

## The use of asset specific investments to increase customer dependence: A study of OEM suppliers

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### ARTICLE INFO

#### Keywords:

Asset specificity

Joint learning capacity

Proactive market orientation

### ABSTRACT

Making asset specific investments without sufficient economic safeguards is usually seen as a poor managerial practice according to transaction cost economics. However, in practice, many suppliers still invest in asset specificity to satisfy their major customers' requirements, who do not make sufficient investment commitments. The objective of this study is to explore how suppliers that make asset-specific investments maintain long-term relationships with their customers and even make their customers reliant on them. Empirical analysis of data from a sample of Taiwanese original equipment manufacturer (OEM) suppliers shows a significant positive indirect effect of asset specificity on the dependence of customers on suppliers, mediated through joint learning capacity. In addition, a positive link between a proactive market orientation and the degree of customer dependence on the supplier was found. This investigation finds evidence that joint learning capacity and proactive market orientation play critical roles in linking asset specificity to customer dependence.

### 1. Introduction

The presence of sellers and buyers and the relationships between the two are essential to marketing (Monga, Chen, Tsiros, & Srivastava, 2012). However, managing these relationships can be a challenge for many suppliers (Nyaga, Lynch, Marshall, & Ambrose, 2013). Given the different goals, resources, knowledge and expectations of the partner firms, each party competes for a competitive advantage, and this leads to a power asymmetry (Cowan, Paswan, & Van Steenburg, 2015). Specifically, one party in a buyer-seller relationship often has more power than the other, which means relative power endowments are highly important to the relationship (Christos & Ivaylo, 2011).

According to market power theory, a firm's behaviors are driven by power differentials (Shervani, Frazier, & Challagalla, 2007). The more powerful party is tempted to use coercive power (e.g. financial penalties, withholding support) and non-coercive power (expert, reference, legitimate, reward) to gain a greater share of the relationship's benefits (Cowan et al., 2015; French & Raven, 1959). The weaker party usually has few alternative options, and thus it is forced into more asset-specific investments, putting the weaker party in a hostage position (Kim & Choi, 2015). For example, original equipment manufacturer (OEM) suppliers are often forced to invest in asset specificity to their customers because of the lack of alternative channels and strong brand recognition of their buyers (Jean, Sinkovics, & Cavusgil, 2010).

Typically, OEM networks include a few main customers with many peer suppliers that compete aggressively against each other to serve those same customers (Cheng, 2010). The structure of the relationship between the OEM supplier and its customer is often characterized by an asymmetric bargaining power (Jean et al., 2010). Therefore, OEMs tend to use their relatively strong bargaining power to ask OEM suppliers to dedicate significant asset-specific investments (Kang, Mahoney, & Tan, 2009). OEM suppliers may accept such unreasonable requests to satisfy their powerful customers' expectations, as long as they also benefit (Cowan et al., 2015).

Asset specificity refers to tangible and intangible investments that exchange parties use to build transactional relationships. Once made, asset specificity create substantial switching costs when the transaction relationship fail to develop (Wu, Chen, & Chen, 2015). Making asset-specific investments without sufficient economic safeguards is seen as a source of dependence (Tjemkes & Furrer, 2010). According to transaction cost economics, these investments are a sign of poor managerial practice (Williamson, 1996). In other words, a firm that makes asset-specific investments increases its dependence on its transactional partner. Dependence indicates the extent to which one party's outcomes rely on the behavior of the other (Molm, 1994), and it also determines the degree of influence on the partner in the buyer-seller relationship (Lusch & Brown, 1996). A dependent party is unlikely to switch even if there are plenty of alternative partners available (Yeniyurt,

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Henke, & Yalcinkaya, 2014).

Although asset-specific investments bring the risk of dependence, many suppliers still invest in asset specificity for their major customers without receiving sufficient commitments in return (Jean et al., 2010). For example, Japanese automobile suppliers make greater asset-specific investments and develop more unique components for their customers (Hwang, 2006). In the USA and Europe, several smaller computer software companies do enter relationships with larger customers and tolerate the requests of asset-specific investments (Pérez & Cambra-Fierro, 2015). Previous research has found that suppliers are willing to commit to asset-specific investments, which refers to the supplier's informal, non-contractual commitments, when they are confident that they can realize benefits from them (Yeniyurt et al., 2014). Kang et al. (2009) also proposed that a supplier's asset-specific investments can yield additional knowledge and capability development benefits. For instance, managers of a supplier in a weak bargaining position might accept an unreasonable request because they have determined that the deal may generate positive economic spillovers via learning and capability development that can be deployed in future transactions with the same or other exchange partners. The premise of this viewpoint is that the supplier has an opportunity to develop multiple transactions, not just a single transaction with a particular customer. Therefore, a supplier's decision to make asset-specific investments can be rational when the transaction is examined more comprehensively (Trigeorgis, 1996).

However, a supplier making asset-specific investments for a particular customer does not mean the relationship will definitely be stable. A supplier that has made substantial asset-specific investments is more dependent on the buyer because the value of the investments will be greatly reduced if the relationship with the focal buyer is terminated (Williamson, 1991). Because the benefits provided by a dependent supplier are only slightly greater than or equal to the benefits provided by other suppliers, buyers have very little incentive to build a long-term relationship with the dependent supplier (Ganesan, 1994).

Although suppliers hope to gain from the spillover effects of their investments, long-standing cooperation between the two sides is not inevitable. Knowledge sharing and absorptive learning between the partners depend on the accessibility of the knowledge assets and characteristics of the partners' relationship (Srivastava & Gnyawali, 2011). However, organizational knowledge is usually tacit, sticky, and embedded in organizational routines; thus, it is difficult to learn (Ho & Ganesan, 2013). In addition, a supplier's learning behaviors may cause leakage of the buyer's knowledge (Jiang, Bao, Xie, & Gao, 2016), which in turn decreases the buyer's intent to continue cooperating with the supplier. Furthermore, potential economic value gained from spillover effects might be not realized if the buyer takes actions to prevent this from happening (Arunada & Vazquez, 2006). In other words, commitments made by a supplier may not be sufficient to build a long-term relationship with the customer. This indicates that after making considerable asset-specific investments, suppliers should deliberate how to turn the tables so that they are not stuck in a passive position. If not, the suppliers would only continue to benefit their powerful customers, while trying to survive another year and playing the same games in this kind of exploitative relationship (Cox, Lonsdale, Watson, & Qiao, 2003). The suppliers need to either invest in development of resources and capacities, and somehow reduce competition between the transactional parties, or become indispensable in some other way (Cowan et al., 2015). Cuevas, Julkunen, and Gabrielsson (2015) also proposed that the suppliers could increase social encounters and experiences in the formal relationships, and this may help the suppliers develop social capital that would facilitate reconciling opposed interests in the asymmetric relationships. However, the extant literature has not fully explored this issue with quantitative research yet.

