 2019). In marketing works, latecomers promote sales in the market through innovative marketing strategies (Eng and Spickett-Jones 2009; Matthyssens, Vandenbempt, and Weyns 2009). For OEM latecomers, they focus on the manufacturing works to meet the request of outsourcers on cost, speed, and reliability, which they need a stable and incremental improvement (Chin, Liu, and Yang 2016; Bijarboneh 2015). In other words, the innovation in the process of manufacturing would be the core in the business activities of OEM firms (Forbes and Wield 2008; Hobday, Rush, and Bessant 2004). For ODM latecomers, they mainly engage in R&D and manufacturing works to provide contract designing and manufacturing for brand outsourcers. The interconnection of product innovation and process innovation promotes the technological capabilities of ODM firms to help their customers provide innovative products in the market (Tiong et al. 2010; Wang and Wu 2012; Hobday, Rush, and Bessant 2004). For OBM latecomers, the new entrant of the existing market, they do not want only to expand their marketing innovation to compete with the incumbent firms but also to strengthen product innovation and process innovation to gain the advantage of products in technological development and manufacturing (Eng 2009; Chu 2009).

In the business model of a firm, organizational management plays a coordination role to moderate the business activities and the firm’s performance (Wang and Chen 2020; Carayannis, Sindakis, and Walter 2015; Teece 2010). In the internal, the lines of managerial authority and organizational structures determine the organizational efficiency and the reaction to the changes in business activities (Taran, Boer, and Lindgren 2015; Teece 2010). In the external, partnership in contract manufacturing has dominated the interconnection with specific suppliers in the value chain to aggregate the value creation to promote the customer’s value in the market (Eng and Spickett-Jones 2009; Sánchez and Ricart 2010). In the internal of organizational management, latecomers would follow their core business as the rules of organizational management. OEM latecomers would adapt the structures to follow manufacturing processes, and it would promote the efficiency of production (Chen 2016). ODM latecomers would combine product and manufacturing line in organizational management to enhance the contract product development (Ma 2005; Yung and Lai 2012). OBM latecomers would restructure to product-market organizational management, and it is beneficial to respond to the needs of the customers quickly (Eng and Spickett-Jones 2009; Eng 2009). In the external of organizational management, the partnership in outsourcing contracts is the core of external relationship management on contract manufacturing. OEM latecomers need a stable and long-term relationship with the suppliers of components to support manufacturing activities (Jacobides, MacDuffie, and Tae 2016; Szalkai and Magyar 2017). ODM latecomers may need to manage the relationships with module partners, OEM partners, and suppliers, and adjust the outsourcing by the request of contract product development (Yung and Lai 2012). OBM latecomers would transform the role from a subcontractor to an outsourcer, which strategically outsources the production works to external partners (Chin, Liu, and Yang 2016; Chu 2009).

Table. 1 Business models and innovation mix in contract manufacturers: OEM, ODM, and OBM

|  |  |  |  |
| --- | --- | --- | --- |
|  | OEM | ODM | OBM |
| 1.Value proposition | Contract manufacturing with the advantage of cost, speed, and reliability | Customized product development and contract manufacturing | Selling innovative products to promote the value of customers |
| 2.Core business activities |  |  |  |
| R&D | Outsourcer | ODM | Optional |
| Manufacturing | OEM | ODM | Optional |
| Marketing | Outsourcer | ODM, Outsourcer | OBM |
| 3. Engagement of innovation practices |  |  |  |
| Product innovation | Low | High | High |
| Process innovation | High | High | Depend on the needs for product innovation |
| Marketing innovation | Low | Demand on outsourcing business | High |
| 4. Organizational management |  |  |  |
| Internal structure | Structuring follow the manufacturing processes | Structuring follow the product development | Structuring follow the product -market segments |
| External partnership | Suppliers, Module partners | Suppliers, OEM partners, and Module partners | Suppliers, OEM, ODM partners, and Module partners, vendors |

According to the summary of business models in contract manufacturing in Table 1, the three models of contract manufacturers demonstrate different configurations to do the business in the existing market. When latecomers want to upgrade their business model, they will face many challenges in the transition of the business model as same as most of the incumbent firms would encounter. Chesbrough (2010) considers that incumbent firms may encounter the tension between the configuration of the existing business model and the reconfiguration of the new business model. Teece (2010) argues that the incumbent firms have to recognize business activities in the value chains and implement the innovation practices in business activities to create new competitive advantage in the existing market when they re-design their business model. Koen, Bertels, and Elsum (2011) think that incumbent firms have to organize a new value network to interconnect between the value creation of internal business activities and the works of the upstream and downstream of partners when they seek a new business model in the existing market for growth. Euchner and Ganguly (2014) mention that incumbent firms should redefine the value proposition to leads them to shift business activities for new value creation. Carayannis, Sindakis, and Walter (2015) indicate that incumbent firms should have an active internal organizational management to incorporate with business activities for sustaining the innovation practices in the market. Furthermore, dynamic governance of external partnerships to enrich the firm's performance for implementing new business opportunities when they intend to transit their business model. Above all, if a contract manufacturer wants to upgrade its business model, it needs a clear pattern of the model to reconfigure their business activities followed the reposition of the value proposition. Also, competence building and leveraging through the reconfiguration of innovation practices would enhance the organizational sustainability in the market to catch up on the new business model and compete with other incumbent competitors.

