

Implementation Strategies of High Technology Acquisitions

The interplay of CEO retention and structural integration

Abstract

Acquisitions of entrepreneurial firms by established firms have become important means for technology transfer through which incumbents accumulate upstream capabilities to enter new product domains. This paper focuses on high-technology acquisitions with an aim to develop a better understanding of how incumbents can realize technology acquisition potentials by accounting for acquisition implementation process, deal and firm specific attributes.

We consider two dimensions of acquisition reorganization; acquired firm integration as structural dimension and human dimension of acquired top manager retention. Empirical literature shows that acquirers who buy small technology firms for their innovative potential often discover that the post-acquisition integration can diminish the acquired firm's innovative potential that was the crucial motive behind the acquisition. On the other hand, structural integration is claimed to be important since it serves as a mechanism of coordination between acquirer and acquired firm, what is particularly significant when high interdependence exists between the two firms. Another important aspect of acquisition implementation is the extent to which the target resources are replaced with acquirer's resources. In the context of high technology acquisitions, the important resource is the human capital of acquired firm top manager. Starting from the resource and competence based perspectives, the likelihood of structural integration and retention of acquired firm's top manager is predicted.

Specifically, we consider the following factors: i) the motives of acquisition, ii) the acquisition experience, iii) the relatedness of two firms, iv) the existence of prior alliance with target, v) whether the acquired firm's technology was a component to acquiring firm's system.

1. Introduction

In recent decades has been observed a well documented trend in technology driven industries: established, dominant firms such as Cisco, Microsoft, Dassault Systemes and big pharmaceutical companies have been increasingly using acquisition strategy with an aim of sourcing external technology and capabilities (Venhaverbeke, Duysters and Noordhaven 2002, Kale and Puranam 2004, Desyllas and Hughes 2008).

Teece (1986, 1992) argued that in these industries established firms risk technological obsolescence unless they are able to partner with innovative start-ups capable to provide an ongoing stream of innovations. Therefore, an important strategic option for established firm is to develop capability to source and apply innovation generated externally. In spite of the popularity of high technology M&A, empirical evidence suggests that their effects on post-deal innovation outcomes are often weak or even negative (Ernst and Vitt 2000; De Man and Duysters 2005; Kapoor and Lim 2007). By using acquisition strategy, established firms aim to reduce risks associated with basic research and focus their investments on more developed lines of research. However, sourcing and absorbing technology innovation outside is a complex process and acquiring firms diverge in their capability to perform such activity (Zollo and Singh 2004, Puranam and Srikanth 2007).

Since the seminal works of Jemison and Sitkin (1986) and Haspeslagh and Jemison (1991), management scholars have emphasized the importance of acquisition implementation as a key process affecting value capture and gains from acquisition activity. Prior research on acquisition implementation has focused dominantly on the challenge of balancing structural integration and separation, whereas separation is often considered as synonym for organizational autonomy. Several prior studies have investigated the antecedents and consequences of the decision to integrate the acquired firm within acquirer's organization as opposed to keep it as a separate subsidiary or business unit (Paruchuri, Hambrick and Nerkar 2006, Puranam, Singh and Zollo 2006, Puranam and Srikanth 2007, Kapor and Lim 2007, Puranam, Singh and Chaudhuri 2008). These studies, starting from Thompson's (1967) work, outline the construct "degree of integration" as the extent to which the functions of the acquired firm are linked and centralized in the corresponding functions of acquiring organization (Zollo and Singh 2004). The extent of integration is important since it serves as a mechanism of coordination and knowledge transfer between acquiring and acquired firms, but at the same time it may provoke the disruption of target pre-existing resources, routines and capabilities. Consequently, acquired firm's capabilities that were initially motive for acquisition may become destroyed.

Dominant focus on the dichotomy between structural integration and separation fails to notice the importance of non-structural aspects of acquisition implementation, such as the role of acquired top management in the acquisition implementation process (Wulf and Singh 2008, Graebner 2004, Bergh 2001, Hambrick and Canella 1993). Acquired leaders are found to play critical role in post-acquisition reorganization through

providing smooth interaction between the two organizations, adequate guidance to acquired employees and cross-organizational responsibilities encompassing both, acquired and acquiring firms (Graebner 2004). By retaining acquired firm's top management, acquirer demonstrates that it values its leadership and prior strategies, and provides some stability during the transaction (Bergh 2001). The role of acquired top manager is highlighted in high technology acquisitions, since due to information asymmetries and present uncertainty acquiring executives may lack the knowledge required to implement the acquisition successfully (Graebner 2004).

The retention of acquired top management is important from different perspectives. First, top managers themselves are concerned about the effects of acquisitions on their employment (Walsh 1989). Second, literature emphasizes that acquired CEO retention may cause the "conflict of interest", since the interests of acquired CEO may not be aligned with those of acquired firm shareholders. For instance, Acquired CEO may choose to negotiate for private benefits including potential retention at the expense of a higher premium for target shareholders (Bargeron et al. 2009).

