

Exploring Dual Business Model Choice of Brand and OEM Businesses

探索品牌與代工雙元營運模式的選擇

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Received 2015/10, Final revision received 2016/12

Abstract

This research undertakes a longitudinal, case-based research to explore how a less well-endowed product supplier chooses a dual business model, which simultaneously engages both own-brand and original equipment manufacturing (OEM) businesses, and its associated decision rationales. Based on in-depth study on multiple product line cases sampled from a single organizational context, we are able to propose two decision constructs: *segment-making capabilities* and *product/service innovation potential*, which various types of dual business models are intertwined with. In addition, we find that in the case of exploratory products, the product supplier adopts a model where the organizational learning effect is more pronounced, while in the case of exploitative products, balancing long and short-term outcomes is the primary motive for model choice. Overall, our research adds new insight to the existing paradoxical conversation of dual business models by offering a useful decision framework with a theoretical foundation and practical guidance.

【Keywords】 dual business model, capabilities-based view, OEM business, business model

摘要

本論文以跨時個案研究方法，探討同一組織脈絡下的四個產品線，如何在資源有限的環境下，同時進行品牌與代工業務的雙元營運模式，並解析其決策判斷依據與決策動機。透過此一質性研究，我們提出兩個重要的決策構面：市場區隔的創造能力、以及產品或服務的創新潛力，並說明四種不同業務組合的雙元營運模式及其判準。此外，我們發現當產品技術屬於較創新者，產品供應商會基於組織學習為主要動機而採用雙元模式，而當產品漸趨多元應用與成熟時，供應商會以長短期收入平衡為其採用雙元模式的主要動機。整體而言，本研究期望能夠對看似矛盾的雙元營運模式，提出兼具理論基礎與實務意涵的決策模式。

【關鍵字】 雙元營運模式、能力基礎、代工業務、營運模式

1. Introduction

We explore a commonly observed yet little researched issue regarding strategically operating both own-brand and original equipment manufacturing (OEM, hereafter) business models for innovative products in different markets. By undertaking this kind of *dual* business model (BM, hereafter), less-endowed product suppliers can penetrate accessible markets using own-brand BMs while strategically leveraging OEM buyers' market power via providing highly efficient, customized design and manufacturing services, which allow them to explore opportunities in non-accessible markets (Alcacer and Oxley, 2014; Shih, 2004). Strategic use of dual BMs is critical for suppliers to grow due to the economic gains operations reaped from pooling production scales, and the potential for learning from the market scope expansion that occurs during interfirm collaboration (Lee and Chen, 2000). In addition, OEM buyers that use strategic outsourcing can focus on their competence areas while flexibly overcoming the threat of fast-changing technologies, hence enhancing their competitive advantage (Eisenhardt and Schoonhoven, 1996).

Despite the potential for win-win collaboration, dual BMs also impose challenges on focal product suppliers. Internally, suppliers must ensure that distinct BMs can be well-managed within one organization, despite each BM requiring tailored resources and incompatible activities (Markides and Charitou, 2004; Porter, 1980). Externally, there are tensions between OEM buyers and product suppliers, as they may become competitors (Luo, 2004). For example, Acer, one of the major personal computer brands in Taiwan, was forced by buyer's concerns to spin off its contract manufacturing service unit from its integrated organization in 2000 (Shih, 2004). Hence, the sustainability of dual BMs is a critical issue for product suppliers, especially those in emerging markets.

Motivated by this knowledge gap, we use the perspective of BM design (Zott, Amit, and Massa, 2011) to discuss *why and how a supplier chooses a dual BM?* Specifically, we establish two central questions to begin our exploration: (1) What are the driving factors underlying the supplier's choice of a dual BM? (2) What synergies motivate the supplier to undertake a dual BM and what is their order of importance? From a BM perspective, we view branding and OEM businesses as different types of BM designs in a spectrum of choices. Suppliers must define appropriate BMs for focal products so they know how to *create value* by clarifying the BMs' associated building blocks and the relationship among them on an operational level (Osterwalder and Pigneur, 2010), *deliver value* by configuring and organizing resources and competence (Demil and Lecocq, 2010) on an

organizational level, and *appropriate value* with partners on a strategic level (Shafer, Smith, and Linder, 2005). Inappropriate dual BM choice may cause conflicting marketing activities and delayed access to wider market coverage. Moreover, we pay special attention to uncovering the supplier's dynamic capabilities in linking strategy with various types of dual BMs over time (Day, 2014; Teece, Pisano, and Shuen, 1997).

Taking these inquiries into consideration, our research undertakes an explorative, case-based study within the context of a single company with multiple product lines (Yin, 1994). We collect longitudinal archival data on four major product lines from the case company and verify different types of operating models undertaken by the company over time for cooperating with channel resellers and OEM buyers in the business ecosystem and transforming products' value propositions into business results (Adner, 2012). Taking each BM as a unit of analysis (Zott et al., 2011) and supported by more than 20 in-depth interviews with executives, we can draw insights by exploring the rich content of this case.

Our study contributes to the extant literature in two ways. First, for BM literature, we provide a feasible framework based on a capabilities-based view (e.g., Day, 2014) for decision makers to effectively define their options for dual BMs. We pinpoint the critical considerations of *product/service innovation potential* and *segment-making capabilities* in defining appropriate dual BMs for products. These considerations blend an outside-in adaptive capabilities view for responding to new demands from a fast-changing market (Day, 2011, 2014) with an inside-out dynamic capabilities view for pursuing new business opportunities (DaSilva and Trkman, 2014). Decision makers' choices result in four types of dual BM instead of the one type mentioned by previous literature (Lee and Chen, 2000). Each type represents a different combination of own-brand business and OEM business.

Second, while there are four types of synergy—organizational learning, resource pooling, cross-signal effect, and long-short term outcomes—discussed in this article, our findings from in-depth case studies show that the strategic motivations underlying dual BM decisions vary by OEM products' status. For exploratory products, the most critical motivation is organizational learning from OEM buyers for improving one's own technology development abilities, as volume demand for OEM products is smaller (Itami and Nishino, 2010). For exploitative products, searching for a balance of long-short term outcomes is the key motive, because OEM services provide beneficial short-term outcomes that can in turn support brands' long-term business development (Lavie,

Stettner, and Tushman, 2010). Overall, we add new insights to the choice of dual BM, which was previously treated as paradoxical (Markides and Charitou, 2004; Smith, Binns, and Tushman, 2010).

2. Literature Background

As we mentioned, our research explores why and how suppliers choose dual BMs, which combine own-brand and OEM business to expand market coverage and enhance growth. In this section we illuminate the differences between own-brand and OEM business and review the extant research on BM choice and emphasize the choice of dual BMs.

2.1 Brand versus OEM Business Model Choices

Product suppliers can choose from two distinctive approaches for developing business: introducing products to target markets through channel resellers under their own brand name, or providing design and manufacturing services to existing brand companies that are seeking outsourcing services for strategic reasons. The former is called a brand BM and the latter an OEM BM (Lee and Chen, 2000). These options reflect different resource configurations, required competencies, organization types, and value propositions (Demil and Lecocq, 2010). Based on the BM chosen, suppliers must establish a system of value-added activities with complementary partners within a business ecosystem (Zott and Amit, 2013).

Suppliers must choose brand or OEM BMs based on their pros and cons. Brand BMs offer greater autonomy for developing product market strategy; however, they require significant investment in sales, marketing and technical teams to support channel promotion and enhance product visibility in the target market. In addition, brand ownership means that the focal firm will be accountable for the end-to-end liability of the specific product, including inventory and after-sale services. Therefore, compared with providing contractual manufacturing services, brand BMs involve greater difficulty and uncertainty. With their larger resource investments and risks, brand BMs usually require a much higher margin than contractual manufacturing. In addition, sales volume for brand BMs is relatively low compared to OEM BMs with prominent OEM buyers, who have strong marketing power.

In comparison, OEM BMs require product suppliers to provide customized design and manufacturing services to buyers, with products shipped under buyers' brand names.

Such contractual services usually require buyers to commit to a certain supply volume in order to gain scale economies and hence provide cost advantages in manufacturing and operations. The competitiveness of OEM BMs hinge upon product quality, costs, speed, and flexibility of delivery as well as associated services provided to buyers. Although the profitability level of OEM BMs is determined by sources of alternative supply, once engaged the business return is more predictable than that of brand BMs. In addition, when providing OEM business to world-class brand buyers, suppliers have a great opportunity to learn advanced technological and operational knowledge, which in turn improves suppliers' capabilities.

With this understanding of the distinctive nature of and trade-offs between brand and OEM BMs, we will switch gears to discuss the extent and feasibility of adopting both types in one company, which is the focus of our research.