# Empirical examination in Taiwanese Manufacturing Sectors

## Manufacturing sectors in Taiwan

In the investigation of contract manufacturing in Taiwan, this paper summarizes the data about the manufacturing sectors in Table 2 from Industry and Service Census in Taiwan, which surveys every five years (DGBAS 2008, 2013, 2019). From 2006 to 2016, The size of Taiwanese manufacturing sectors increased from 147,908 to 161,334 firms. The OBM firms had substantial growth from 8,878 firms in 2006 to 13,797 firms in 2011. It indicated it is a critical period in the five years which many firms transited their business model into OBM. On the production of manufacturing sectors, the total sales of goods also have a steady growth from 18,412 NT billion in 2006 to 25,175 NT billion in 2011. It has almost 24 % of total sales from new products. On the development of OBM business, the share of OBM sales in the overall sales is more than 22%, and it indicated OBM firms have less 10% share of the total firms, but their revenue may be more than other non-OBM firms. Furthermore, offshore sales in OBM firms have been increasing from 2,076 NT billion in 2006 to 3,580 NT billion in 2011, and it indicated that OBM firms in Taiwan have a steady growth in the foreign market.

Table. 2 The development of Taiwanese manufacturing sectors and OBM business.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Firms (N) | OBM firms  (N) | | Sale of Goods  (NT/Billions) | Sale of New Products  (NT/Billions) | | Goods Sale of OBM  (NT/Billions) | | Offshore Goods Sale of OBM  (NT/Billions) | |
| 2016 | 161,334 | 14,999 | 9.3% | 24,626 | 5,807 | 23.6% | 5,992 | 24.3% | 3,080 | 51.4% |
| 2011 | 157,284 | 13,797 | 8.8% | 25,175 | 6,125 | 24.3% | 7,175 | 28.5% | 3,580 | 49.9% |
| 2006 | 147,908 | 8,878 | 6.0% | 18,412 | - | - | 4,366 | 23.7% | 2,076 | 47.5% |
| Data Source: DGBAS (2008, 2013, 2019) | | | | | | | | | | |

## Data collection

This study would provide the investigation on the configuration of innovation practices in OEM, ODM, OBM models as well as the examination of the reconfiguration of contract manufacturers in business model transition. We employ a large-scale survey in the industries of Taiwan conducted by the Ministry of Science and Technology, Taiwanese Industrial Innovation Survey (TIS), as like the Community Innovation Survey (CIS) in Europe. On the data collection, we collected the data from the second survey in 2004-2006 (TIS2) and the third survey in 2007-2010 (TIS3) (Wu 2009, 2013). After removing the respondents from non-manufacturing firms, there are 3,944 valid questionnaires in TIS2 and 3,838 ones in TIS3. Moreover, 1,319 manufacturing firms have listed the surveys both in TIS2 and TIS3. Furthermore, we identified the business models of the firms, and there are 427 OEM firms, 543 ODM firms, 562 OBM firms in TIS2. There are 699 OEM firms, 816 ODM firms, 1,223 OBM firms in TIS3.

## Variables compilation

On the compilation of variables, it compilated separately from TIS2 and TIS3. All variables in the studies are nominal or dummy variables. For the engagement of innovation practices, we compile *Product Innovation* and *Process Innovation*, which concerns these firms have engaged in new product development and reinventing the manufacturing process. On the marketing innovation, we gather *Product Design*, *Channel Distribution*, and *Marketing Promotion* to the inquiry that the firms have engaged in the changes of marketing strategies on product design, marketing channels, and promotion in the market for selling the products to the customers. On the organizational innovation, we compile two variables for the internal changes of the firms, *Authority Realignment* and *Organization Restructuring*, which investigate the revisions on the managerial authority and organizational structure of the firms. Besides, we also compile a variable, *Outsourcing Re-assignment*, which examines the change of the firms on the external outsourcing relationship with the suppliers and the customers.

For the business models of contract manufacturing, we compile a sole model to the firms by *OEM*, *ODM*, and *OBM*. On the transition of the business model, we only gather the variables from the 1,319 firms, which both listed in TIS2 and TIS3. On the upgrade of OEM firms, we compile *OEM transition* in TIS2, which 1 means that the business model of firms is OEM in TIS2, but non-OEM in TIS3 and 0 indicate that the other firms stay at OEM in TIS2, and we skip all non-OEM firms. Following the prior logic, we compile the *ODM transition* in TIS2 as the upgrade of ODM firms. After upgrading the business model, we organize *ODM Entrant* in TIS3, which 1 means that the business model of the firms is ODM in TIS3, but OEM in TIS2 and 0 represents other ODM firms in TIS3, and we skip all non-ODM firms. As before, we compile *OBM Entrant* in TIS3 for the upgraded OEM and ODM firms.

On the control, we control the characteristics of the firms as the factors to the engagement of innovation practices. The industrial affiliation of *Hitech*, which compiled with the industrial code of the firms associated with the two-digital code of the Hi-tech industry in 20, 26, and 27, and 1 means the firm is a Hi-tech firm. The size of firms is compiled by *SME*, which 1 means that the firms have more than 200 people. The geography of the market of the firms is organized with the *Domestic*, which 1 means that the firms have no sale in other countries. The primary client of the firm is compiled with the *B2C*, which 1 means that the primary client of the firm is the end-user.