The main purpose of the current study is to address the gaps in the literature by examining how suppliers that make asset-specific

investments can maintain long-term relationships with their customers, and even make their customers reliant on them. Since the buyer's dependence on the supplier is a source of power for the supplier (Caniëls & Gelderman, 2007), this means the degree of power asymmetry could be mitigated. Although this scenario is not uncommon in practice, it is still a new area that can be explored further. For example, Foxconn focuses on satisfying specific requests by Apple, and invests in substantial asset specificity to maintain the relationship between the two. However, the *Fox-Apple* partnership goes well beyond a traditional transactional relationship, as it involves intensive and extensive collaboration (Xing, 2015). To investigate this topic, we focus on two different supplier capacities: The first, *joint learning capacity*, refers to the extent that the supplier engages in cooperative and synergistic learning to develop relationship-specific knowledge, routines, rules, and processes that benefit both transaction parties (Fang & Zou, 2010). The second, *proactive market orientation*, refers to the extent that the supplier is proactive in understanding and satisfying the customer's latent needs as part of the value creation and relational processes (Flint, Woodruff, & Gardial, 2002; Tuli, Kohli, & Bharadwaj, 2007). We hypothesize and test the mediating roles of these two capacities on asset specificity and customer dependence on the supplier using a sample of Taiwanese OEM suppliers that supply powerful customers.

This contributes to the literature by linking asset specificity to customer dependence through these two capacities, which explore how a supplier is not always subject to powerful customers' demands, even if the supplier has made asset-specific investments. As Williamson (1999) mentioned, there is room for refinement of transaction cost theory to capture differential firm-level capabilities and learning in explaining the variance of governance choice (Kang et al., 2009).

The remainder of this study is organized as follows. In the next section, the conceptual framework and research hypotheses are proposed. This is followed by descriptions of the methodology, measurements, and data analysis of the study. Finally, we conclude the article with a discussion of the results and its managerial implications.

## 2. Theoretical development and hypotheses

### 2.1. Asset specificity and joint learning capacity

Asset specificity has emerged as a core concept in transaction cost theory, and it has been used in research on the boundary choices of organizations (Geyskens, Steenkamp, & Kumar, 2006). Williamson (1975) pointed out that the critical factors that influence transaction costs, which determine a firm's governance structure choice, are asset specificity and opportunistic behavior. In buyer-seller relationships with high asset-specificity, vertical integration is a preferred governance structure because the associated higher transaction costs safeguard against costly opportunistic behaviors. Therefore, transaction cost theory contends that asset-specific investments should only be made when there are expectations of substantial cost savings or other benefits (De Vita, Tekaya, & Wang, 2011).

Because asset-specific investments are tailored to a particular customer or value chain partner, they cannot easily be redeployed to alternative value-generating uses. These investments are also less valuable for suppliers outside of the focal relationship (Lohtia, Brooks, & Krapfel, 1994; Williamson, 1991). Heide (1994) indicated that investments of physical or human capital that are dedicated to a particular partner entail considerable switching costs. A supplier may be locked-in with a particular customer due to its asset-specific investments. From the suppliers' viewpoint, lock-in is risky because it increases the supplier's vulnerability to customer opportunism (Williamson, 1985). Asset-specific investments increase a supplier's reliance on the transactional partner, and therefore lead to a subordinate and exploitable bargaining position (Kang et al., 2009). Liu, Liu, and Li (2014) postulated that specific investments induce two different forms of opportunism by the partner. One is opportunistic

behaviors that go against formal contracts, and is called a strong-form opportunism. The other is lawful opportunistic behaviors that violate relational norms, and is seen as a weak-form opportunism. No matter which form happens, opportunism could seriously damage interfirm collaboration. Because channel partners might behave opportunistically, the seller has to dedicate considerable resources to develop and implement governance mechanisms and economic safeguards that monitor for and control these behaviors and motivate the exchange partners to fulfill their obligations (Kabadayi, 2011; Wathne & Heide, 2000).

It is worth noting that asset-specific investments are not always harmful to suppliers. Buyer-seller relationships are unstable and continuous adaptations are required for both parties in order to solve any problems they face (Guercini, La Rocca, Runfola, & Snehota, 2014). Traditional transaction cost theory focuses on individual transactions to examine governance mechanism choices. However, transactions may be interdependent (Kang et al., 2009). Relationships between buyers and sellers are generally continuous over time, rather than consisting of discrete transactions. They are complex which include a great many interactive connections (Håkansson & Snehota, 1989). Contrary to transaction cost theory, which emphasizes the potential for opportunistic behavior in transaction relationships, relational exchange theory (Macneil, 1980) contends that inter-firm relationship performance is strengthened by trust-based collaboration and the development of intangible or relationship-specific assets (De Vita et al., 2011). Pérez and Cambra-Fierro (2015) also proposed that making asset-specific investments is a key factor which affects the dynamics of collaboration in an asymmetric relationship. Indeed, asset-specific investments demonstrate the two parties' long-term commitment to one another (Lui, Wong, & Liu, 2009). A number of studies have shown that asset-specific investments can provide considerable benefits for both parties in an exchange relationship (Jap, 1999; Kang et al., 2009; Liu et al., 2014). Anderson and Weitz (1992) indicated that idiosyncratic investments are positively related to both supplier and buyer commitment. Thus, asset specificity has been a key construct in research into the performance of buyer-supplier relationships (De Vita et al., 2011; Lui et al., 2009).