2.2 Dual Business Model

Research on BMs has received increasing attention in the extant literature (e.g., Zott et al., 2011). In addition to discussing the essence of BM design and the strategic implications of BM choices, scholars also pay special attention to cases where companies undertake multiple brand strategies for particular products in different market segments (Markides, 2013; Markides and Charitou, 2004). For example, Nestle owns Nescafe and Nespresso in the coffee market, with Nescafe serving as an instant coffee provider for the mass market and Nespresso positioned as an upscale brand. Generally, by operating more than one brand at a time, suppliers can forestall potentially disruptive BMs (Christensen, 1997; Velu and Stiles, 2013), crowd out competitors in their current market, penetrate new markets, create synergistic effects for new and existing models by making more efficient use of common resources, and generate new income streams by operating in tandem (Casadesus-Masanell and Tarzijan, 2012). However, research also indicates that to ensure multiple BMs can work in a single organization, it is essential for companies to manage internal conflicts, as each BM has its own tailored resources and incompatible activities (Markides and Charitou, 2004).

Differing from multiple brand BMs, BMs that involve both own-brand and OEM business, which we call *dual* BMs, have received less attention in the extant literature. However, they are increasingly important due to the rise of offshore outsourcing and market globalization (Alcacer and Oxley, 2014). Product suppliers that implement dual BMs simultaneously launch own-brand business with channel resellers while providing

contractual manufacturing services to OEM buyers that own their own brands (Lee and Chen, 2000). Hence, dual BMs are more challenging than BMs containing multiple brands, as the relationship between suppliers and buyers is both collaborative and competitive. That is, focal suppliers collaborate with OEM buyers to ensure satisfaction with the quality and cost of supplied products (Luo and Rui, 2009), while potentially competing with them through similar products under their own brand name.

Interestingly, despite tension from competition, dual BMs are becoming popular in many industry sectors and have been adopted by established companies. For example, Logitech, a leading PC peripheral brand company, generated around 10% in average of its total revenue from its OEM BM during 2002-2013 by working with famous companies like HP and Apple. Also, Giant, the world's leading bicycle producer, generated around 30-40% of its revenue during 2010-2015 from its OEM services. Some scholars indicate that several suppliers learn best practices while supplying major branded firms globally and parlay their OEM experience into positions as vital branded name players (Alcacer and Oxley, 2014).

While real examples exist, it is unclear why suppliers choose dual BMs. Lee and Chen (2000) proposed a competence-based framework based on the practices of many Taiwanese information technology companies, in which dual BMs are used to realize synergistic value creation for suppliers. They suggested three major sources of synergy: the resource pooling effect; due to commonalities in product development and manufacturing, the cross-signal effect; which attracts buyer companies of a higher tier, and organizational learning effects from supply fulfillment and market exploration. However, they assumed that the synergy generated could sustain implementation without considering how appropriate dual BMs are chosen. They also did not address what types of synergy primarily motivate the decision.

Moreover, extant literature shows conflicting views on the sustainability of dual BMs. Alcacer and Oxley (2014) stated that dual BMs could be sustainable when there is a clear strategic direction and proper management of both the means and motives for potential buyers. In contrast, some research has cast doubt on their sustainability for several reasons. First, suppliers and buyers may compete in external markets with similar products under their separate brand names if both aim at the same market and have similar product positioning (Lee and Chen, 2000). Hence, OEM buyers can become concerned about leakage of their business secrets to suppliers' brand businesses (Arruñada and Vázquez, 2006). Therefore, buyers may undertake a multiple sourcing policy to bolster

their bargaining power and detach from a contractual relationship if a competitive threat emerges (Kittilaksanawong, 2015), or restrict suppliers' ability to sell own-brand products through stringent outsourcing agreements (Alcacer and Oxley, 2014).

Second, suppliers may face internal management conflicts. Units in charge of brand business possess a very different mindset and culture from those providing OEM services. Brand businesses focus on creating value through product differentiation while OEM focuses on cost competitiveness. Cost-profit structures are very different, which makes it hard to consistently determine resource allocation and measure performance (Shih, 2004; Smith et al., 2010). Thus, both BMs may constrain each other in operational decisions, resulting in higher coordination costs (Markides and Charitou, 2004).

Lastly, suppliers may face inconsistent identity issues among stakeholders. By simultaneously engaging in own-brand and OEM business, suppliers reveal mixed signals to OEM buyers, channel resellers, and upstream suppliers (Porter, 1980, 1996). They may also confuse employees about their identity (Santos and Eisenhardt, 2005). Such inconsistency in image and positioning may discount internal operational efficiency and external validity in business communication. Thus, the execution of dual BMs is certainly difficult though not impossible.

In sum, the extant literature leaves a research opportunity for bridging the knowledge gap between conceptual discussion and ongoing reality, which motivates us to initiate an explorative study on why and how dual BMs can be deployed and realized in the complex world of co-opetition.

3. Research Methods

3.1 Case Selection

Given limited exploration of this topic in the extant literature, we decided to conduct a case-based research to unravel the decision logic of why and how suppliers choose dual BMs for their products (Yin, 1994). We hence studied an embedded single case with multiple product lines within one organizational context. A single-case study provided researchers with good opportunities to draw theoretical insights from the rich content of social dynamics that are intelligible to readers (Dyer Jr and Wilkins, 1991). Furthermore, multiple product lines provided us comparative logic of replication and extension to develop theoretical insight (Eisenhardt, 1991), with each serving to confirm or disconfirm inferences drawn from the others within the same organizational context (Yin, 1994). As BMs are emerging as a unit of analysis (Zott et al., 2011) and each product in the case we

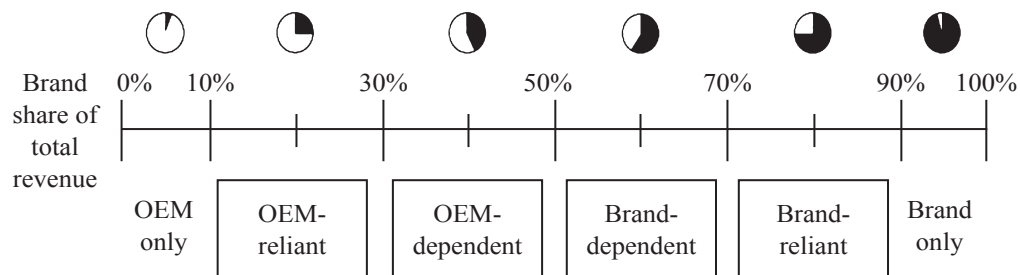
studied involved a different BM, we focused on exploring the choice of dual BM for each product line and the corresponding business synergies, external competitive landscape, and internal capabilities.

The case we studied is a *typical* Taiwan-based company (AV-Firm, hereafter) (Yin, 1994). Many Taiwanese firms adopt dual BMs to develop their business. AV-Firm was founded in 1990 and positioned itself as an innovative product provider in audio and video with the aim of enriching people's entertainment and communication. AV-Firm has developed and launched numerous product lines with unique value propositions since its founding and successfully boosted its business growth. This led to the company being listed in the Taiwan stock market in 1997. Currently, AV-Firm is very competitive in video signal compression and conversion technology across multiple interfaces and has received more than 500 patents based on the efforts of its 500 plus engineers. While AV-Firm has established 10 international offices to market its products across 70 countries, it also engaged in contractual relationships with brand companies such as HP, Dell, Toshiba, Sony, Acer, and NEC, to which it provided design and manufacturing services. Internally, AV-Firm regarded this as "Value plus ODM (original design and manufacturing)" business.

AV-Firm is a *revelatory* case for qualitative research. We focused on the richness and accessibility of the case, rather than the randomness of sample selection (Yin, 1994). AV-Firm, having evolved during the past two decades, provided a rich business configuration and retrievable quantitative and qualitative data at the product line level. This helped us build theoretical insights based on replication logic across various product lines. Thus, theoretical generalization was more feasible (Hallen and Eisenhardt, 2012).

We purposely identified four product lines of AV-firm for our case-based exploration. Table 1 describes the research setting for these four product lines, in the industries of education, PCs, telecommunications, and security. These product lines all adopt dual BMs and constitute the main revenue stream for the focal company. This setting was attractive because of the emergence of industry confluence with numerous global brand and OEM business collaborations. In addition, two product lines were first movers and the other two were late movers in their market segments. Further, the product lines have been marketed for 17, 22, 5, and 8 years, respectively; hence, we could access detailed data for a *longitudinal* study. In sum, AV-Firm is a typical, revelatory, and longitudinal case, and ideal for researchers' exploration.

For the purpose of this research, we define the ratios of brand and OEM revenue for differentiating four types of dual BM. Consistent with prior work (Parmigiani and Mitchell, 2009), we define *brand-reliant* dual BMs as receiving 70 to 90% of revenue from brand business and the rest from OEM; *brand-dependent* as receiving 50 to 70% from brand business; *OEM-dependent* as receiving 30 to 50% from brand business; and *OEM-reliant* as receiving 10 to 30% from brand business (see Figure 1).



Brand only: over 90% of total revenue is brand revenue and less than 10% is OEM revenue.

Brand-reliant: 70 to 90% is brand revenue and the rest is OEM revenue.

Brand-dependent: 50 to 70% is brand revenue and the rest is OEM revenue.

OEM-dependent: 30 to 50% is brand revenue and the rest is OEM revenue.

OEM-reliant: 10 to 30% is brand revenue and the rest is OEM revenue.

OEM only: less than 10% is brand revenue and over 90% is OEM revenue.