## Analytical model

There are two critical investigations in this paper. Firstly, we want to investigate the configuration of innovation practices under the OEM, ODM, and OBM models. We have two datasets, TIS2 and TIS3 could be employed to measure. We use the independent sample test to examine the differences in innovation practices in TIS2 and TIS3. The results indicated that TIS2 and TIS3 are the two independent sample in product innovation (t=4.381, p<0.001), process innovation (t=-3.025, p<0.01), product design (t=-.248), channel distribution (t=5.199, p<0.001), marketing promotion (t=.415), authority realignment (t=-9.707, p<0.001), organization restructuring (t=-7.825, p<0.001), and outsourcing re-assignment (t=-6.113, p<0.001). Therefore, we consider the business development of contract manufacturing in Taiwan, and we decide to employ the data of TIS3 as the observation. Then, we use logistic regression to investigate the configuration of innovation practices of the firms under the models of OEM, ODM, and OBM.

Secondly, we want to examine the reconfiguration in the business model upgrading. To observe the changes in the transition, we concentrate on 1,319 firms which both listed in TIS2 and TI3. For examining the changes before the transition, we cut the TIS2 data into the sub-datasets of OEM firms and ODM firms. We employ the models of logistic regression in which OEM transition and ODM transition are the independent variables that may influence the innovation practices of the firms. Following the same logic on the examination in the changes after the transition, we cut the TIS3 data into the sub-datasets of ODM firms and OBM firms and employ the logistic regression to analyze which ODM entrant and OBM entrant are the independent variables. For post hoc analysis, we employ ANOVA to validate the results.

# Results

## Descriptive statistics

On the general structure of manufacturing sectors in Taiwan, Hi-tech firms share one-fifth to one-fourth of total firms during 2004-2011, and SME dominates the form of manufacturers by 89% in TIS2 and 74% in TIS3 firms. The decrease in the percentage of the domestic market from 0.48 in TIS2 to 0.31 in TIS3 indicates that the export of manufacturing goods has significant shares of the manufacturing business. Low rates on B2C (0.25 in TIS2 and 0.21 inTIS3) suggest that most of the manufacturers sell their products to other business customers. On the development of contract manufacturing, from the two surveys, the total shares of OEM and ODM firms, 25% in TIS2, and 42% in TIS3 indicate contract manufacturing is the general business model and is increasing in manufacturing sectors of Taiwan. The OBM firms are growing in 2006-2010 from 14% in TIS2 to 34% in TIS3 as consistent as the statistics in the Industry and Service Census in Taiwan.

Table. 3 Descriptive statistics.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | TIS2 | | TIS3 | |
| Frequency | Mean | Frequency | Mean |
| *Hitech* | 789 | .20 | 1,082 | .28 |
| *SME* | 3,046 | .89 | 2,829 | .74 |
| *Domestic* | 1,881 | .48 | 1,177 | .31 |
| *B2C* | 993 | .25 | 814 | .21 |
| *OEM* | 427 | .11 | 753 | .20 |
| *ODM* | 543 | .14 | 851 | .22 |
| *OBM* | 562 | .14 | 1,313 | .34 |
| *Product Innovation* | 977 | .25 | 704 | .21 |
| *Process Innovation* | 884 | .22 | 870 | .25 |
| *Product Design* | 629 | .16 | 620 | .16 |
| *Channel Distribution* | 600 | .15 | 431 | .11 |
| *Marketing Promotion* | 385 | .10 | 364 | .09 |
| *Authority Realignment* | 707 | .18 | 1,039 | .27 |
| *Organization Restructuring* | 715 | .18 | 976 | .25 |
| *Outsourcing Re-assignment* | 457 | .12 | 629 | .16 |
| *OEM Transition* | 73 | .17 |  |  |
| *ODM Transition* | 27 | .05 |  |  |
| *ODM Entrant* |  |  | 46 | .05 |
| *OBM Entrant* |  |  | 54 | .04 |

## The configuration of innovation practices in OEM, ODM, and OEM Models

On the innovation practices in manufacturing sectors, product innovation (0.25 in TIS2 and 0.21 in TIS3) and process innovation (0.22 in TIS2 and 0.25 in TIS3) have more manufacturers to engage. In the marketing innovation, product design (0.16 in TIS2 and TIS3) is a significant activity associated with the market for manufacturing firms. On the organizational innovation by business development, the frequency of internal changes is more than the adjustment of external partnership. The engagement in organizational changes has been increasing during 2006-2010, such as the increase of Authority Realignment from 0.18 in TIS2 to 0.27 in TIS3, the rise of Organization Restructuring from 0.18 in TIS2 to 0.25 in TIS3, and the increase of Outsourcing Re-assignment from 0.12 in TIS2 to 0.16 in TIS3. On the transition of a contract manufacturer, OEM firms (0.17 in OEM firms of TIS2) seem to have more motivation to upgrade their business model more than ODM firms (0.05 in ODM firms of TIS2). However, not all of OEM firms would upgrade their business to OBM (0.04 in OBM firms of TIS3), and ODM (0.05 in ODM firms of TIS3) is the first choice to the transition of OEM firms. It also proves that the OEM-ODM-OBM path may be an essential model for the upgrading of the business model for contracted manufacturers.

For investigating the business configuration on the innovation practices in contract manufacturing, this study defines the three specific models by OEM, ODM, and OBM for contracted manufacturers, and employ the logistic regression to examine the influence of these business model on the innovation practices of the firms (Table 4). For OEM contracted manufacturers, it indicates no significant engagement in the product innovation (β=-.233), process innovation(β=-.049), and marketing innovation (*Product Design*, β=.322; *Channel Distribution*, β=.099; *Marketing Promotion*, β=-.128, p<0.001). On the changes in organizational management, OEM firms may have a significant engagement in a corporate restructuring (β=.318, p<0.05). According to post hoc analysis by ANOVA (Table 5), it also confirms that OEM firms have low engagement in all innovation practices in their business activities. For ODM contract manufacturers, they aggressively engage in product innovation (β=.351, p<0.01) and process innovation (β=.553, p<0.001) and also have significant engagement in marketing innovation (*Product Design*, β=1.030, p<0.001; *Channel Distribution*, β=.693, p<0.001; *Marketing Promotion*, β=.829, p<0.001). Facing the high degree of engagement in the innovation practices on production works, ODM firms have significant changes in organizational management by managerial authority (β=.219, p<0.10), organizational structure (β=.649, p<0.001), and outsourcing partnership (β=.819, p<0.001).