Ghani and Khan (2004) empirically confirmed that suppliers who use asset-specific investments tend to have stronger collaboration with their key customers. The researchers also found that asset specificity is related to better relationship performance because it facilitates information sharing and assistance (e.g. Chen, Chen, & Wu, 2017; Handfield & Bechtel, 2002). Asset specificity may also increase the incentive for buyers to share information and knowledge. Dedicated teams and joint decision-making for new product development may, for example, increase information or knowledge sharing activities between suppliers and buyers (Dyer & Nobeoka, 2000). Moreover, because asset-specific investments are sunk cost commitments, clients are more willing to provide timely market information to their suppliers. In other words, a firm's tendency to use asset-specific investments may encourage knowledge transfer between the transactional partners (Kang et al., 2009).

Suppliers that agree to make asset-specific investments without safeguards are usually portrayed as “powerless” and more willing to bear the transaction risk because of a lack of other contractual options (Kang et al., 2009). However, there is some disagreement with this perspective. For instance, a supplier's asset-specific investments can act as a stepping stone from which the supplier can reposition its profile and enhance its capability to enter markets (Cohen & Levinthal, 1990; Nickerson, Hamilton, & Wada, 2001). Similarly, the greater the asset-specific investment, the more partner-specific knowledge the supplier gains (von Hippel, 1994), which helps the supplier outperform competitors in future transactions (Kang et al., 2009). Parmigiani (2007) also proposed that partners attempt to outlearn each other in order to acquire the other's knowledge and improve overall capacity. This kind of evolution may change the balance of power in the relationship because as one party absorbs the other party's knowledge, it becomes less

dependent on the partner (Inkpen & Beamish, 1997). This situation is particularly prevalent in OEM contexts where an upstream partner uses the cooperative relationship to gain insight into the market structure and customer needs (Hamel, 1991). In such cases, it would be reasonable for suppliers to make asset-specific investments that might generate negative short-term effects, but lead to positive outcomes in the long term (Kang et al., 2009).

The absorption of knowledge is one of the key objectives for firm relationships (Fang & Zou, 2010), and absorptive capacity has a strong connection with innovative performance (Cohen & Levinthal, 1990). Kang et al. (2009) pointed out that many OEM suppliers make asset-specific investments without reciprocal commitment because these investments can create two types of learning advantages: (1) inter-project spillovers with the same exchange partner, and (2) inter-project spillovers with other clients. However, possession of absorptive capacity is insufficient to sustain a relationship. Suppliers also need to build deeper connections with their clients and develop new specific knowledge that maximizes the mutual value of their complementary knowledge and skills over the long run (Larsson, Bengtsson, Henriksson, & Sparks, 1998). Joint learning in a cooperative relationship is important because it can continually provide new knowledge bases for both parties to respond to dynamic environments (Fang & Zou, 2010). For example, by engaging in new product development projects, OEM suppliers can combine their manufacturing experience with their buyers' understanding of market change, which can facilitate the development of new technologies, products, procedures, management skills, and process routines that benefit both parties. This kind of new relationship-specific knowledge enables a supplier and its customers to respond more efficiently to market dynamics.

Fang and Zou (2010) contended that absorptive capacity is usually examined at the individual firm level, but partnerships are inherently a dual process. Partners engage in cooperative and synergistic learning to form specific knowledge, routines, rules, and processes that benefit both parties. Joint learning capacity, by definition, is the ability of the partners to mutually develop specific organizational infrastructure and communication channels that integrate the partners' knowledge, and institutionalize it in the context of their relationship (Fang & Zou, 2010). Drawing on the value co-creation perspective, joint learning is a bilateral form of learning involving co-exploration by both transactional parties and it can develop new knowledge and ideas. Hence, this joint learning capacity can overcome the limitation of dissimilar knowledge bases through the development of mutual understanding between the two parties (Jean, Chiou, & Sinkovics, 2016). This could yield collaborative advantages for both of the parties. Unlike absorptive capacity, it is important to note that joint learning takes place when the two parties are actively creating, leveraging, and upgrading synergies by combining their resources (Fang & Zou, 2010). Only a long-standing relationship has the trust required to promote the sharing of resources and mutual creation of knowledge. When a supplier is willing to commit dedicated investments with the hope of future transactions, its customers are more likely to consider long-term partnerships (Monczka, Trent, & Handfield, 2002). Making reliable commitments via asset specificity has been empirically associated with greater cooperation and joint product design (Charterina, Basterretxea, & Landeta, 2016). Huikkola, Ylimäki, and Kohtamäki (2013) also found asset-specific investments, such as relational steering groups, product development teams and integrated IT systems, facilitate joint learning through relational forums. This effect is based on interaction between the two parties. By enriching interactions between the supplier and customer, these relational forums facilitate the sharing and creating of new knowledge (Kohtamäki & Bourlakis, 2012). More specifically, asset specificity enables suppliers to create relation-specific knowledge that enables learning advantages and enhances capabilities. In accordance with these arguments, we propose the following hypothesis:

**Hypothesis 1.** A supplier's asset-specific investments are positively

associated with joint learning capacity.

## 2.2. Joint learning capacity and proactive market orientation

For an organization to earn sustainable competitive advantage, it must create superior customer value by providing solutions that satisfy customers' latent and future needs (Narver & Slater, 1990). Sustaining a customer value-based strategy can be quite difficult (Woodruff, 1997). The vast majority of studies have shown that market-oriented companies that create superior value for their customers are associated with better performance. Kohli and Jaworski (1990, p.6), from an activity-based perspective, defined market orientation as “the organizationwide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organizationwide responsiveness to it.” They concluded that market orientation consists of responsive and proactive dimensions (Blocker, Flint, Myers, & Slater, 2011). However, most empirical research that has explored how suppliers learn about and act on buyers' needs have only focused on “responsive market orientation” (Narver, Slater, & MacLachlan, 2004).

Customers actively voice their expressed perceived needs. Yet, they usually do not mention their latent needs because they are often unaware of them even if they are important (Blocker et al., 2011; Slater & Narver, 1998). Latent needs are universal and can be found by a supplier who engages in focused and disciplined research. Firms that pursue the fulfillment of customers' latent needs exhibit a proactive market orientation (Narver et al., 2004). In contrast, firms that only address customers' expressed needs have a responsive market orientation. A responsive-oriented firm mainly develops products by integrating extant knowledge and experience to satisfy customers' expressed needs. Conversely, a proactive market-oriented company explores new information and knowledge beyond the scope of its experience to discover the latent, unarticulated requirements of its customers (Atuahene-Gima, Slater, & Olson, 2005; Tsai, Chou, & Kuo, 2008).