Figure 1 The Percentages of Brand and OEM Revenue for Each Type of Business Model

Table 1 Description of the Four Product Lines

Product Name	Document Camera (Doccam)	Video Conferencing Device (VC)	PC-TV Tuner (Tuner) *	Network Video Recorder (NVR)
Product Function	Captures objects, displays live image on LCD projector or TV.	Camera and microphone for talking with far site VC devices.	A PC add-on card, or external device that lets PC function as a smart TV.	Captures images from IP cameras and stores them for security processing.
Target Customer and Application	Helps teachers improve interactive communication with students.	Inexpensive room-based devices for small and medium business (SMB) market.	Consumers in retail markets and PC makers in pre-installed market. Can watch TV on PCs.	Acts as a system component for resellers or system integrators for small- and medium-sized projects.
Year of Product Launched	1998	2010	1993	2007
First or Late Mover	First mover	Late mover	First mover	Late mover
Years of Dual Business Model	2012-Present	2014-Present	2010-Present	2010-Present
Brand vs. OEM Revenue & Type of Dual Business Model	83:17 Brand-reliant	62:38 Brand-dependent	22:78 OEM-reliant	42:58 OEM-dependent

Product Name	Document Camera (Doccam)	Video Conferencing Device (VC)	PC-TV Tuner (Tuner) *	Network Video Recorder (NVR)
Competitive Landscape (2010-2015)	More than 5 worldwide brands compete for platform-type document camera market in university auditoriums.	More than 5 big players compete for large company market. 2 major players have 80% VC market share but only 4% of meeting rooms have VC installed.	More than 10 brands compete for retail markets. Only three compete for preinstalled market. AV-Firm is ranked as #1 in preinstalled market and #2 in retail market, with 35% market share worldwide.	More than 10 big players compete in the market for solution-based system products. More than 20 compete in the low-cost NVR market. AV-Firm focuses on special customization to meet system integrators' project needs.
	Only 3 to 4 less famous brands compete for portable-type market in K-12 classrooms.	AV-Firm focuses on SMB market which cannot afford higher price and is ignored by major players.		
	AV-Firm is the biggest player in portable-type market with 40% market share in North American market.			
Industry	Education	Tele- communications	PCs	Security
Number of Interviews	5	5	8	4

Note: *Please see Table 2 for different types of dual business model for PC-TV tuner.

3.2 Data Collection

Our data collection focused on tracking the motivations and capabilities behind each product before and during the implementation of a dual BM. To ensure a rich, longitudinal understanding of capabilities, we followed Seelos and Mair's (2007) suggestions concerning BMs as a set of capabilities configured to enable value creation consistent with economic or social strategic objectives. According to Day (2011), there are two dimensions for evaluating capabilities: "Whether the orientation is from the inside-out or the outside-in and whether the function is primarily to exploit existing resources or to explore new possibilities." As our questions were related to discovery, we only explored the inside-out dynamic and outside-in adaptive capabilities of the new business (Day, 2014).

We used two primary data sources: archives and interviews. For each product, we began data collection by gathering archival data from internal financial and manufacturing departments. Internal financial department sources included 1) revenue generated from brand and OEM business, 2) dual BMs' period, 3) the cost of goods sold with and without OEM business, 4) the operating income of brand and OEM BMs. From the manufacturing department, we collected first pass yield rates from 2008 to 2015. We began to use the data to develop chronological case histories for each product and thoroughly discussed their content elements, index selection, and how they can be compiled. This took around four months and resulted in documents over 10 pages long for each product, including key metrics such as market share, revenue, and profit.

The second source of data was semi-structured interviews with internal and external informants located in Taiwan, Japan, the US, and other countries. Four to eight interviews were conducted per product line, with a total of 22 interviews from 2013 to 2015. To probe at suitable junctures, interviews were based on topic guides (see Appendix A). We interviewed the in-charge executive of every product line for 1.5 to 2 hours each. We also added conceptually consistent lay language to further explain possible capabilities and synergies. We matched data from interviews with archival material, to ensure triangulation. These first-hand interviews allowed us to create a historical reconstruction of incidents. Hence, we identified major related capabilities criteria and their associated synergies.

We selected other internal informants based on these criteria: (1) long tenure of service in AV-Firm so that they can provide a temporal perspective on the product's decision process, (2) direct involvement in the product line to provide first-hand knowledge, and (3) various functional/hierarchical positions, allowing us to obtain diverse views. Moreover, to complement internal informants, we interviewed outsiders including OEM buyers, channel resellers, and ex-colleagues via email, Skype, and face-to-face interviews. If conflicting interpretations of the same phenomena occurred, we clarified the discrepancies using emails and phone calls. By so doing, information could be triangulated and confirmed by several sources (Yin, 1994) instead of relying on informants' memory, reducing individual bias and revealing complementary aspects of major decisions (Santos and Eisenhardt, 2009).

Each interview lasted around 45 to 90 minutes and was tape recorded and transcribed. The first document contained unrestricted questions for informants to provide a broad view of each dual BM's evolution and synergies. The second focused on

informants' direct involvement in dual BM decisions. We focused on objective facts rather than hearsay from different informants for the same questions (Eisenhardt, 1989). Thus, we ensured that their interpretations contained meaningful data for this research.

It took three months to consolidate internal and external interview data with archival-based data, enabling a better and triangulated understanding of each product phenomenon (Kumar, Stern, and Anderson, 1993). For example, PC makers, which were OEM buyers, gave “*no comment*” on AV-Firm's retail marketing capabilities. But internal informants' responses were: “*We are the main player in retail market tuner business.*” The conflicting results provided relatively complete and multi-angled thoughts.

3.3 Data Analysis

We began by asking why and how a dual BM was chosen for each product line and wrote case histories for each (Eisenhardt, 1989). There were no theoretical preferences or a priori hypotheses. We read each case thoroughly and independently to identify the theoretical constructs and their longitudinal patterns and relationships through the facilitation of graphs and tables (Miles and Huberman, 1994). To ensure accuracy and completeness, the second author provided an independent perspective by reviewing the data and triangulating with the first author. We reconciled by often going back to the data and occasionally to informants to better understand the major capabilities and synergies involved. Finally, we identified the reasons behind each choice.

To identify patterns and themes, we first performed cross-product analysis and compared agreements and discrepancies to find insights about each product (Eisenhardt and Graebner, 2007). Agreements were grouped and discrepancies were noted and further investigated by revisiting data and/or informants. We followed an iterative process of cycling among data, literature, and theories to refine our findings. The iterative process ended when “theoretical saturation” (Eisenhardt, 1989) was reached. This data analysis took another three months and resulted in a theoretical model of interpreting why and how suppliers choose dual BMs.

4. Research Findings

4.1 How a Dual Business Model is Chosen

In general, our research suggests that successful decision makers adopt a strategic fit and consistent approach to select the right buyer (Porter, 1980). We identified two critical considerations for decision makers in defining a particular type of dual BM so that mutual

benefit between supplier and buyer can be realized. They are *product/service innovation potential* of the focal product line and *segment-making capabilities* with respect to the buyer's target market. *Product/service innovation potential* attempts to estimate the value and market size OEM products can generate in the current competitive landscape, while *segment-making capabilities* evaluate the comparative assets suppliers' own-brand business can earn with similar products in the same market. With these two variables, decision makers are able to choose dual BMs.

Our research found that decision makers devote significant effort from an outside-in view to exploring target markets' product/service innovation potential. There are three metrics underlying the assessment of innovation potential. *Dominant design* wins the allegiance of the marketplace when a focal supplier owns key product features that have become the de facto standard which all players must adhere to. *Technology standard* follows an industrial committee for a de jure standard platform/protocol, providing a mechanism based on the assumption that focal suppliers can create limited innovation. *Entry barriers* are existing obstacles established by a supplier that restrict competitors from entering a given market.

In addition, our research also found that, anticipating threats from buyers, decision makers tend to focus from an inside-out view to explore the target market's segment-making capabilities. Decision makers delineate the perimeters of their brand activities to form their own niche marketplaces (Santos and Eisenhardt, 2009). Three metrics underlying the assessment of segment-making capabilities are: *product novelty*, which creates a disruptive product/application through engineering breakthroughs, significantly changing existing features or creating a new product to fill a niche, *channel bonding*, which constructs durable trade relationships by providing a non-replaceable service that locks in resellers and secures repeat orders, and *marketing execution*, which uses targeted activities to establish market leadership.

In the following sections we will elaborate on how these metrics can be applied to dual BM selection within the context of our seven case studies. In addition to the product information shown in Table 1, we summarize buyer information and OEM business status in Table 2.