In this paper, we explore the following research questions:

1. Are the two dimensions of structural integration and acquired top manager retention complements or substitutes?
2. What are the antecedents of the two dimensions?

We propose a model in which the likelihood of selected acquisition implementation dimensions depends on the collection of resources and competencies developed by the firms. We jointly consider the two dimensions of acquisition implementation process. It might be important to consider these two aspects in the same model, since integration and autonomy allowed to acquired firm do not have to be necessarily incompatible; they may occur simultaneously. For instance, key individuals in acquired firm may be retained and given autonomy even in the case of the structural integration. Similarly, structural separation does not necessarily imply autonomy given to acquired firm. Regardless of the level of integration, acquired top manager can be retained and motivated to cooperate or replaced with new manager from acquiring organization, what would affect the level of autonomy allowed to acquired firm. Thus, there appear to exist at least two key dimensions of acquisition implementation process: the degree of acquired firm's integration as a structural aspect (Paruchuri, Hambrick and Nerkar 2006, Puranam, Singh and Zollo 2006, Puranam and Srikanth 2007, Kapor and Lim 2007, Puranam, Singh and Chaudhuri 2008) and the extent to which the acquired firm's resources, here viewed as human capital of acquired top manager, are replaced (Capron 1999). Prior studies observe these two dimensions separately, with the only notable exceptions of empirical works by Zollo and Singh (2004) and Zaheer, Castaner and Souder (2008). These two studies explore the consequences of acquisition implementation dimensions by linking them to different measures of acquisition performance, while this paper focuses on the antecedents of selected implementation

dimensions by modeling their likelihood starting from the deal and firm level characteristics.

This paper is organized as follows. Section 2 discusses the findings of previous literature on structural integration and top management retention. Section 3 illustrates the propositions and theoretical model starting from the resource and competence based perspectives. The section 4 describes sample, variables and method used. The subsequent section 5 describes the findings. Finally, the section 6 discusses the possible implications.

2. Acquisition implementation

2.1 Structural integration

The critical decision determining overall post-acquisition implementation strategy is the extent of structural integration vs. separation of acquired organization (Pablo 1994, Larsson and Finkelstein 1999, Ranft and Lord 2002, Schweitzer 2005, Puranam et al. 2006, Puranam and Srikanth 2007, Puranam et al. 2009). Structural integration is needed as a mechanism of close coordination to support efficient knowledge flow between the two firms (Pablo 1994, Ranft and Lord 2002, Schweitzer 2005, Puranam et al. 2006, Puranam et Srikanth 2007, Puranam et al. 2009). Structural integration allows the combination of formerly distinct organizational units into the same organizational unit following an acquisition. As a formal design choice concerning the “grouping” of formerly distinct organizational units, structural integration is beneficial as coordination mechanism when there are large interdependencies between two organization (Puranam, Singh and Chaudhuri 2009). Corresponding to higher levels of interdependence are coordination mechanisms with increased coordination capacity, such as authority and mutual adjustment (Tushman and Nadler 1978, Puranam, Singh and Chaudhuri 2009). Structural integration provides increased coordination capacity by aligning interests of acquirer and acquired firm towards the goals of the integrated unit. Thus, structural integration typically results in common goals, common procedures and common authority between acquiring and acquired employees, as they are located in common organizational units. Even if imposition of these aspects on acquired employees can provoke some disruption effects, these aspects can also increase reciprocal predictivity of actions as two parties adhere to the same procedures, have the same common goal and are responsible to the same authority (Puranam, Singh and Chaudhuri 2009).

Structural integration has certain drawbacks as well (Puranam, Singh and Chaudhuri 2009). Integration may provoke disruption of target pre-existing routines, since it ends the target’s autonomous existence. Such “loss of autonomy” effect can occur in two different ways. First, specifically in high-technology acquisitions, structural integration may cause loss of autonomy of acquired inventors resulting in the decrease in their

motivation and productivity (Paruchuri et al. 2006). Second, extensive integration implies common authority, work practices and procedures. To become a part of such an integrated unit, work and practices of acquired firm have to be altered inevitably (Puranam, Singh and Chaudhuri 2009). Such changes can disturb valuable organizational routines of acquired firm and in such a way may undermine its innovative capabilities (Ranft and Lord 2002, Puranam, Singh and Chaudhuri 2009). Empirical studies have provided evidence in support of this view, because of before mentioned shortcomings, structural integration on average damages innovation activity of the acquired firm. For instance, Paruchuri et al. (2006) and Kapoor and Lim (2007) found larger decrease in the innovation productivity of acquired inventors when the acquired firm was integrated into the acquiring organization as opposed to being kept as a separate subsidiary. The empirical results suggest that structural integration through the alignment of acquirer and target operations permanently alters target's organizational properties, affects its existing routines and may provoke the disruption of its innovative capabilities, at least in the short run.