Although being responsive is important, Berthon, Hulbert, and Pitt (1999) indicated that a responsive market orientation may neglect innovativeness, or may cause managers to interpret the world solely through their clients' eyes (Hamel & Prahalad, 1994). Customers need suppliers to help them go beyond what they ask for; they want suppliers to devote energy and resources toward actively predicting their evolving needs (Blocker et al., 2011). Some qualitative studies have also discovered that clients desire their suppliers to proactively know and address their latent and future needs as part of the value creation process (Flint et al., 2002; Tuli et al., 2007). More importantly, clients can explicitly distinguish between firms' responsiveness and proactivity, and valuable suppliers are able to proactively anticipate their clients' needs (Blocker et al., 2011; Tuli et al., 2007). Thus, a firm's ability to continuously gather intelligence about its customers' latent needs and how to satisfy those needs is essential for creating superior customer value (Blocker et al., 2011).

A proactive market orientation entails exploratory behaviors including seeking new information and knowledge beyond the firm's existing scope (Atuahene-Gima et al., 2005; Tsai et al., 2008). It also requires working closely with clients in order to cover latent customer needs (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002). Joint learning activities help develop a shared understanding of the relationship-specific rules, routines, and processes, and the need to make coordinated actions through mutual adjustments (Crossan, Lane, & White, 1999). The supplier and customer engaged in joint learning could co-create values in terms of a new knowledge set in the exchange relationship through interaction and problem solving process (Jean et al., 2016). Under this situation, the customer extends its role into those not traditionally expected for a customer, and becomes a source of information and co-developer (Fang, 2008). The customer could be active

in identifying product opportunities and providing knowledge about the market through this interaction process (Öberg, 2010). Several individual employees are usually involved in a customer-supplier relationship, and new ideas may emerge from their interactions (Guercini, La Rocca, Runfola, & Snehota, 2015). Therefore, joint learning requires that a supplier has good communications and close cooperation with its clients to predict and then satisfy their latent needs more effectively and efficiently. An example of leveraging proactive market orientation through joint learning with clients can be found in a company called Zeng-Hsing Industrial Company, which is a major OEM supplier for Singer Sewing Company. Zeng-Hsing is good at building long-term relationships with its buyers and creates relation-specific knowledge with its clients. Thus, Zeng-Hsing provides customized products that fulfill its clients' expressed needs and anticipates its key clients' (e.g., Singer) future plans and then actively designs innovative products for them. In order to gain foresight into changing customers' needs, some companies, such as P & G, have projects where employees actually live and work with their customers. These kinds of joint learning activities are helpful for the suppliers to predict future needs, and thus develop many innovative and profitable products (Lafley & Charan, 2008). In accordance with these arguments, we propose the following hypothesis:

**Hypothesis 2.** Joint learning capacity is positively associated with the proactive market orientation of the supplier.

## 2.3. Joint learning capacity and dependence of the customer on the supplier

Inkpen and Beamish (1997) claimed that a party's dependence on its partner is contingent on the irreplaceable knowledge and skills the partner owns. Successful joint learning in a transactional relationship enhances the creation of new knowledge embedded in the organization, such as in systems, structures, procedures, culture, and strategies (Fang & Zou, 2010). The joint creation of new knowledge could be completely appropriated by the two parties in such a way that each party extracts the specific value they need (Pérez & Cambra-Fierro, 2015). This enhances the supplier's capability to fulfill its client's needs. In addition, intense information and knowledge sharing within buyer-seller relationships raises the probability of discovering new knowledge to enhance product innovations, and can also be an important factor for process innovations (Charterina et al., 2016). In this sense, joint learning capacity can be viewed as a type of dynamic capacity that helps organizations respond to environmental change and thus drives performance through blending, integrating, combining, and institutionalizing resources (Fang & Zou, 2010).

Joint learning, featuring bilateral and interactive learning, can facilitate buyers and suppliers to generate relationship-specific new knowledge by complementing each party's different knowledge base (Jean et al., 2016). During the joint learning process, created, shared and combined knowledge is transferred from a single party to become a relationship-specific property (Huikkola et al., 2013). Therefore, new knowledge created through joint learning activities is difficult to apply outside of the relationship without critical losses (Spender, 1996). Some knowledge created from joint learning activities can be transferred through documents and performed outside the relationship, but much of the knowledge stored in the routines will vanish in a different context (March & Simon, 1958). In other words, a supplier with joint learning capacity increases its clients' dependence because both parties create collectively irreplaceable knowledge that is generated from their joint learning activities. This knowledge only can be applied and retained when both parties maintain a close relationship. Thus we propose the following hypothesis:

**Hypothesis 3.** Joint learning capacity is positively associated with the dependence of the customer on the supplier.

## 2.4. Proactive market orientation and dependence of the customer on the supplier

A supplier with a proactive market orientation discovers and satisfies the latent needs of its customers through market experiments that discover future market opportunities (Li, Lin, & Chu, 2008). In this sense, a supplier is “leading” their clients to uncover unconscious needs and then develops future products to meet these unexpressed needs (Narver et al., 2004). Zeithaml et al. (2006) proposed that an ability to proactively predict what customer's value depends on processes that focus on distinct aspects of the customer's world rather than the traditional voice-of-the-customer. A supplier with a proactive market-orientation may pay more attention to changes in the clients' environment, competing firms, as well as managerial perceptions and strategies. These are interaction processes that enhance value co-creation (Payne, Storbacka, & Frow, 2008). Therefore, a supplier with a proactive market orientation assists its customers in grasping market trends and provides solutions in advance. The result is that the customer becomes reliant on the supplier to create new market opportunities and develop new products. Additionally, focusing on future customers' needs may allow the supplier to pay more attention to new market and technology developments (Tsai et al., 2008). This focus increases innovation abilities, new product development capabilities, and creates and delivers superior value to customers. In accordance with these arguments, we propose the following hypothesis:

**Hypothesis 4.** A supplier's proactive market orientation is positively associated with its customer's dependence.

The conceptual model is shown in Fig. 1.