Table 2 OEM Buyers' Backgrounds and OEM Product Status

	Document Camera (Doccam)	Video Conferencing Device (VC)	PC-TV Tuner (Tuner)	PC-TV Tuner (Tuner)	PC-TV Tuner (Tuner)	PC-TV Tuner (Tuner)	Network Video Recorder (NVR)
Years of Dual Business Model	2012-Present	2014- Present	1999-2000	2001-2008	2009	2010- Present	2010- Present
OEM Buyer Background	Alpha: Largest interactive white board provider with 10 times more revenue than AV-Firm.	Beta: Large, but not major, communication tool provider. Fortune 500 company.	Some Japanese local brand distributors had 10 times more revenue than AV-Firm.	Most Japan-based and a few US-based PC makers. Fortune 500 companies.	PC makers: Most world-famous PC makers. Fortune 500 companies.	PC makers: Most world-famous PC makers. Fortune 500 companies.	Gamma: Large video security provider. Fortune 500 company.
	Added new proprietary features to link to buyer's software, and changed appearance.	Changed user interface and enhanced compatibility with standard protocols.	Altered company logo to reflect OEM buyer and added specified features.	Altered company logo to reflect OEM buyer and added specified features.	Altered company logo to reflect OEM buyer and added specified features.	Altered company logo to reflect OEM buyer and added specified features.	Changed user inter- face and used AV-Firm's existing case with Gamma logo.
OEM Product Changes							
OEM Buyers' Product Positions	Focused on inter-active white board systems for K-12 market; treats OEM camera as an accessory.	Focused on complicated solutions for non-SMB markets; treats OEM device as VC system end point.	Local distributor focused on Japanese retail market.	PC maker focused on Japanese retail market; sells own PCs with preinstalled PC-TV module.	PC maker focused on European retail market through own PCs with preinstalled PC-TV module.	PC maker focused on worldwide retail market through their own PCs with preinstalled PC-TV module.	Gamma focuses on security system total solutions for reseller distribution; treats OEM products as system parts.

	Document Camera (Doccam)	Video Conferencing Device (VC)	PC-TV Tuner (Tuner)	PC-TV Tuner (Tuner)	PC-TV Tuner (Tuner)	PC-TV Tuner (Tuner)	Network Video Recorder (NVR)
Brand versus OEM Revenue	83:17 brand-reliant	62:38 brand-dependent	80:20 brand-reliant	62:38 brand-dependent	42:58 OEM- dependent	22:78 OEM-reliant	42:58 OEM-dependent
Conflict Status: Complementarity or Substitution	Complementarity: Almost no conflict even though Alpha targets the same K-12 market.	Complementarity: Almost no conflict as Beta targets big companies while AV-Firm targets SMBs.	Complementarity: No conflict though they target retail market. AV-Firm did not address Japanese retail market.	Complementarity: No conflict though they targeted retail market. AV-Firm did not address Japanese retail market.	Substitution: Conflict as users bought fewer tuner modules and more lap- tops from same retail market.	Substitution: Conflict as users bought fewer tuner modules and more laptops from same retail market.	Complementarity: Almost no conflict as Gamma targets reseller and AV-Firm targets system integrators.

4.1.1 Document Camera—Brand-Reliant Dual Business Model

Business background: Around 1998, AV-Firm became the first company to launch a portable document camera with a price range under US\$500 (see Table 1). Several famous branded firms, such as JVC, Sony, and Toshiba, were already selling platform document cameras for between US\$3,000-\$30,000. These are mostly used in university auditoriums. AV-Firm's portable document cameras were not only cheaper than the platform-type, they were also one fourth the size, and therefore better suited to small classrooms. AV-Firm therefore promoted portable document cameras to kindergarten to high school (K-12) teachers under its own-brand name. The US office president explained: *"The platform type's price was too high and its size too large. K-12 teachers did not like this product. There are around 4 million classrooms in the US and Canada, thus, we found much better opportunities for the portable type's success in K-12, not in universities."*

Since 2012, AV-Firm has developed an OEM partnership with the market's largest interactive white board provider (Alpha, hereafter; see Table 2 for buyer's background). Both firms have strong marketing capabilities and target the K-12 market, but there is no conflict between them. The president of the US office explained: *"The price of Alpha's solution is around \$10,000 and its camera is treated as an accessory. Ours costs under \$500. Alpha focuses on a pulling strategy with its strong brand power. We focus on a pushing strategy."*

Overall, AV-firm has high product/service innovation potential for this product (see Table 3). It was the first company to design the portable type and became the dominant designer. It was not constrained by a standard platform or protocol. As the K-12 market is conservative, schools only purchase products from existing approved vendors.

Table 3 Status of Constructs of Different Product Decisions

Item	Document Camera	Video Conferencing Device (VC)	PC-TV Tuner (Tuner) 1999-2000	PC-TV Tuner (Tuner) 2001-2008	PC-TV Tuner (Tuner) 2009	PC-TV Tuner (2010-Present)	Network Video Recorder (NVR)
Innovation Potential	High	Low	High	Low	High	Low	High
Dominant Design	AV-Firm is a leader. ++	2 major players set most key features +	AV-Firm was a leader. ++	AV-Firm was a leader. ++	AV-Firm was a leader. ++	AV-Firm is a leader. ++	Many players but none dominant. ++
Technology Standard	No standard technology that must be followed. ++	Follows standard audio and video communication protocols. +	Needed to comply with US, European, French analog TV systems. +	Microsoft defined tuner software interface. +	PC makers promoted laptops with zero-defect tuners world-wide. ++	As mobile replaced laptop application, IP-TV and digital TV became popular. +	Each vendor has own system protocol with no set standard. ++
Entry Barriers	Low for existing players in conservative K-12 market and high for new players. ++	80% concentration rate occupied by these 2 players. +	High entry barrier because PC players adjust analog signal for each system. ++	IC vendors integrated video window and signal bus into chips. +	Tested tuner signal reception worldwide to ensure correct parameters. ++	IC vendors integrate all major functions, creating low entry barriers. +	New firmware in NVRs for them to work with different vendors' IP cameras. ++
Segment-making Capabilities	Strong	Weak	Strong	Strong	Weak	Weak	Weak

Item	Document Camera	Video Conferencing Device (VC)	PC-TV Tuner (Tuner) 1999-2000	PC-TV Tuner (Tuner) 2001-2008	PC-TV Tuner (Tuner) 2009	PC-TV Tuner (2010-Present)	Network Video Recorder (NVR)
Product Novelty	First to create portable document camera, with 81 patents. ++	Created compatible device with lower cost and fewer features maximum 10 site conferencing. +	First to create brand-new tuner application, with 197 patents. ++	Continued to improve product features and verification. ++	Focused on production quality rather than innovation. +	Maintain product features for mature PC retail market. +	Customized firmware design for linking with different vendors' IP cameras. +
Channel Bonding	First to provide lifetime warranty program. ++	Provides simple solution suitable for SMBs but insufficient for large companies. +	First to add smart TV and VCR functions into PCs and signal PC-TV leadership. ++	Signaled leadership in PC-TV industry. ++	Provided design specially requested for laptops with 80% market share. ++	Move focus from branded retail to preinstalled market, to non-PC applications. +	Lock in clients with special design capabilities. ++
Marketing Execution	Joined around 150 shows annually to educate teachers. ++	Large companies not interested even though price is 1/2 of market price. +	Promoted tuner as a standard home PC peripheral in retail markets. ++	Exported to high TV tax areas with zero tax. Promoted in over 70 countries. ++	Less retail marketing power compared to PC makers. +	Minimum marketing activities for seeking new PC and non-PC opportunities. +	Hard to promote pure NVRs without bundling IP-camera to provide solution to clients. +

Note: A score of "+" means regular and "++" means significant for AV-Firm. 5 or 6 "+" means high innovation potential or strong segment-making capabilities. 3 or 4 "+" means low potential or weak capabilities.

AV-Firm also has *strong segment-making capabilities* for this product. It has strong product novelty with 81 patents. It invested enough resources in R&D to launch a new generation every six months, whereas platform-type providers took around two years. It had strong marketing with 150 roadshows annually from 2008-2010, and collected customer feedback for product improvement. It participated in far more roadshows than its competitors did. Now, AV-Firm is the biggest supplier in the US and Europe with around 40% market share.

Also, AV-Firm flexibly handled its pricing program with a purchasing process different from platform types. The BU head of document cameras explained: *“For the platform-type, the purchase volume was 1 to 5 units per transaction, and it was always purchased by university departments. For the portable-type, the purchase volume was up to several thousand units from school district-level bids in the K-12 market. We had a flexible price program to work with resellers who competed for bids.”*

In addition, AV-Firm had strong channel bonding. Around 2000, AV-Firm rolled out the first customer service program in the K-12 market to create durable relationships with customers. The VP of AV-Firm’s reseller in the US said that people do business with people they like: *“AV-Firm’s current management and sales team is reliable, outgoing, friendly, and in my opinion do a very solid job of reaching out to channel partners.”* The president of the US office explained: *“Our value is in providing a service commitment to end users and channel resellers. For defective goods, we provide hot swapping instead of a two month wait, and carry the two-way freight cost instead of one way. We are the first company to provide a 5-year warranty, instead of 1 year, to meet schools’ asset maintenance requirements.”*

Thus, AV-Firm chose a brand-reliant dual BM from 2012-2015, with 83% of its average revenue generated by brand and 17% from OEM (see Figure 2).