Table. 4 Engagement of innovation practices by OEM, ODM, and OBM firms.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| Hitech | .271\*\*\* (.094) | -.131 (.091) | -.151 (.103) | .029 (.116) | -.273\* (.133) | -.014 (.084) | .640\*\*\* (.083) | -.428\*\*\* (.106) |
| SME | -.598\*\*\* (.094) | -.385\*\*\* (.090) | .022 (.104) | .164 (.120) | -.621\*\*\* (.121) | -.502\*\*\* (.084) | -.603\*\*\* (.085) | -.310\*\* (.099) |
| Domestic | -1.168\*\*\* (.135) | -1.234\*\*\* (.119) | -.646\*\*\* (.115) | -.804\*\*\* (.139) | -.939\*\*\* (.138) | -1.046\*\*\* (.100) | -1.184\*\*\* (.107) | -1.469\*\*\* (.143) |
| B2C | .086 (.113) | .134 (.104) | .648\*\*\* (.106) | .017 (.133) | .715\*\*\* (.133) | -.058 (.097) | .181+ (.098) | .252\* (.113) |
| OEM | -.233 (.155) | -.049 (.137) | .322 (.179) | .099 (.191) | -.128\*\*\* (.372) | -.077 (.128) | .318\* (.127) | -.020 (.169) |
| ODM | .351\*\* (.135) | .553\*\*\* (.122) | 1.030\*\*\* (.158) | .693\*\*\* (.167) | .829\*\*\* (.199) | .219+ (.117) | .649\*\*\* (.118) | .819\*\*\* (.141) |
| OBM | .447\*\*\* (.124) | .249\* (.116) | 1.423\*\*\* (.143) | .771\*\*\* (.154) | 1.430\*\*\* (.176) | .699\*\*\* (.103) | .291\*\* (.110) | .708\*\*\* (.132) |
| Pseudo R2 | .069 | .057 | .066 | .034 | .125 | .069 | .087 | .080 |
| LR chi2 | 238.56\*\*\* | 221.65\*\*\* | 224.46\*\*\* | 90.53\*\*\* | 300.69 | 309.60\*\*\* | 376.41\*\*\* | 275.11\*\*\* |
| Freedom | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Log-  likelihood | -1,622.221 | -1,828.664 | -1,583.005 | -1,302.760 | -1,053.042 | -2,085.836 | -1,987.391 | -1,572.439 |
| N | 3,432 | 3,420 | 3,836 | 3,836 | 3,836 | 3,836 | 3,836 | 3,836 |
| Note: Computed in TIS3 by logistic regression, coefficient and S.E. are shown, and significant level at +p<0.10, \*p<0.05, \*\*p,0.01, and \*\*\*,p<0.001 | | | | | | | | |

OBM manufacturers also have significant positive engagement in the innovation practices of all production works, such as product innovation (β=.447, p<0.001), process innovation (β=.249, p<0.05), and marketing innovation (*Product Design*, β=1.423, p<0.001; *Channel Distribution*, β=.771, p<0.001; *Marketing Promotion*, β=1.430, p<0.001). Moreover, they have high frequency to adjust their organizational management in managerial authority (β=.699, p<0.001), organizational structure (β=.291, p<0.01), and management of outsourcing partnership (β=.708, p<0.001).

In Table 5, the ANOVA test on innovation practices by business models also confirms that ODM and OBM firms have significant engagement in all innovation practices. However, it still has a difference in the configuration of innovation practices between ODM and OBM manufacturers. It indicates that ODM firms have more engagement in process innovation and organization restructuring, but they have equivalent involvement in product innovation, marketing channels, and outsourcing management. Moreover, OBM firms have more engagement in marketing strategies, and they have aggressive adjustments on managerial authority to support their business activities.

Table. 5 ANOVA Table for variation in the engagement of innovation practices for OEM, ODM, and OBM firms.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BM | N | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| OEM | 699 | 0.130 | 0.190 | 0.094 | 0.077 | 0.012 | 0.189 | 0.234 | 0.097 |
| ODM | 816 | 0.234 | 0.328 | 0.179 | 0.139 | 0.100 | 0.269 | 0.328 | 0.223 |
| OBM | 1,223 | 0.249 | 0.265 | 0.251 | 0.147 | 0.173 | 0.367 | 0.264 | 0.208 |
| F | | 20.188\*\*\* | 18.688\*\*\* | 39.537\*\*\* | 11.483\*\*\* | 66.773\*\*\* | 39.434\*\*\* | 9.673\*\*\* | 26.343\*\*\* |
| Note: Computed in TIS3, \*p<0.05, \*\*p,0.01, and \*\*\*, p<0.001 | | | | | | | | | |