## 3. Method

### 3.1. Sample and data collection

The research hypotheses were tested using a survey of managers from Taiwanese OEM suppliers in the information technology (IT) industry. We chose this research context to investigate the impact of asset specificity for following reasons: First, Taiwan OEM suppliers are important suppliers to leading international brands in this industry (Jean et al., 2016). For example, Taiwan has been the largest laptop manufacturer in the world since the mid-1990s, so these OEM suppliers have built close relationships with industry leaders from the US, Japan, and China. Second, the IT industry is characterized by a high degree of asset specificity (Kang et al., 2009). OEM suppliers must invest in special equipment, operating procedures, and human resources that are tailored to particular customers because of the highly competitive and rapidly changing industry environment. Third, the IT industry is vertically segregated; brands focus on marketing and new product development and buy their products from OEM suppliers that focus on manufacturing and advanced product innovation and design (Pete, Einhorn, & Reinhardt, 2005). Thus, the level of cooperation is an

important strategic feature in this industry. This makes Taiwanese OEM suppliers in the IT industry a particularly suitable context for empirically testing our hypotheses.

The survey was designed following qualitative and exploratory in-depth interviews with 15 senior managers of Taiwanese OEM suppliers. This approach provided valuable input for refining the survey tool and making the key constructs more relevant to the industry context. Using information obtained from the interviews and a review of the literature on business-to-business relationships, the survey instrument was developed using the procedures suggested by Dillman (2008).

The sampling frame included all Taiwan IT OEM supplier from directory of the *TOP 5000 Largest Firms in Taiwan* published by China Credit Information Service Ltd. (1020 companies). Since the survey required respondents who held upper management or key account manager positions, each firm was first contacted by phone to identify an appropriate respondent. After all respondents who held the job title of project manager, key account manager, sales vice president, or president were identified and confirmed at each firm, we mailed each a packet that contained the following items: (1) a cover letter explaining the purpose of the study and the promise of anonymity; (2) the survey tool; and (3) a postage-paid return envelope. Respondents were contacted again after the packets were mailed to ascertain their receipt of the packet, and they were also urged to return the completed surveys promptly (Sivadas & Dwyer, 2000). While the respondents filled-in the questionnaires, they were asked to select their most important customers, based on largest sales volume, to answer our questionnaire. This was considered critical to our study's investigation of the asymmetric nature of cross-border relationships. After eliminating 7 invalid surveys, 204 usable responses were received for analysis, resulting in a response rate of 20%.

### 3.2. Variable measurements

Measurements of the research construct used variables that appeared in previous studies, which were modified slightly to increase their applicability according information gained during the earlier in-depth interviews (Churchill & Brown, 2004). The survey tool was given in Chinese, but it was originally developed in English. Therefore, we used the conventional translation and back-translation technique, which was completed independently by two English-Chinese bilingual academics (Brislin, 1980). The two versions of the survey were then given to a third academic to assure the Chinese version had achieved idiomatic accuracy. The survey was further refined in personal interviews with another five key account managers to make sure the instructions were clear. The final version of the survey had questions meant to measure the following four primary constructs: asset specificity, joint learning capacity, proactive market orientation, and dependence of the customer on the supplier. Table 1 shows the construct names, related measurement items, Cronbach's alphas, and model fitness statistics.

The measures of asset specificity were based on an OEM supplier's

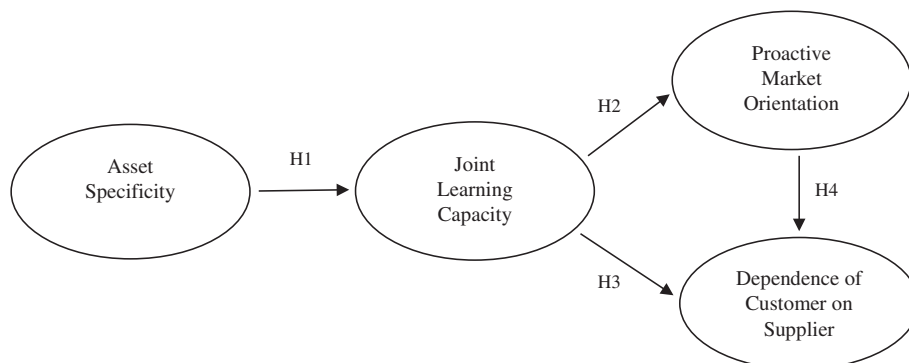


Fig. 1. Conceptual model.

**Table 1**  
Confirmatory factor analysis for the measurement model.

Construct and measurement item	Cronbach's $\alpha$	SFL	t value	SMC	CR	AVE
Asset specificity	0.93				0.93	0.70
1. If we switched to another competitive customer, we would lose a lot of the physical investment we've made for this key customer.		0.73	– <sup>a</sup>	0.53		
2. If we switched to another competitive customer, we would lose a lot of the investment in software and applications we've made for this key customer.		0.88	12.77	0.77		
3. If we switched to another customer, we would lose a lot of the investment in operating procedures (e.g., manufacturing, bar-coding, packaging, shipping procedures, etc.) we've made for this key customer.		0.87	12.63	0.76		
4. If we switched to another competitive customer, we would lose a lot of the investment in knowledge and understanding of planning for new products and programs we've made for this key customer.		0.85	12.27	0.72		
5. If we switched to another competitive customer, we would lose a lot of the investment in human resources training and learning development we've made for this key customer.		0.81	12.57	0.66		
6. If we switched to another competitive customer, we would lose a lot of the investment in relationship building we've made for this key customer.		0.87	11.61	0.76		
Joint learning capacity	0.94				0.94	0.80
1. Our relationship with the key customer is very good at establishing effective knowledge communication channels between the two parties.		0.81	– <sup>a</sup>	0.66		
2. Our relationship with the key customer has established strong capacity and organizational procedures to develop new knowledge sets.		0.90	16.00	0.81		
3. Our relationship with the key customer has built a strong ability to incorporate new organizational information systems to create, store, access, and retrieve the newly developed knowledge sets.		0.92	16.45	0.85		
4. Our relationship with the key customer is very good at establishing effective knowledge communication channels between the two parties.		0.94	17.03	0.88		
Proactive market orientation	0.89				0.89	0.67
1. We are good at anticipating changes in what our key customer needs before they ask.		0.77	– <sup>a</sup>	0.59		
2. We are able to successfully anticipate changes in this key customer's needs.		0.81	12.05	0.85		
3. We are able to offer new solutions that this key customer actually needs before they ask.		0.92	13.71	0.66		
4. We are always looking for clues that might reveal changes beyond what this key customer currently asks for.		0.77	11.31	0.59		
Dependence of the customer on the supplier	0.84				0.84	0.64
1. This key customer is strongly dependent on us.		0.75	– <sup>a</sup>	0.56		
2. It would be very difficult for our key customer to replace production or manufacturing from our company.		0.86	11.19	0.74		
3. It would be very costly for this key customer to replace our company's production or manufacturing.		0.79	10.81	0.62		

Note: SFL = standardized factor loading.