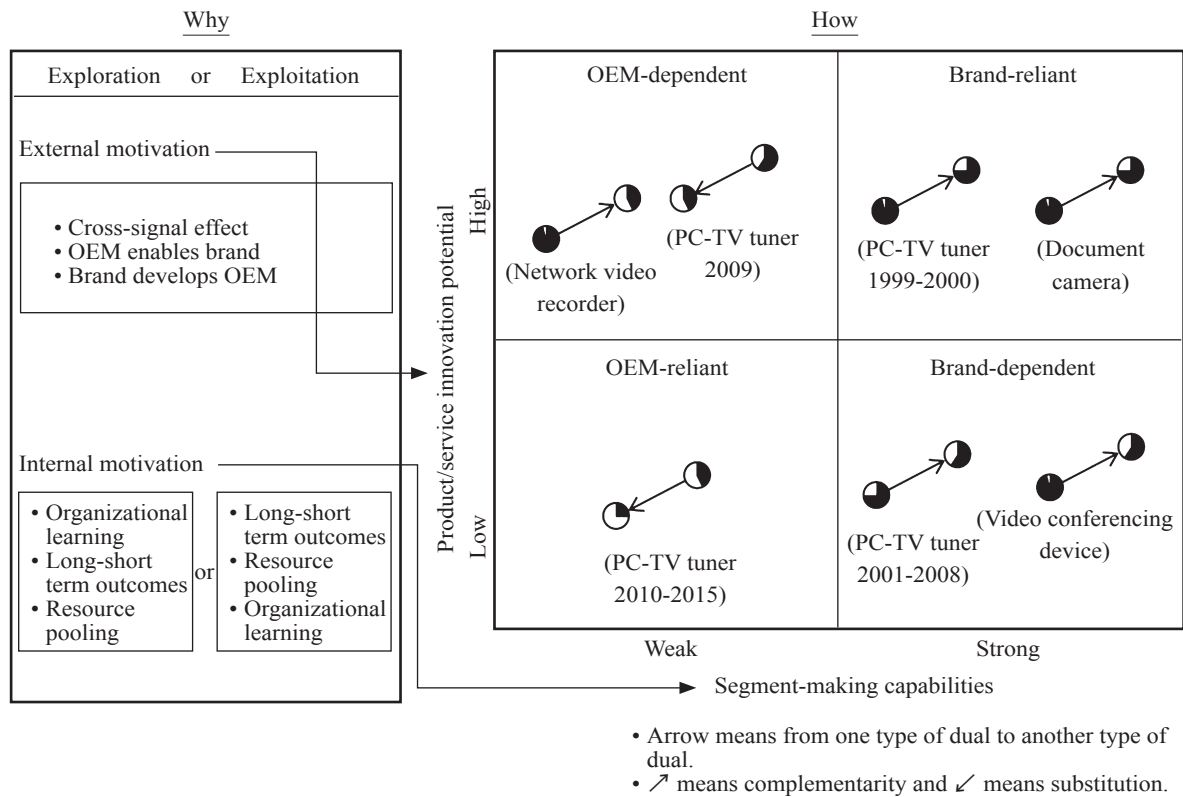


Figure 2 Why and How Suppliers Choose a Dual Business Model

4.1.2 Video Conferencing Devices—Brand-Dependent Dual Business Model

Business background: Around 2010, to meet the needs of small and medium-sized businesses (SMBs), AV-Firm was the first company to design video conferencing systems with price ranges of under \$1500 per end point and \$3,000-\$8,000 per video server (see Table 1). Famous branded firms such as Cisco, Polycom, and Sony offered products costing \$6,000-\$10,000 per end point and \$10,000-\$30,000 per video server. Their major applications are in managerial meeting rooms in large companies, instead of SMBs.

Since 2014, AV-Firm has developed an OEM business with a Japanese firm (Beta, hereafter), one of the most famous computer and communications firms in the world (see Table 2 for buyer's background). There is no conflict between Beta and AV-Firm. Beta's

technical director described: “*AV-Firm’s knowledge of competitors is excellent. The main reason is its products have special features based on the study of market’s unstated needs. Its effective pricing program is above average and gives us enough profit for winning big projects.*” Beta focuses on big companies; however, it cannot compete with leading branded firms like Polycom and Cisco. Thus, Beta’s sales volume is not large.

For this product, AV-Firm has *low product/service innovation potential* (see Table 3). The dominant design is low as Polycom and Cisco occupy 80% market share and created several proprietary features embedded only in their own devices to avoid competition. The standard communication protocols limit room for innovation. Further, they have locked in many users to form entry barriers, as they are the default referents in this industry.

AV-Firm also has *weak segment-making capabilities* for this product. AV-Firm’s products provide limited new features, and they cannot satisfy the requirements of large companies that need more advanced features.

AV-Firm has relatively weak customer-linking capabilities. As a new vendor in this market, the slow tempo, long transaction cycle, and its low brand awareness are unfavorable to AV-Firm. The president described typical business practices: “*Traditional channel resellers need months to make a sale. They need to promote their products to arouse user interest, then demo them and put them in users’ sites. Users may return products or ask for an extra demo. Our profit margin doesn’t permit our resellers to do this. Beta sells other facilitators to expand its application coverage and lock in customers. But, we just sell a simple package as a one-time only business.*”

AV-Firm promoted its own brand mainly to the SMB market, which was still emerging. It spent significant effort gaining acceptance by users through pricing and advertising. The BU head explained: “*Price is still SMBs’ main concern. Beta cannot support SMBs’ inexpensive price needs. We support our resellers with a margin appropriate for penetrating SMB markets. We serve small projects, but Beta only supports big projects.*”

Previously, AV-Firm chose a brand-dependent dual BM from 2014-2015, with 62% of its average revenue generated by brand and 38% from OEM (see Figure 2). However, according to our explorative model, it should have chosen an OEM-reliant dual BM. This discrepancy will be discussed later.

4.1.3 PC-TV Tuner (1999-2000) —Brand-Reliant Dual Business Model

Business Background: Around 1993, AV-Firm was the first company to design a PC-TV tuner product and sell it to end users through retail markets (see Table 1). After

many years of effort, it accumulated enough market knowledge to effectively promote this application while enhancing customer relationships. It eventually became the biggest supplier worldwide.

After 1999, AV-Firm engaged in OEM for several local brand distributors in Japan to penetrate the PC peripheral retail market (for the buyers' background see Table 2). This application allows PCs to act as smart TVs, saving space and money. At that time, the Japanese market was not AV-Firm's focus area so there was no business conflict.

Overall, AV-Firm had *high product/service innovation potential* for this product (see Table 3). AV-Firm was the dominant design player and created many smart features using PC software capabilities. AV-Firm's design fully followed US, Japan, EU and Brazil analog TV systems. Thus, it created entry barriers for PC makers, which are more familiar with digital worldwide standards than analog products and analog TV systems.

AV-Firm also had *strong segment-making capabilities*, filing 197 patents to protect features such as smart recorder capabilities with time-shifting functionality. AV-Firm signaled leadership to create legitimacy and superior power to hold onto resellers and users. It also promoted this PC-TV application through numerous PC exhibitions.

Thus, AV-Firm chose a brand-reliant dual BM from 1999-2000, with 80% of average revenue generated by brand and 20% from OEM (see Figure 2).

4.1.4 PC-TV Tuner (2001-2008) —Brand-Dependent Dual Business Model

Business background: Several famous PC-makers mainly from Japan, such as Fujitsu, Sony, and Hitachi, heavily promoted their PCs with preinstalled tuners (buyer's background see Table 2). After 2001, AV-Firm developed many OEM deals with them. The supplier and buyers had no conflict because the Japanese retail market was not AV-Firm's main focus.

Overall, AV-Firm had *low product/service innovation potential* for this product (see Table 3). It maintained dominance by raising its market awareness and service levels to meet user demands. Microsoft created a standard software interface to lower software innovation potential. The marketing director explained: "*Around 2005, Microsoft promoted PC-TV applications and gave PC-makers marketing funds, so PC-TVs became popular.*" Meanwhile, IC vendors integrated video processing circuits into chips to reduce hardware entry barriers.

However, AV-Firm had *strong segment-making capabilities*. AV-Firm collected PC makers' feedback to enhance its product's reliability and compatibility. It then disseminated tuner stories and became a key cognitive player for tuners (Santos and

Eisenhardt, 2009). It also promoted its product to high import tax countries for traditional TVs, where PC products had lower or zero tax. Its sales coverage reached over 70 countries.

Thus, AV-Firm chose a brand-dependent dual BM from 2001-2008, with 62% of its average revenue generated by brand and 38% from OEM (see Figure 2).

4.1.5 PC-TV Tuner (2009) —OEM-Dependent Dual Business Model

Business background: In 2009, AV-Firm developed OEM business with most major PC makers in European markets (for buyer's background see Table 2). As a result, preinstalled tuners replaced standalones, because the total cost of the former in laptops was lower.

Overall, AV-Firm had *high product/service innovation potential* for this product (see Table 3). It was still the dominant design player. As laptop volume exceeded that of desktop PC's, the technology standard was for almost zero defect product verification and production. AV-Firm's products were fine-tuned by Japan's stringent requests, and they were awarded the Sony green partner award certification. AV-Firm did field tests worldwide to verify its tuner TV signal reception capabilities, which became an entry barrier for competitors.