## The reconfiguration of innovation practices before the upgrade of the business model in contract manufacturers

As we know, the upgrade of contract manufacturing would redefine their way of business, and it has many different organizational configurations on the business activities between old and new business models. When the firms have a plan to reinvent their business model, they need good preparatory to lead the transition of the business model. Therefore, this paper examines the reconfiguration of innovation practices before the upgrade of the business model in contract manufacturers. At first, we consider the changes in the configuration of OEM firms between prepare-to-upgrade and stay-quo ones. In Table 6, the results indicate that there are no significant changes of the innovation practices on production works before the upgrade of OEM firms in product innovation (β=-.120), process innovation(β=.445), and marketing innovation (*Product Design*, β=.020; *Channel Distribution*, β=.251; *Marketing Promotion*, β=-.272) as same as the results of ANOVA test in Table 7. Although it only indicates a significant engagement in the change of managerial authority (β=.893, p<0.01) in Table 6, we find OEM firms have more possibilities to change their organizational management (*Authority Realignment*, F=10.208, p<0.01; *Organization Restructuring*, F=0.524, p<0.05; *Outsourcing Re-assignment*, F=5.581, p<0.05) before they upgrade their business model which shown in Table 6.

Table. 6 Reconfiguration of innovation practices by OEM firms before the transition.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| Hitech | -.041 (.308) | .284 (.300) | .670\* (.313) | .349 (.326) | .437 (.371) | .534+ (.309) | .691\* (.303) | .254 (.389) |
| SME | -.077 (.308) | -.409 (.297) | -.445 (.315) | -.391 (.326) | -.299 (.376) | -.147 (.310) | -.529+ (.303) | .059 (.395) |
| Domestic | -.139 (.323) | -.343 (.323) | -.183 (.348) | -.121 (.362) | -.178 (.416) | .347 (.335) | -.613 (.344) | .138 (.428) |
| B2C | -.370 (.342) | .830 (.352) | .712\* (.354) | .392 (.371) | .337 (.422) | .042 (.362) | .298 (.352) | .064 (.458) |
| OEM  Transition | -.120 (.315) | .445 (.306) | .020 (.328) | .251 (.334) | -.272 (.400) | .893\*\* (.314) | -.047 (.314) | .863 (.390) |
| Pseudo R2 | .006 | .043 | .041 | .021 | .015 | .050 | .047 | .030 |
| LR chi2 | 1.70 | 12.99\* | 11.28 | 5.4 | 3.00 | 14.10\* | 13.7\* | 5.79 |
| Freedom | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Log-  likelihood | -140.961 | -145.990 | -131.195 | -124.203 | -101.294 | -135.386 | -138.947 | -95.151 |
| N | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 220 |
| Note: Computed in TIS2 by logistic regression, coefficient and S.E. are shown, and significant level at +p<0.10, \*p<0.05, \*\*p,0.01, and \*\*\*,p<0.001 | | | | | | | | |

Second, we observe the changes in the configuration of ODM firms before upgrading. In Table 8, it shows that the ODM firms have much insignificant difference on the reconfiguration of innovation before upgrading the business model, such as *Product Innovation* (β=.213), *Product Design* (β=-.157), *Marketing Promotion* (β=-.137), *Authority Realignment* (β=.583), *Organization Restructuring* (β=-.038), and *Outsourcing Re-assignment* (β=-.767). However, the results indicate that ODM firms would reduce to engage in process innovation (β=-.918, p<0.05) and the exploration of the marketing channel (β=-1.070, p<0.10). Furthermore, on the ANOVA in Table 7, the results also confirm the findings, but it finds a visible increase in *Authority Realignment* (μ=.556>.388) and decreases in *Outsourcing Re-assignment* (μ=.185<.290).

Table. 7 ANOVA Table for variation in the engagement of innovation practices in the transition for OEM, ODM, OBM firms.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| **Before the transition (TIS2)**  *OEM* | | | | | | | | |
| Non (N=147) | .660 | .449 | .299 | .238 | .184 | .279 | .361 | .122 |
| Transition (N=73) | .644 | .589 | .342 | .315 | .164 | .493 | .411 | .247 |
| F | .055 | 3.86 | .419 | 1.485 | 0.123 | 10.208\*\* | .524\* | 5.581\* |
| *ODM* | | | | | | | | |
| Non (N=247) | .580 | .612 | .294 | .302 | .171 | .388 | .412 | .290 |
| Transition (N=27) | .630 | .407 | .259 | .148 | .148 | .556 | .444 | .185 |
| F | .249 | 4.260\* | .140 | 2.825 | .093 | 2.852 | .103 | 1.319 |
| **After the transition (TIS3)**  *ODM* | | | | | | | | |
| Incumbent (N=215) | .265 | .395 | .239 | .162 | .126 | .329 | .441 | .252 |
| Entrant (N=43) | .163 | .372 | .130 | .109 | .022 | .326 | .413 | .326 |
| F | 2.012 | .081 | 2.609 | .837 | 4.340\* | .001 | .124 | 1.063 |
| *OBM* | | | | | | | | |
| Incumbent (N=345) | .264 | .365 | .221 | .067 | .131 | .363 | .248 | .216 |
| Entrant (N=50) | .440 | .449 | .370 | .111 | .296 | .537 | .389 | .370 |
| F | 6.720\*\* | 1.271 | 5.795\* | 1.389 | 10.267\*\* | 6.122\* | 4.834\*\* | 6.312\* |
| Note: \*p<0.05, \*\*p,0.01, and \*\*\*, p<0.001 | | | | | | | | |