SMC = squared multiple correlation.

<sup>a</sup> The loading is fixed.

investment of tangible and intangible assets in an exchange relationship with a customer, where the investments could not be transferred for other uses, and losses would happen if the buyer-seller relationship ceased (Kang et al., 2009). According to our pre-study interviews with senior managers, four kinds of specific investments were particularly important for OEM suppliers: physical asset investments, business process investments, human capital investments, and asset-specific investments. Physical asset investments refer to making physical investments that are tailored to a specific transaction and have few alternative uses because of their specific characteristics (Joskow, 1988). Business process investments are typically portrayed as organizational routines and workflows that are customized to a particular transactional partner and which are difficult to modify once created without value reduction (De Vita et al., 2011). Human capital investments involve not only the knowledge that is required for executing particular activities, but also the costs of training and the development of an organizational culture that facilitates the interaction within an exchange relationship (Ruchala, 1997). Asset specificity relates to investments, such as material handling software and delivery systems, which have been made for a particular transactional agreement that is likely to maintain a long-term relationship (De Vita et al., 2011; Ebers & Semrau, 2015). Generally speaking, the measurement of asset specificity used six items and was based on studies by Kang et al. (2009) and Subramani and Venkatraman (2003).

According to Fang and Zou's (2010) joint learning capacity scale and pre-study interviews, four items were adopted to measure the construct, and were rated on 7-point scales, anchored with (1) strongly agree and (7) strongly disagree. Proactive market orientation refers to the discovery and satisfaction of the latent needs of customers. Hence, market orientation “leads” customers rather than merely “responds” to them

(Narver et al., 2004). We made a slight modification to four items from Blocker et al. (2011) and Narver et al. (2004). In addition, this study measured dependence of the customer on the supplier with three items modified from Kumar, Scheer, and Steenkamp (1995) and Lusch and Brown (1996).

## 4. Analytical results

### 4.1. Measurement model

Anderson and Gerbing (1988) proposed a two-step procedure as the main analysis procedure in our study. Firstly, we ran the confirmatory factor analysis (CFA) to evaluate the construct validity, and then conducted the structure equation model analysis to determine whether the full model fits well. We also performed Cronbach's alpha detection to measure reliability.

As shown in Table 1, Cronbach's alphas of four constructs exceed 0.7, indicating acceptable reliability (Cortina, 1993). In addition, all of the observed variables reach a level of significance ( $t > 1.96$ ), and the estimated parameters for standardized factor loading are over 0.45 criteria (Bentler & Wu, 1993). The values of average variance extracted (AVE) and squared multiple correlation (SMC) all meet the recommendation value of  $> 0.50$  as proposed by Bagozzi and Yi (1988), and the values of composite reliability (CR) are over threshold value of 0.6 (Hair, Black, Babin, & Anderson, 2010). Generally, the measurement model in this study has adequate convergent validity.

For the discriminant validity test, Fornell and Larcker (1981) suggested that the AVE square root of each construct should be greater than the correlation coefficient between latent constructs in the model. The analytical result of this study indicates that the values of AVE

**Table 2**  
Descriptive statistic and zero-order correlations.

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1).Asset specificity	3.58	1.41	(0.84)						
(2).Joint learning capacity	5.01	1.04	0.32**	(0.82)					
(3).Proactive customer orientation	4.80	1.05	0.36**	0.61**	(0.89)				
(4). Dependence of a customer on a supplier	4.42	1.20	0.23**	0.43**	0.41**	(0.80)			
(5). Firm age	27.83	20.15	0.01	−0.07	−0.06	−0.02	1		
(6). Firm size	1371	3901	0.05	0.15*	0.15*	0.07	0.06	1	
(7). Duration of relationship	8.36	3.83	0.08	0.10	−0.01	0.08	0.12	0.02	1

\*  $p < 0.05$ .

\*\*  $p < 0.01$  ( ) reports the square root of AVE.

square root for all constructs exceed the correlation coefficient between the two respective constructs (see Table 2). This shows that the constructs are not identical factors although they are correlated, and we have reasonable discriminant validity of the measurement model. The overall fitness indices are also satisfactory ( $\chi^2/df = 2.01$ , CFI = 0.96, GFI = 0.88, NFI = 0.92, RMSEA = 0.07) (Hair et al., 2010). In general, the reliability, validity and goodness-of-fit of the measurement model in this study are all acceptable.

Considering the validity of self-report questionnaires, this study took some steps to mitigate common method variance (CMV) problem. With regard to questionnaire design stage, (1) we scattered items in order to avoid items are identified into one specific factor by respondents. (2) we advised respondents their answers to be anonymous, and they should answer all questions honestly since there are no right or wrong answers (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). During data analysis stage, we used Harman's single-factor test to examine possible CMV problem (Podsakoff & Organ, 1986). The result of single factor model in CFA fitness indices ( $\chi^2/df = 10.89$ , CFI = 0.45, GFI = 0.43, NFI = 0.42, RMSEA = 0.22) does not yield a better result than the present model. Therefore, this is evidence to confirm that there is no serious CMV problem in this study.

#### 4.2. Structural model

The results of full model indicate an appropriate fit of the model:  $\chi^2_{(166)} = 324.16$ , CFI = 0.94, NFI = 0.90, GFI = 0.87, RMSEA = 0.07 (Bollen, 1989). The chi-square statistic of the model is significant, as might be derived from the statistic's sensitivity to sample size (Bagozzi & Yi, 1988). This study examines the relationships between the constructs, and presents the coefficients of the hypotheses in Table 3.