However, AV-Firm had *weak segment-making capabilities*. It focused on production and verification rather than on novelty creation as the product matured. Its channel bonding was good as most PC makers relied on AV-Firm's special tuner know-how with 80% market share in the preinstalled market. AV-Firm had limited marketing activities as more users bought laptops with tuners. The VP of sales explained the business transition: "*We started to enter maintenance mode in the retail market and directed most of our resources to support the demands of buyers. Thus, our marketing gradually weakened.*"

Thus, AV-Firm chose an OEM-dependent dual BM in 2009, with 42% of its average revenue generated by brand and 58% from OEM (see Figure 2).

4.1.6 PC-TV Tuner (2010-2015) —OEM-Reliant Dual Business Model

Business background: During this period, mobile devices and IP-TV gradually replaced preinstalled tuners (see Table 2). Thus, the volume of both branded and OEM tuners dropped significantly. Only high-end laptops and desktop PCs had built-in tuners.

Overall, AV-Firm had *low product/service innovation potential* for this product (see Table 3). It was the dominant player at its height, but the technology standard moved from analog to digital TV. This damaged AV-Firm's position as the leading technology designer. Also, IC vendors lowered the barriers to entry by integrating functions into a few chips.

AV-Firm also had *weak segment-making capabilities*. It maintained tuner features for the mature market. It focused on non-PC market OEM projects with huge volumes such as set-top boxes. It maintained marketing activities in countries where analog TV systems persisted, to PC users who still watched TV on PCs, and for non-PC applications.

Thus, AV-Firm chose an OEM-reliant dual BM from 2010-2015, with 22% of its average revenue generated by brand and 78% from OEM (see Figure 2).

4.1.7 Network Video Recorder —OEM-Dependent Dual Business Model

Business background: Many famous firms such as GE, Bosch, Sony, and Honeywell also sell security systems, including network video recorders (NVRs) (see Table 1). As their brands are perceived to have higher value, their customers are willing to spend more.

In 2009, a Japanese branded firm (Gamma, hereafter) asked AV-Firm to design an OEM NVR (for buyer's background see Table 2). AV-Firm had been in the video security industry since 2000. For this project the asymmetrical competition between seller and buyer allowed AV-Firm to sell its product with its brand to system integrators. The PM Director of Gamma explained: "*Each product reflects basic knowledge of clients' needs. The real requirement of each client is a solution. AV-Firm must understand how to become a solution provider to meet clients' demands.*" Thus, Gamma focused on reseller distribution.

Overall, AV-Firm has *high product/service innovation potential* for this product (see Table 3). There are many players but none are clearly dominant, with no standard communication protocols. The entry barrier was engineers' ability to achieve compatibility with other vendors' devices.

However, AV-Firm has *weak segment-making capabilities*. AV-Firm spent a lot of effort customizing its NVRs to work with different vendors' IP cameras, without spending effort creating product novelty. However, AV-Firm's channel bonding capabilities were sufficient to meet system integrators' special demands. The BU head explained: "*Our firm has highly experienced and competent people handling special requirements that Gamma is reluctant to take on. These need a flexible business policy.*"

For marketing execution, the VP of R&D explained AV-Firm's weakness: "*Any security system is very complicated and includes many components. Gamma can provide a complete and reliable solution to customers. We cannot.*" The BU head added: "*Gamma's users have large budgets, so they buy many branded products to ensure product quality and reliability. Our users don't buy in bulk. They buy cheaper NVRs to integrate into their own solution for special project-based applications.*"

Thus, AV-Firm chose an OEM-dependent dual BM from 2010-2015, with 42% of its average revenue generated by brand and 58% from OEM (see Figure 2).

4.2 Toward a Model for Decision Making

The strategic fit between the product/service innovation potential and segment-making capabilities is important. In the previous section, we described how decision makers chose dual BMs. Now, we will illuminate the reasons underlying the results shown in Figure 2. For document cameras, AV-Firm was the first mover in the K-12 market, with around 4 million classrooms in the US and Canada compared to 500,000 classrooms in universities. AV-Firm had the potential to become a dominant player and create entry barriers. Alpha, the OEM buyer, had its own leading position in the interactive white board business, with much higher revenue than AV-Firm (see Table 2). It was not in Alpha's interest to fight for the camera business. Thus, AV-Firm chose a brand-reliant dual BM for the document camera.

For PC-TV tuners, AV-Firm was the first mover to choose the high-potential PC peripheral retail market, and it gained a leading position in the brand retail market. However, due to (1) the increased popularity of PC-TV applications in the laptop market with preinstalled tuners fueled by PC makers' dominant marketing power, (2) the impact of mobile devices on PC business, (3) the replacement of analog TV with IP-TV, and (4) built-in tuners in non-PC devices such as set-top-boxes, its dual BM has evolved from brand-reliant, to brand-dependent, to OEM-dependent, to OEM-reliant.

For network video recorders, AV-Firm was a late mover to the security industry, and many segments had already been occupied by major players. Although the industry had high potential, it was hard to have strong segment-making capabilities because AV-Firm only provided tailor-made services for system integrators. In contrast, Gamma focused on its resellers' distribution market. Thus, AV-Firm chose an OEM-dependent dual BM.

In video conferencing, AV-Firm was a late mover, while two dominant players occupied over 80% market share. So, AV-Firm found and served a virgin market segment--SMBs-- which had limited market demand. AV-Firm approached these dominant players but no deal was struck as they had far more proprietary technology and no pressure to cost-down. Also, Beta faced fierce challenges from these two players, leading to small sales volume. In theory, with low potential and weak capabilities, AV-Firm should have chosen the OEM-reliant dual BM. Instead, AV-Firm chose a brand-dependent BM. This caused losses as volume was too low and R&D costs were too high.

Overall, the capabilities of dynamically reconfiguring and integrating internal resources affect suppliers' decision to focus on brand or OEM. To adapt to fast-changing markets, suppliers can adjust the degree of emphasis on brand or OEM in a dual BM (see Figure 2). After dual BMs are implemented, the complementary or substitutive relationship between brand and OEM business decides the direction of the arrow shown in Figure 2. Formally, we propose the following two propositions regarding dual BM choice:

Proposition 1: Firms that adopt a dual business model for a product with strong (weak) segment-making capabilities are more likely to choose the brand-reliant or brand-dependent (OEM-dependent or OEM-reliant) model.

Proposition 2: Firms that adopt a dual business model for a product with high (low) product/service innovation potential are more likely to choose the model with a higher brand (OEM) ratio.

4.3 Why a Dual Business Model is Chosen

Our data demonstrates that decision makers are motivated by four types of synergy: cross-signal effect, organizational learning, resource pooling, and long-short term outcomes (see Figure 2). Cross-signal effect is an external synergy, which occurs when dual BMs create signals that straddle the connection between public branded retail channels and hiding suppliers' desire for OEM (Clair, Beatty, and Maclean, 2005). Brand BMs signal that product quality has been approved by users through market competition. They attract OEM buyers who want to sell similar products. OEM BMs subtly signal that products have the approval of famous OEM buyers, thus avoiding being seen as immature in unfamiliar brand channels (Arruñada and Vázquez, 2006). In other words, brands and OEMs create opportunities for each other, as the president of the Japanese office explained: *"We sold a few branded video conferencing products in the Japanese retail market, which attracted Beta to do OEM with us. Then, Beta induced Hitachi to carry our brand in the retail market."*

Organizational learning occurs when dual BMs allow suppliers to learn from large buyers, thereby advancing their own strategic capabilities. Suppliers can acquire external advice and benchmarking from buyers, learn about buyers' technological strengths and marketing approaches, and imitate their operation rules through informal contacts, training, and knowledge sharing (Dyer and Singh, 1998; Friesl, 2012; Wen and Lee, 2012). Suppliers can then explore more business opportunities in new markets and new

product development. The supplier's role is not merely to complement buyers. Rather, it can also gradually enhance its own marketing capabilities, becoming a potential source of innovation that buyers may be able to access (Liu, Tsou, and Chen, 2013). The BU head of network video recorders offered an example: *"From Gamma, we informally learned about soft-value design, which enabled us to make a more user-friendly user interface and increase our competitive arsenal."*

Resource pooling occurs in dual BMs when both BMs share production capacity, enhancing suppliers' cost position, and letting them flexibly adjust excess capacity and respond to temporary fluctuations in market demand (Lee and Chen, 2000). For example, the CFO explained: *"The total factory overhead costs with and without Alpha OEM document camera were: \$4.43 and \$6.1 million for 2012, \$3.3 and \$6.6 million for 2013, and \$4.3 and \$7.84 million for 2014. The total reduction was \$8.51 million."*

Long-short term outcomes occur when dual BMs have duality in performance measurement (Lavie et al., 2010). Brands have more stable and time-consuming business activities, so long-term outcomes are more critical. OEM activities are project-based, bringing in large orders in short bursts, with a focus on short-term outcomes. For example, the US office president explained: *"Even with fruitful branded long-term outcomes, we still need to maximize outcomes through Alpha's profitable short-term business."*

4.4 Decision Motivations and Order of Importance

The order of importance of the types of internal synergy differs for each dual BM. According to our research the decisive variable is whether the OEM product is exploitative or exploratory. We discuss these terms below (see also Table 4).