Table. 8 Reconfiguration of innovation practices by ODM firms before the transition.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| Hitech | .295 (.277) | .048 (.277) | .171 (.292) | .220 (.297) | .189 (.349) | .071 (.281) | .258 (.277) | .355 (.298) |
| SME | -.149 (.270) | -.314 (.273) | .054 (.289) | -.026 (.295) | -.044 (.347) | -.606\* (.271) | -.768\*\* (.268) | -.514+ (.290) |
| Domestic | .-.708 (.287) | .568+ (.301) | -.654+ (.338) | -.273 (.326) | .334 (.363) | -1.111\*\* (.326) | -.676\* (.308) | -.949\*\* (.366) |
| B2C | .119 (.318) | .172 (.325) | .104 (.346) | 1.013\*\* (.332) | -.037 (.410) | .195 (.332) | .462 (.323) | .737\* (.348) |
| ODM  Transition | .213 (.433) | -.918\* (.428) | -.157 (.474) | -1.070+ (.580) | -.137 (.579) | .583 (.433) | -.038 (.430) | -.767 (.539) |
| Pseudo R2 | .023 | .027 | .014 | .039 | .005 | .060 | .046 | .052 |
| LR chi2 | 8.47 | 9.94+ | 4.56 | 12.77\* | 1.23 | 22.06\*\*\* | 16.86\*\* | 16.77\*\* |
| Freedom | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Log-  likelihood | -180.394 | -178.944 | -161.611 | -156.606 | -123.005 | -172.5048 | -176.199 | -152.745 |
| N | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Note: Computed in TIS2 by logistic regression, coefficient and S.E. are shown, and significant level at +p<0.10, \*p<0.05, \*\*p,0.01, and \*\*\*,p<0.001 | | | | | | | | |

## The reconfiguration of innovation practices after the upgrade of the business model in contract manufacturers

In the transition of the business model, the new entrant would pay the efforts in building the new business activities and reconfigure their production works in the value chains to compete with the incumbent firms in the market. By examining the changes in innovation practices between new entrant and incumbent firms, it provides the understanding which new entrants pay apparent efforts to catch up on the new business as well as encounter the challenges in the new business. As a new entrant of ODM business, the firms may have significantly insufficient engagement in product innovation (β=-.856, p<0.10) and marketing promotion (β=-1.890, p<0.10) than incumbent firms (Table 9).

Table. 9 Reconfiguration of innovation practices by ODM new entrants

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| Hitech | .109 (.312) | .219 (.277) | -.245 (.325) | -.750+ (.408) | -.939+ (.503) | -.134 (.289) | -.275 (.296) | -.623+ (.321) |
| SME | -.584+ (.300) | -.315 (.269) | -.291 (.307) | -.262 (.355) | -1.555\*\*\* (.440) | -.903\*\*\* (.274) | -1.411\*\*\* (.282) | -.729\* (.292) |
| Domestic | -.577 (.426) | -.788\* (.370) | .298 (.359) | .160 (.422) | .916+ (.473) | -.293 (.352) | -1.456\*\*\* (.394) | -.591 (.404) |
| B2C | -.263 (.361) | -.541+ (.323) | .100 (.346) | .219 (.395) | -.121 (.491) | .195 (.314) | -.216 (.324) | -.256 (.349) |
| ODM  Entrant | -.856+ (.482) | -.241 (.370) | -.721 (.475) | -.282 (.520) | -1.890+ (1.051) | -.156 (.367) | -.328 (.362) | .357 (.365) |
| TIS2 | .195 (.352) | -.086 (.308) | .128 (.356) | -.630 (.511) | -.213 (.669) | .387 (.294) | .284 (.317) | .432 (.356) |
| Pseudo R2 | .033 | .029 | .018 | .030 | .132 | .045 | .129 | .048 |
| LR chi2 | 9.44 | 9.98 | 4.94 | 6.97 | 24.19 | 15.31\* | 47.20\*\*\* | 14.85\* |
| Freedom | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Log-  likelihood | -139.812 | -167.718 | -138.793 | -111.181 | -79.764 | -161.993 | -160.002 | -147.520 |
| N | 258 | 258 | 268 | 268 | 268 | 268 | 268 | 268 |
| Note: Computed in TIS3 by logistic regression, coefficient and S.E. are shown, and significant level at +p<0.10, \*p<0.05, \*\*p,0.01, and \*\*\*,p<0.001 | | | | | | | | |

Also, we observe the average of engagement in innovation practices in Table 7, and we find new ODM entrants have distinctly low activities in average on *Product Innovation* (μ=.163<.265), Product *Design* (μ=.130<.239), *Channel Distribution* (μ=.109<.162), and *Marketing Promotion* (μ=.022<.126). Overall, the contract manufacturers would face the challenges of building the new competencies on R&D and marketing works when OEM firms transited their business model to the ODM model.

For new entrants on OBM business, the firms have a comprehensive enhancement on production works in the market (Table 10), such as product innovation (β=.728, p<0.05), process innovation (β=.277), and marketing innovation (*Product Design*, β=.631, p<0.05; *Channel Distribution*, β=.504; *Marketing Promotion*, β=.893, p<0.05). Moreover, they usually adjust organizational management in the external (*Authority Realignment*, β=.650, p<0.05; Organization *Restructuring*, β=.647, p<0.05) and the external (*Outsourcing Re-assignment*, β=.599, p<0.10). In comparison to ANOVA in Table 7, it points out that the new OBM entrants would pay more effort to build the new practices of their new business for the competition in the market.