With regard to the proposed hypotheses, the result implies that asset specificity is a significantly positive antecedent of joint learning capacity ( $\gamma = 0.34$ ,  $t = 4.46$ ). This indicates when the supplier invests in higher level of specific assets for managing the relationship with the clients, joint learning capacity of the supplier is greater, thus supporting H1. As anticipated, the supplier's joint learning capacity significantly and positively affects its proactive market orientation, with a coefficient

**Table 3**  
Structure parameters and hypotheses.

Hypothesis	Standardized estimate	$t$ value	Result
H1: Asset specificity → Joint learning capacity	0.34	4.46**	Support
H2: Joint learning capacity → Proactive customer orientation	0.65	8.35**	Support
H3: Joint learning capacity → Dependence of a customer on a supplier	0.35	3.49**	Support
H4: Proactive customer orientation → Dependence of a customer on a supplier	0.23	2.35*	Support
Control variables			
Firm age → Dependence of a customer on a supplier	0.01	0.08	
Firm size → Dependence of a customer on a supplier	0.01	0.14	
Duration of relationship → Dependence of a customer on a supplier	0.04	0.64	

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

of 0.65 ( $t = 8.35$ ), supporting H2. We also find support for H3 ( $\beta = 0.35$ ,  $t = 3.49$ ); positing that joint learning capacity of the supplier would have a positive effect on the degree of customer dependence on the supplier. Consistent with H4, a positive link is revealed between the proactive market orientation and the degree of customer dependence on the supplier ( $\beta = 0.23$ ,  $t = 2.35$ ).

We extended our findings beyond the hypotheses to provide more insight. Bootstrapping analysis was performed in order to examine for the significance of the indirect effects in the model. Bootstrapping analysis is similar to the Sobel test (Mikolon, Quaiser, & Wieseke, 2015), but is particularly robust against violation of normal distribution, and provides better control of Type I error (Preacher & Hayes, 2008). Base on this analysis, Zhao, Lynch, and Chen (2010) proposed that an indirect effect exists and mediation is established when the 95% bootstrap confidence interval (CI) of the indirect effect does not include zero. Therefore, we conducted bootstrapping analysis (base on 5000 resamples), and display results in Table 4.

Accordingly, joint learning capacity partially mediates the relationship between asset specificity and proactive market orientation ( $\gamma = 0.20$ ; 95% CI = 0.11 to 0.30). We also find a significant positive indirect effect of asset specificity on dependence of a customer on a supplier, mediates through joint learning capacity ( $\gamma = 0.19$ ; 95% CI = 0.10 to 0.30). Notably, the direct effect of asset specificity on dependence of a customer on a supplier does not have significance when we add joint learning capacity as mediator. Together with the significant indirect effect, this finding indicates the role of joint learning capacity as an underlying mechanism that can explain the effect of asset specificity on dependence of a customer on a supplier.

## 5. Conclusion and discussion

### 5.1. Theoretical implications

The objective of this investigation was to explore how suppliers that make asset-specific investments increases the dependence of their customers. The empirical results fully support the proposed hypotheses in the study. For suppliers that make asset-specific investments, the

**Table 4**  
Mediating effects.

Relationship	Direct without mediator	Direct with mediator	Result
Asset specificity → Proactive market orientation (mediated by joint learning capacity)	0.16*	0.20**	Partial mediation
Asset specificity → Dependence of a customer on a supplier (mediated by joint learning capacity)	0.06	0.19**	Full mediation

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

findings demonstrate that suppliers can develop capacities such as joint learning capacity and proactive market orientation during cooperative process with their customers.

Several important theoretical implications can be drawn from this study's findings. First, we tried to respond to Williamson's (1999) call that the next generation of transaction cost theory research should incorporate learning and capability development into investment decisions. Transaction cost theory emphasizes the importance of choosing the best governance mechanism to maximize economic value and reduce contractual hazards (Williamson, 1996). Asset specificity is an important dimension to consider in describing transactions, since specialized assets cannot be redeployed from existing users, except at a significant loss of productive value (Williamson, 1995). Therefore, asset-specific investments may cause hold-up risk in which an investor could be locked into a relationship, and thus find it hard to change transactional partners (Chen et al., 2017). In such a situation, the investor becomes dependent on its transaction partner and increases its risk of being exploited (Hwang, 2006). Thus, investing in asset specificity without sufficient economic safeguards is seen as a form of "myopia" (Williamson, 1996).

However, transaction cost economics primarily uses individual transactions as the basic unit of analysis; thus it is not able to fully explore the possibility of interactions between deals (Kang et al., 2009). This study adopts a more systematic view that explores how suppliers can increase the dependence of their customers even while the supplier is making asset-specific investments. Our results demonstrate that joint learning capacity and proactive market orientation play critical roles in linking asset specificity to customer dependence. The mediating role of joint learning capacity implies that when a supplier makes asset-specific investments, customer dependence increases because of the development of the supplier's joint learning capacity. This is consistent with previous literature that highlights asset specificity as a necessary ingredient to creating new knowledge (Doz, 1996; Pérez & Cambra-Fierro, 2015). Asset specificity is like a relational contract that promotes relational norms that facilitate joint planning and information sharing (Hwang, 2006). Therefore, the supplier has more opportunities to build up its joint learning capacity, and create new specific knowledge, routines, rules, and processes that benefit both parties. This is a kind of a safeguard that secures a mutual sunk-cost commitment as the customer also makes investments to co-work with the supplier during joint learning. In addition, new knowledge generated as a result of joint learning activities, especially organizational routines and processes, are difficult to apply to contexts outside the relationship (Fang & Zou, 2010). It should be noted that joint learning falls within research on bilateral governance, and strong joint learning capacity in a cooperative relationship tends to make both parties more dependent and irreplaceable (Fang & Zou, 2010).