Table 4 Relative Importance of Motivations for Choosing a Dual Business Model

Informant	Document Camera		Video Conferencing Device		PC-TV Tuner		Network Video Recorder
	Ex-president		Technical director		Marketing director, ex-OEM director		Security BU head, president
OEM Buyer and Period	Delta: 2003-2005	Beta: 2012-2013			Japanese PC makers, a few US PC makers: 2001-2008		Gamma: 2010-2015
Exploratory OEM product	Re-designed and retested for higher image display quality.	Re-verified all features were workable with main players to ensure reliability as an end point product.			Designed new Japanese digital TV system different from systems in US and Europe. Dell/Sony demanded much higher quality.		Made all user interfaces more user-friendly.
Order of importance	1. Organizational learning 2. Long-short term outcomes 3. Resource pooling						
Reasons for order of importance	Learned key image technology to the next higher level. Small sales volume lessens resource pooling effect.	Learned correct usage of unfamiliar features. Improved short term outcome.			Learned special Japanese TV system design and reliable production to create profitable short-term outcome.		Gamma emphasized soft-value design to ensure whole system had better user interface and higher performance.
Informant	Ex-president, US office president	R&D VP, president*, Japan office president			Marketing director, ex-OEM director		Security BU head*
OEM buyer name and period	Alpha: 2012-2015	Beta: 2014-2015			Several big PC makers: 2009		Epsilon: 2014-2015

	Document Camera	Video Conferencing Device	PC-TV Tuner	Network Video Recorder
Exploitative OEM product	Asked for a new product appearance.	Fulfilled delivery with expected quality.	Requested reliable fulfillment and zero-defect production quality.	Only altered logo of existing product.
Order of importance *	1. Long-short term outcomes 2. Resource pooling 3. Organizational learning			
Reasons for order of importance	Improved short-term outcome. Reduced production cost. Less organizational learning for matured products.	Made profit from OEM products. Combined production volume and resources. Less organizational learning.	Short-term outcome most important. Had significant cost reduction.	Made profit from short-term OEM products first. Shared most materials and production and production facilitators.
Note: * The order of importance for the president and the security BU head is: "1. Long-short term outcomes, 2. Organizational learning, 3. Resource pooling." The main reason is sales volume is too small to create a resource pooling effect.				

Exploratory products: Initial demand for exploratory products is relatively low. For higher-volume products, buyers either manufacture them in-house or work with pure OEM manufacturers. For this type of product, organizational learning is the key motive for decision makers to consider dual BMs. Exploratory products face “things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation” (March, 1991). Their main purpose is to create more business opportunities in the following exploitation stage (Lavie et al., 2010). We found that AV-Firm significantly redesigned the product’s features and re-verified its functionality and reliability. In Table 4, Delta requested a redesign of the document camera’s image quality, with very few bad pixels allowed. As an OEM buyer has a much higher brand value, it needs to thoroughly verify products’ features and quality before selling them. Thus, AV-Firm improved its knowledge of image technology and enhanced quality to the Japanese standard. The ex-president explained: *“After learning this technology, our branded products sold very well. In the beginning we didn’t care about Delta’s order volume, but only about its technology guidance.”* In another example, Beta verified AV-Firm’s video conferencing product. The RD technical director explained: *“Beta pointed out several features that had been ignored such as the handling of infrequently used protocols. So, we adopted these improvements.”*

Comparing with learning, motivation for long-short term outcomes and resource pooling would be secondary. Most buyers have strong marketing power and can sell OEM goods quickly and in large volume through existing channels. Suppliers need this short-term OEM revenue and the cross-signal effect for its brand business. The effect of resource pooling is limited because volume for new exploratory products is not significant without scalability.

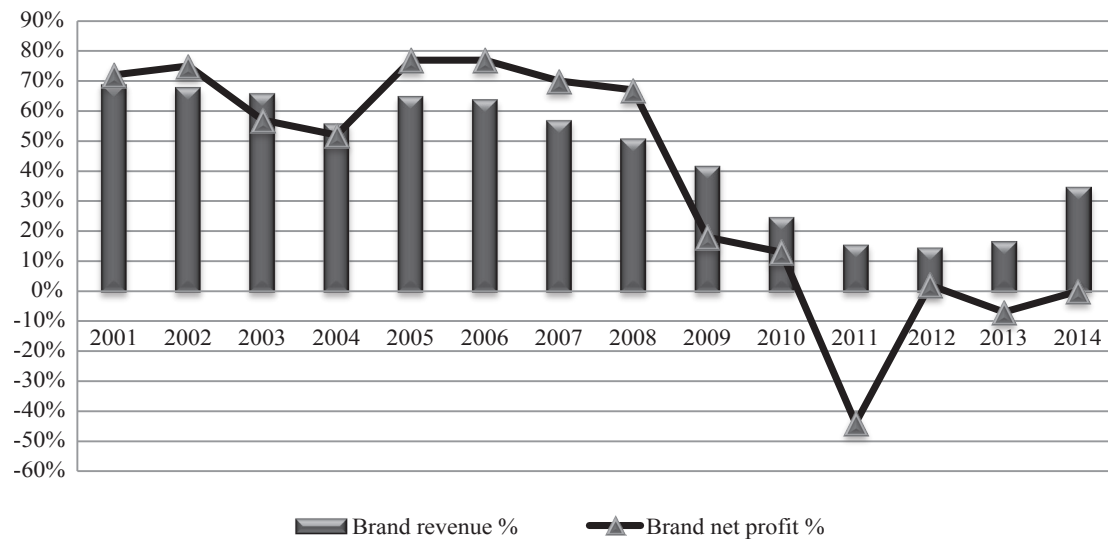
In summary, organizational learning is the most important strategic goal for capturing additional product knowledge to transition products from exploration into exploitation. Using buyers’ superior marketing power, suppliers can boost short-term outcomes faster. However, resource pooling synergy is not significant because of low volumes. Therefore, we suggest the following proposition concerning decision motivations for exploratory products.

Proposition 3: Firms that adopt a dual business model for an exploratory product are more likely to be motivated by learning through cooperating with prominent OEM buyers, while long-short term outcomes and resource pooling synergies are secondary.

Exploitative products: As technology matures, buying volume usually increases because OEM buyers have no interest in engaging in low-volume exploitative product business. Thus, suppliers can maximize market share and profits for the product.

In this situation, considerations on long-short term outcomes is the major driver for choosing dual BMs. Exploitative products face “things as refinement, choice, production, efficiency, selection, implementation, execution” (March, 1991). Their main purpose is to create more short-term and project-based outcomes for supporting exploration at the next stage (Lavie et al., 2010). Our research found that AV-Firm changed product outlook or fulfilled reliable delivery for most OEM products. Table 4 shows that PC makers in 2009 requested reliable tuner production and delivery. As a result, AV-Firm earned 42% of revenue and 18% of net profit from brand business (see Table 5). Conversely, it had a huge OEM short-term outcome between 2009 and 2015. Another example is Epsilon, which requested a change to the appearance of the network video recorders. Compared to brand business, which requires a considerable length of time to gain stable and long-term outcomes, these exploitative products bring in short-term and variable outcomes under time-to-market and risk control, which are critical for OEM buyers’ decisions. Thus, focal suppliers’ most important motivation is balancing long-short term outcomes.

Table 5 Percentage of PC-TV Tuner Revenue and Profit from Own-Brand Business



Year	2001	2002	2003	2004	2005	2006	2007
Brand revenue %	69%	68%	66%	56%	65%	64%	57%
Brand net profit %	72%	75%	57%	52%	77%	77%	70%
Year	2008	2009	2010	2011	2012	2013	2014
Brand revenue %	51%	42%	25%	16%	15%	17%	35%
Brand net profit %	67%	18%	13%	-44%	2%	-7%	0%

The second driver is resource pooling. This is for several reasons. First, as volume increases, cost reduction for all shared components becomes significant and production capacity can be shared by both BMs. Second, larger scales also increase the production yield rate. For example, after the first shipment of OEM camera products in 2013, quality improved from an average first-pass yield rate of 98.89% to 99.25%, with a standard error of 0.0039 to 0.0021. For tuners in 2009, the first-pass yield rate went from 99.24% to 99.60%, and the standard error from 0.0019 to 0.0012. Hence, suppliers' performance improves and quality fluctuation falls.

Third most important is organizational learning. Suppliers reutilize their existing knowledge to fulfill demand for exploitative products. They actually learn less new knowledge from buyers, and what they do learn is mostly related to marketing promotion.

In summary, long-short term outcomes synergy, which improves financial performance, is the most important motivation. Following this is the resource pooling synergy created by large volumes, followed by organizational learning. Formally, we draw the following proposition concerning decision motivation on exploitative products.

Proposition 4: Firms that adopt a dual business model for an exploitative product are more likely to be motivated by balancing long-short term outcomes through OEM business, while resource pooling and organizational learning synergies are secondary.