Table. 10 Reconfiguration of innovation practices by OBM new entrants

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Product  Innovation | Process  Innovation | Product  Design | Channel  Distribution | Marketing  Promotion | Authority  Realignment | Organization  Restructuring | Outsourcing  Re-assignment |
| Hitech | .234 (.249) | -.145 (.239) | -.317 (.264) | .484 (.394) | -.873\* (.376) | -.555\* (.231) | .380 (.236) | -.724\* (.286) |
| SME | -.327 (.236) | .323 (.226) | -.066 (.237) | .261 (.389) | -.930\*\* (.293) | -.353+ (.214) | .033 (.233) | -.160 (.240) |
| Domestic | -.946\* (.375) | -1.156\*\*\* (.330) | -.776\* (.358) | -1.451+ (.757) | -2.469\* (1.027) | -.723\* (.295) | -.074 (.292) | -1.240\*\* (.425) |
| B2C | .018 (.272) | -.252 (.259) | .229 (.266) | .170 (.437) | .430 (.321) | .229 (.241) | .068 (.260) | .213 (.272) |
| OBM  Entry | .728\* (.316) | .277 (.315) | .631\* (.314) | .504 (.488) | .839\* (.356) | .650\* (.304) | .647\* (.309) | .599+ (.318) |
| TIS2 | -.040 (.230) | -.019 (.215) | .215 (.248) | .056 (.403) | .158 (.364) | -.369 (.212) | .377+ (.225) | -.103 (.264) |
| Pseudo R2 | .040 | .034 | .032 | .035 | .136 | .051 | .021 | .062 |
| LR chi2 | 18.71\*\* | 17.34\*\* | 15.15\* | 7.71 | 49.50\*\*\* | 29.17\*\*\* | 10.59 | 29.15\*\*\* |
| Freedom | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Log- likelihood | -227.092 | -250.190 | -228.884 | -107.451 | -157.718 | -271.251 | -243.085 | -219.552 |
| N | 395 | 391 | 429 | 429 | 429 | 429 | 429 | 429 |
| Note: Computed in TIS3 by logistic regression, coefficient and S.E. are shown, and significant level at +p<0.10, \*p<0.05, \*\*p,0.01, and \*\*\*,p<0.001 | | | | | | | | |

# Discussions

In the empirical examination, this paper employs the investigation of Taiwanese contract manufacturers for reconfiguring their business activities in the transition of business models. Through reviewing the business model innovation in contract manufacturing, OEM, ODM, and OBM firms demonstrate differentiated business activities to implement a value proposition in the existing market by providing valued production works. For detail, the engagement of innovation practices behind the business models explains the value creation and organizational configuration in contract manufacturers to promote their competitive advantage in the market.

As an entry mode of contract manufacturing, we find that OEM firms have lower engagement in the innovation of production works as well as fewer changes in organizational management. In the OEM model, to sustain excellent manufacturing efficiency is the core business of the firms, and to avoid the changes to keep cost advantage in the market becomes the critical factor to firm performance. Wang and Wu (2012) examined the moderation of the contract manufacturing model on the relationship between R&D investment and the operating performance, and it found a negative effect on the OEM model, in which R&D investment may reduce the performance of OEM firms. Feng-Hsu, Heng-Yih, and Ting-Ling (2008) considered that OEM contract manufacturers leverage existing manufacturing competence, which involves a low level of risk. Moreover, the success of the OEM model depends on the effectiveness of current organizational practices to offer incremental improvements on sustaining to fulfill customers’ needs (Kittilaksanawong 2015).

On the configuration of innovation practices to ODM firms, product innovation, process innovation, marketing product design, and organizational changes have significantly positive engagement in the run of business. For ODM model, contract manufacturers extend its value works to upstream outsourcing in new product development, product innovation, and process innovation synergize as technological capabilities of the ODM firms to demonstrate the primary product design process in the market (Lee, Song, and Kwak 2015; Wang and Wu 2012). Furthermore, the ODM model connects the value works to downstream marketing practices to demonstrate the abilities of latecomers to react to the changes in the needs of end-users as the selling of market flexibility to the customers (Chu 2009; Manzakoğlu and Er 2018). Also, organizational management in ODM firms needs to be adaptive in dynamic markets to renew the internal organizational practices for the changes quickly and to reassign the external partnership for fostering new product development and manufacturing (Yung and Lai 2012; Christensen, Bartman, and Van Bever 2016). In contrast to OEM firms, ODM contract manufacturers have to upgrade their business activities to catch more production works in the value chains, and engagement in the innovation practices to pursue the success of their business model and to build a competitive advantage in the market.

In contract manufacturing, the OBM model represents a radical change of the role in the existing market from the suppliers to second movers (Chu 2009). On the configuration of innovation practices, our results indicate that OBM firms have strong engagement in all production works as well as sustainable organizational management. As the latecomers in the existing market, OBM firms have to improve technological innovation capacity and change to high-value-added products, and they also need to strengthen the marketing capabilities to more skilled operation and value-added marketing activities in a competitive market (Eng and Spickett-Jones 2009; Feng-Hsu, Heng-Yih, and Ting-Ling 2008; Wan 2015). Moreover, the OBM firms also need sustainable organizational management to make sure the run of business activities and to align the dynamic changes in the market (Day 2006; Carayannis, Sindakis, and Walter 2015; Foss and Saebi 2016).

After confirming the differentiated configuration of innovation practices under OEM, ODM, and OBM models, this study also finds the reconfiguration in the transition is the critical threshold to upgrade the business models. Before the upgrade of OEM firms, we find a positive change in organizational management but no significant changes in their business activities compared to other OEM firms who have no intention to change the business model. Many prior scholars indicate organizational changes would influence the development of new capabilities and partnership in business model innovation, and the upgrade of OEM firms face a radical change to promote innovation practices for catching more valued works in contract manufacturing. In other words, OEM firms need to overcome the barriers of organizational inertia associated with the old business model when they prepare to transit the upgraded business model (Carayannis, Sindakis, and Walter 2015; Jacobides, MacDuffie, and Tae 2016; Bijarboneh 2015). However, we do not find apparent changes when ODM firms prepare to upgrade to the OBM model, and it only indicates a significant reduction in process innovation for manufacturing. In other words, ODM firms may concentrate on the necessary process innovation to core products in branding development.