Second, this research contributes to the extant literature by emphasizing that joint learning capacity facilitates the supplier's development of a proactive market orientation and influences the relationship between the cooperative partners. Previous studies have indicated that cooperative relationships create value through inter-organizational learning (e.g., Chen, Lin, & Chang, 2009; Ho & Ganesan, 2013; Palmatier, Dant, & Grewal, 2007). This enables the supplier to identify ways to improve product quality and update manufacturing and R & D capabilities, and thus obtain competitive advantage (Yang, Fang,

Fang, & Chou, 2014). However, this point of view only captures the absorptive learning of the individual party; it does not consider the possibility that the other party may be afraid losing its proprietary knowledge. To counter this perceived risk, the partner may adopt a strict knowledge protection policy, thereby reducing the other party's willingness to collaborate, which then restricts the flow of knowledge (Nielsen & Nielsen, 2009). Moreover, according to inter-partner learning theory, when cooperative partners attempt to outlearn each other, this tends to change the balance of power, which leads to relationship instability (Inkpen & Beamish, 1997). Thus, compared to previous research, the present study highlights the importance of joint learning capacity. We suggest that the supplier's joint learning capacity is a central motivation for maintaining long-term customer relationships.

Third, this study provides empirical evidence that shows a high degree of joint learning capacity directly leads to a more proactive market orientation. Proactive market orientation is a strategically important ability in business-to-business markets. A supplier with a proactive market orientation can thoroughly analyze its customers' organizations and the dynamics of market environments to help the customers visualize possible futures (Blocker et al., 2011). However, until recently, few studies have focused on the antecedents of proactive market orientation (Lamore, Berkowitz, & Farrington, 2013). Since proactive market orientation aims to identify and satisfy a customer's latent needs, this necessarily involves knowledge generation and information sharing. Therefore it is likely that the supplier acquires the required knowledge through a joint learning process. Moreover, our results support a significant positive relationship between proactive market orientation and customer dependence. This finding is consistent with Blocker et al.'s (2011) results that found a high proactive market orientation can generate positive customer value. This means a proactive market orientation appears to play an influential role in business relationships.

## 5.2. Managerial implications

Transaction cost economics suggests that managers should not invest in asset specificity without sufficient economic safeguards. Yet, it is common in practice for an asymmetric distribution of specific investments between the transacting parties to exist (Ebers & Semrau, 2015; Nickerson et al., 2001). Within a relationship, interactions happen between parties who are seeking their own goals and acting purposefully. In such a setting, it is more important to react to the other party's actions rather than acting independently (Håkansson & Snehota, 1989). The weaker party is often forced to make more asset-specific investments to satisfy the other powerful party's requirements in an exchange relationship (Kumar, 2010). If the weaker party refuses these requests, decreased cooperative behaviors and lower performance of inter-firm relationships would result. In this inter-organizational context, the weaker supplier should view asset-specific investments as options that allow potential access to further cooperative relationships with their customers. When the supplier examines the transactional relationship from a more systematic viewpoint, the individual gains and losses become secondary to the strategic consideration of inducing the customer to form a long-term relationship. The results of our study suggest that value creation for both parties via asset specificity is a key factor that



builds strong and positive supplier-buyer relationships for the long term.

To increase customer dependence, suppliers can cultivate two capacities. The first is joint learning capacity. Suppliers need to know when learning activities involve absorbing strategic know-how and unintended leakage of customers' information. Customers may adopt knowledge protection policies to avoid leakage of core proprietary knowledge. But an overly strict knowledge protection policy can undermine the relationship. Joint learning is a solution that makes both parties more irreplaceable and stabilizes the relationship. Previous studies have also shown that joint learning leads to dyadic ability enhancement and increases relationship performance (Kohtamäki & Bourlakis, 2012; Selnes & Sallis, 2003). Therefore, suppliers should view asset-specific investments as a way to build their core competencies, and establish relationship-specific infrastructure and communication channels that facilitate shared knowledge creation. This could be an opportunity for suppliers to gain power and presence in their industry (Pérez & Cambra-Fierro, 2015).

The second capacity is proactive market orientation. The present study indicates that a proactive market orientation can increase customer dependence. Previous studies have highlighted the importance of a responsive market orientation, and many companies have striven to adjust their market orientation accordingly. Thus, the responsive market orientation is becoming quite common with time (Narver et al., 2004). However, a proactive orientation provides suppliers with greater strategic foresight and enables them to better identify and fulfill their customers' latent needs. More importantly, customers can easily distinguish between suppliers with responsive and proactive market-orientations (Blocker et al., 2011). Through joint learning, suppliers and customers cooperatively communicate their goals and values, develop a shared understanding of relevant knowledge, and take coordinated actions. This means that proactively-oriented suppliers can more easily anticipate what their customers will value. We suggest that in addition to responding to customer's expressed needs, suppliers should dedicate greater resources to developing a proactive market orientation because this helps maintain long-term relationships.

### 5.3. Limitations and future research

There are some limitations that should be taken into account when interpreting the results of this study. First, we collected a single sample source to assess independent and dependent variables for the conceptual model. Because the sample collection was not dyadic, the focal customer's actual perception might not be identical to that found in this study, and this could generate common-method variance (CMV). However, the respondents (all senior managers) of this study were well qualified to interpret their customers, and we also examined the validity of the measures using Harman's single-factor test, so CMV should not be a serious problem. Nevertheless, future research could re-test the model using respondents from multiple sources to further reduce the potential for bias.

Second, the context of the study was OEM suppliers in the Taiwan IT industry. Although Taiwan OEM suppliers are major players in the global IT industry, the research findings may not be generalizable to supplier-buyer relationships in other industries and countries. Thus, examining whether there are any country and industry differences would be an interesting future research topic.

Third, this study is subject to the limitations inherent in cross-sectional data. The present study aims at closing the research gap by examining how suppliers that make asset-specific investments can turn the tables so that they are not stuck in a passive position, even making their customers reliant on them. Although the results of the study reveal the role of joint learning capacity and proactive market orientation, the causalities can only be implied. Therefore, a longitudinal quantitative study focusing on pairs of buyers and sellers would overcome this limitation, and yield more comprehensive results.

Fourth, our conceptual model investigated two important company capacities, joint learning capacity and proactive market orientation, but other variables might have influences. Therefore, future studies should consider additional variables that could be added to the model, such as other organizational abilities (e.g., dynamic capability, strategic flexibility) and moderators (e.g., technological turbulence, goal congruence). Although the possible causal relationship was not main focus of this study, it is worth further exploration.

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