It is important for decision makers to be aware of the permanent disequilibrium of dual BM choices for each product (Demil and Lecocq, 2010). External synergy expands the product/service innovation potential after working with OEM buyers. The main reasons are: First, most OEM buyers are industry leaders in their own areas, and have efficient network ties with complementary industry leaders (Hallen and Eisenhardt, 2012). OEM buyers can provide focal suppliers with access to otherwise unreachable resources, potentially helping them achieve product design dominance. AV-Firm's marketing director explained: *"Our branded product attracted HP's attention. HP introduced Microsoft to work with us on tuner design. We could not have had access to Microsoft in the beginning. Eventually we became its technology partner."* Second, the potential view from focal suppliers should be different from that of buyers. Most OEM buyers are dominant players, own technology standards, and/or create entry barriers. Through their channels, suppliers can access previously inaccessible markets and technologies. The president of the Japanese office explained: *"After Beta's OEM, Hitachi started buying our branded video conferencing products and also sold them in the large companies market. Previously we only focused on SMBs."*

Moreover, internal synergies impact the segment-making capabilities toward strong positioning. This is because suppliers can gain exploratory knowledge for product innovation and customer service through OEM business development, gain large but short term outcomes, and so forth. These factors improve suppliers' product novelty creation, channel bonding, and/or marketing execution abilities. The president of the US office explained: *"We earned almost as much profit from the OEM buyer as from own-brand document cameras. This further developed our products' marketing capabilities."* Formally:

Proposition 5: Firms that have a dual business model for a product are more likely to enhance product/service innovation potential through external synergy while developing segment-making capabilities through internal synergies.

5. Discussion and Implications

So far, we have proposed a capabilities-based framework to elucidate how dual BMs embracing own-brand and OEM business can be logically defined and properly executed. We highlighted two critical considerations, product/service innovation potential and segment-making capabilities, in choosing right-fit dual BMs. The former reflects an outside-in view of product suppliers to evaluate their relative competitiveness in potential target markets, while the latter represents an inside-out view of suppliers to gauge their existing branding capabilities as opposed to that of potential OEM buyers. By considering both outside-in adaptive and inside-out dynamic capabilities, less well-endowed product suppliers can strategically maneuver in the market through different dual BM settings. To make this framework more useful, we also laid out key measures of respective constructs for managers to align individual judgments and reach strategic consensus. This helps resolve internal controversies concerning the type of dual BM that works best for a company.

In addition, our exploratory study has identified four distinctive types of synergy dual BMs may create: cross-signal effect, organizational learning, resource pooling, and long-short term outcomes. The first type of synergy enhances suppliers' product/service innovation potential while the latter three develop suppliers' segment-making capabilities. Our study helped us understand the association between types of synergy and product characteristics. For exploratory products, learning by providing contractual manufacturing services to leading OEM buyers is the key motive for BM choice. This is because organizational learning captures more product knowledge for transitioning products from an exploration to an exploitation phase in order to generate outcomes. However, as products evolve to become more exploitative, balancing long- and short-term outcomes becomes the strategic driver for implementing brand-and-OEM dual BMs.

These findings not only clarify how dual BMs with brand and OEM can be formulated but also specify types of synergy underlying dual BMs that are critical for success. Our research both enriches and enhances the arguments in Lee and Chen (2000),

which first highlighted dual business models and the associated synergy creation. First of all, our capabilities-based framework leads to four types of dual BM: brand-reliant, brand-dependent, OEM-dependent, and OEM-reliant. This enriched our understanding of how product suppliers can grow by planning right-fit dual BMs. Second, while our findings confirm the three types of synergy proposed by Lee and Chen (2000), we suggest that balancing long- and short-term outcomes is another critical synergy for adopting dual BMs. Markides (2013) called such a balance an ambidexterity challenge. Including all four types of synergy enhances the practicality of dual BMs. Lastly, given these four types of synergy, our study further identified their order of importance in choosing dual BMs. These provide real-world lessons for decision makers, and collectively make the dual BM decision framework more complete.

Despite the usefulness of dual BMs that embrace both own-brand and OEM business, they are not without cost. There will also be various tensions from both inside and outside the organization. Externally, product suppliers may face competitive tension with OEM buyers if differentiation between the supplier's and OEM buyer's brand becomes marginal. Internally, inter-departmental conflicts over resource allocation and performance management may emerge due to the different natures of brand operations and OEM execution. Further, engaging in both own-brand and OEM business may reveal inconsistent identity to employees, customers, upstream suppliers and alliance partners. When the impact resulting from the above-mentioned factors becomes significant, value creation from dual BMs is reduced. To successfully operate dual BMs, it is imperative that product suppliers take proper measures to manage potential tensions.

In the case of AV-Firm, the CEO explained: *"If conflict is unavoidable between brand and OEM business, we will give the OEM business higher priority in order to reduce tensions."* The VP of sales added, *"Brand business is time consuming. OEM is project-based and short-term. Without the success of short-term business, long-term business cannot be sustained."* Consequently, AV-Firm dynamically adjusts the scope of market coverage of its own-brand business, which is subtly accepted by OEM buyers, to reduce potential competitive tensions (Santos and Eisenhardt, 2009). When AV-Firm is no longer regarded as a competitor by the OEM buyer, market conflict is reduced. In addition, AV-Firm formally sends a positive message to OEM buyers and internal colleagues indicating that reducing OEM costs is a higher priority at this stage than brand innovation. Thus, internal tension and conflict are reduced with clear strategic guidance.

We call this a *soft-power approach* for resolving inter-organizational tension (Nye Jr, 2004). It is very different from the traditional concept of power play with upstream or downstream partners. For example, Porter's famous five-force model (Porter, 1980) suggests that firms try every measure to enhance its bargaining power over partners along vertical chains in order to enhance profitability. In our case, AV-firm chose to redefine its brand business scope to reduce inter-organizational competitive tension so that the dual BM could be sustained. It is very similar to the concept proposed in foreign policy studies that it is better to use soft-power strategies based on subtle influence to reduce tensions, rather than traditional hard-power coercion executed by extensive resource control (Nye Jr, 2004). In other words, taking a soft-power approach to potential competitive tension does not mean to step back but reflects a smart way to reach a win-win resolution. Such strategic decisions can then manage internal resource allocation so that inter-departmental conflicts between own-brand and OEM businesses can be reduced as well.

Although the present research offers a complete decision framework, including key motivations, considerations, and possible variations for suppliers to define right-fit dual BMs, its exploratory nature also provides a basis for further research. First of all, based on our framework, future research can establish testable hypotheses to empirically validate our model, including the influence of decision constructs on model choice and the impact of model adoption on firm performance, among others. This would not only offer empirical results for model validation and hence contribute to the extant literature, which includes little empirical work (Markides, 2013), but also offer further insight concerning determinants and contingencies of dual BM adoption and hence enrich our understanding of dual BMs.

The second area for future research is empirically investigating how various types of synergies can be realized and potential competitive and organizational tension can be resolved in implementing dual BMs. This is because while creating synergistic outcomes is essential for adopting dual BMs, sustaining the value created is the key to real model success. In addition to the use of soft-power to dynamically adjust types of dual BM, are there strategic measures useful for reducing potential tension? Research in this area would be a significant contribution to the growing literature of ambidexterity (e.g., Lavie et al., 2010).

6. Conclusions

Adopting a dual business model that embraces own-brand and OEM business at the same time is common among product suppliers, especially in emerging countries, to both explore brand business opportunities and leverage OEM buyers' resources. While synergy due to complementary resource utilization and learning could render competitive advantages to firms with dual BMs, underlying challenges and tensions are nontrivial and require the adopting firm to subtly maintain balance internally and externally. Based on a longitudinal case-based exploration, our study proposes a capabilities-based framework to determine why and how dual BMs are formulated. Such a decision framework helps product supplier decision makers define business strategy in terms of model selection, organizational boundaries, and competitive positioning. With clear strategic guidance, internal and external conflicts could be reduced and win-win co-opetition achieved. To sum up, our paper charts a path toward a more comprehensive understanding of dual business model choice and thereby facilitates more predictive theoretical development of dual business models.

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Appendix A: Excerpts of interview topic guide

- 1) What were AV-Firm's products' applications and background? What strategic motivations led decision makers to choose a dual business model, and what was their order of importance?
- 2) What was OEM buyers' background for each product? Why did these buyers choose AV-Firm?
- 3) What marketing and other capabilities were behind each product when a dual business model was chosen?
- 4) What were the special outside-in capabilities for each product, e.g., market sensing, creating and managing durable customer relationships, channel-bonding, retaining customers, etc.?
- 5) What were their special inside-out capabilities for each product, e.g., knowledge of competitors and customers, effective advertising and pricing programs, integrating marketing activities, segment and target market skill, etc.?

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We would like to thank the area editor and two anonymous reviewers of NTUMR for their insightful guidance and excellent suggestions. We would like to express our gratitude to Feng-Hsu Liu for his providing valuable comments during the early development stage of this manuscript. We also thank all participants of the 2016 Management Theory and Practice Conference held in Kyoto, Japan, where this manuscript received a best paper award. Finally, we are very much thankful for the excellent assistances provided by Joyce Huang and Joseph Breed during the revision processes.