Furthermore, this paper compares the configuration of innovation practices between new entrants and incumbent firms in the business model of ODM and OBM. At the early stage in the transition from OEM to ODM, we find that the new entrants of the ODM business have fewer new product development and weak marketing capabilities compared to existing ODM firms. For a new ODM firm, promoting the R&D and marketing works is the determinant on the success of business model transition to build the competence and business practices, but it needs a long-term path and investment to transform into a new competitive advantage in the market (Feng-Hsu, Heng-Yih, and Ting-Ling 2008; Eng and Spickett-Jones 2009; Matthyssens, Vandenbempt, and Weyns 2009). In the transition to OBM firms, the new entrants demonstrate strategic changes in a comprehensive enhancement of production works and organizational management. It indicates the new entrants of the OBM business need to pay more effort to overcome the challenges in the competitive market as a second-mover (Chu 2009; Lee, Song, and Kwak 2015; Yan 2012).

From the observation in the business model transition of Taiwanese contract manufacturers, it indicates that the OEM-ODM-OBM path of reinventing the business models exhibits the reconfiguration of business activities by the value proposition in the market. The differentiated configuration of innovation practices under these models shows the composition of the firm’s competence to fit the business activities of the firms in the value chains. In the transition of the business model of contract manufacturers, radical upgrading leads them a necessity to promote the engagement of innovation practices that could adapt to the new value proposition.

# Conclusion and managerial implication

By the rise of globalization, vertical specialization encouraged the business model innovation in manufacturing sectors by contract manufacturing in the existing market, and it provides the new business opportunity to participate in the value chains for the latecomers in the emerging economies, such as South Korea, Taiwan, and China. Through the positioning of the business model, latecomers take parts of production works as core business activities to create the values by the engagement of innovation practices. In this study, it illustrates and demonstrates the new business model of OEM, ODM, and OBM in contract manufacturing for the latecomers.

In Taiwanese manufacturing sectors, by the growth of contract manufacturing in emerging Asia, the regular competition leads to a business model transition in OEM, ODM, and OBM are emerging from the 1990s (Hobday 1998). Many Taiwanese contract manufacturers pursue the upgrading of business models to provide more added values to the contractors by developing new business activities through the engagement of innovation practices in production works as well as ongoing organizational innovation to coordinate the run of new business. Many success stories in the last 30 years on Taiwanese contract manufacturers, such as Acer, Quanta Computer, Giant, Johnson, and HTC (Hobday 1998; Chu 2009; Yan 2012), prove Taiwanese case as the good referred model for the business model transition of contract manufacturers.

Through the examination of the business model transition of Taiwanese contract manufacturers, it could find that business model innovation generates from the reposition of value proposition in the existing market, which still takes parts of works in value chains (Zott and Amit 2010; Amit and Zott 2012; Johnson, Christensen, and Kagermann 2008). The firms would illustrate their business activities and engagement of innovation mix to provide the value to the customers in the existing market, which they repositioned (Bucherer, Eisert, and Gassmann 2012; Teece 2010). When the firm intends to reclaim their business models, they will purchase the transition of innovation mix in production and organizational works for reconfiguring their business activities to meet the new value proposition in the existing market (Sánchez and Ricart 2010; Carayannis, Sindakis, and Walter 2015). In other words, it could conclude that business model innovation rooted in value repositioning, and the transition of the business model demonstrates in the reconfiguration of the innovation mix to describe new business activities. Therefore, the firms have to pay their effort to catch up on the innovation practices in the business model transition.

In practical implication, this paper points out some challenges on the upgrading of the business model to the latecomers. At first, although the transition to ODM or OBM models aims to expand to R&D and marketing works, there is a gap of capabilities to encourage new entrants in building new configuration of innovation practices for reposition value proposition in the market (Teece 2010; Euchner and Ganguly 2014). Second, the tension of radical change from OEM to ODM exists in the transition, and the competence on new product development in R&D and marketing capabilities may need long term investment and accumulation (Chesbrough 2010; Yan, Chiang, and Chien 2014). Third, organizational management is the core mechanism to sustain the operation of business activities and to foster the transition of the business model. On the ODM and OBM models, adaptive organizational management could make the firms have high flexibility to react to the dynamic changes in the market by incorporating other business activities (Carayannis, Sindakis, and Walter 2015; Koen, Bertels, and Elsum 2011). In the final, the external network of partnership in contract manufacturing demonstrates the combination of valued works in the value chains, and the reassignment is the critical work in the operating business model to implement the specialization practices in terms of attaining the value proposition in the market (Sánchez and Ricart 2010; Hsu and Liu 2008).

In the future research, although the study finds different business models in contract manufacturing that have focused on the various business activities, and plot the transition of the business model, there are two research limitations for further research. Although the data of TIS2 and TIS3 across two periods have the consideration on time horizontal, a time series analysis by consecutive years would provide more dynamic observation in the business model transition of contract manufacturers. Moreover, the Taiwanese case offers good evidence. Still, different industrial contexts for each economy may lead to the necessity of adjustment in the practices, and it would encourage the comparison across different economies.