2.2 Top manager retention in acquisition literature

Another important dimension of the post-acquisition implementation involves the degree to which existing resources of acquired firm are dismissed or replaced with acquiring firm's resources. Capron (1999) explored the extent of resource redeployment between the two firms and found it is significantly positively related to performance. Important among acquired firm's resources is the human and social capital embedded in its employees, in particular, in its top management team (Graebner 2004, Zollo and Singh 2004). In the case of extensive integration, the resource redundancy between the two firms may be more prominent (Zollo and Singh 2004). Zollo and Singh (2004) show that the correlation between the constructs capturing the level of integration and the degree of acquired firm's resource replacement is positive and significant (0.417). They measure the target resource replacement on a questionnaire based four-point scale asking to what extent the executive leadership of the acquired firm has been changed following the acquisition. While positive relationship between the level of structural integration and target top management replacement can often be observed, the correlation is less than perfect.

There have been developed different perspectives regarding the effects of changes of acquired top management on acquisition performance. Market for corporate control and agency perspectives argue that acquisitions have a purpose to replace incompetent management of acquired firm with capable and more competent acquiring or external management (Jensen and Meckling 1979, Fama and Jensen 1983, Walsh 1988, Walsh 1989). To the extent that an acquisition was motivated by the poor performance of acquired top management, the performance of acquired organization is expected to improve after their replacement.

On the other hand, resource-based view emphasizes the role of redeployment of merging firms' resources leading to revenue-enhancing capabilities (Capron 1999). According to resource-based view, acquisitions can build competitive advantage through retention of acquired top managers as owners of valuable resources, embodied in personal characteristics such as experience and expertise (Canella and Hambrick 1993, Graebner 2004, Wulf and Singh 2008).

In the context of high technology acquisition, human capital embedded in acquired top manager may be especially important due to the following reasons.

First, knowledge-based assets are more difficult to access than tangible ones. In particular, it is difficult to observe asset quality and value of target; acquirer cannot be certain what will be transferred in acquisition due to tacit nature of knowledge and increased human capital turnover (Coff 1999, Zander and Kogut 1995). In uncertain technological environments acquiring firm managers are less likely to have clear idea about what the acquired personnel should be working on; or even where the acquired firm's knowledge lies. In such context, it may be important for two management teams to develop an ongoing working relationship (Coff 1999). Moreover, it may be important to retain and motivate to cooperate acquired CEO who can act as a leader of target innovation strategy, set goals for target and perform mobilizing, mitigating actions and cross-organizational responsibilities (Graebner 2004).

Second, dynamic external conditions and rapid changes in technology markets often make it difficult for acquirer to dedicate enough attention to the acquired firm and to design adequate actions for an acquisition to succeed (Graebner 2004). In such an environment, the active role of acquired leaders may be needed to support the process of acquisition implementation and replace the eventual lack of leadership from acquirer.

Empirical literature evidenced that acquisitions trigger substantial changes in the top management of acquired firm (Walsh 1988, Walsh 1989, Canella and Hambrick 1993, Buchholtz et al. 2003). US targets often lose about two-thirds of their executives within five years following the acquisition- over twice the normal rate (Walsh 1988). Zollo and Singh (2004) explore the replacement of target top management team at acquisition. Their findings suggest that replacing acquired top management negatively affects post-acquisition performance, in particular for targets at intermediate levels of pre-acquisition performance. One possible explanation can be in the fact that the uncertainty about the performance implications of management replacement is highest for targets at the intermediate levels of pre-acquisition performance (Zollo and Singh 2004). At the low level of target's pre-acquisition performance, the management replacement takes on positive sign, as in the market for corporate control hypothesis, but is not statistically significant. Canella and Hambrick (1993) find that the departure of acquired executives is harmful for post acquisition performance. Their study suggests that the retention of acquired leaders represents an important aspect of stability, that may prevent and reduce the disruptive effects of extensive changes during acquisition implementation. Importantly, departure of higher rank executives had greater negative impact on post-

acquisition performance. Moreover, promoting one or more acquired executives in the newly combined firm led to performance enhancement. The status promotion increased management commitment and motivation towards making an acquisition successful. In their sample near 50 percent of acquired executives departed within the two years after the acquisition, indicating that for many executives an acquisition represents a serious career disruption. Earlier studies provide evidence that about 60 percent of acquired executives leave acquired firms within five years following the acquisition (Hayes and Hoag 1974, Walsh 1988, Walsh 1989).

Data and Grant (1990) conducted an unique study where they analyzed the autonomy of acquired firm as the level of day-to-day freedom allowed to acquired firm's management in managing the business. Thus, autonomy means that acquired management had freedom of influencing events and making day-to-day operating decisions without control by the acquirer in the strict sense. They found that acquirers allow greater autonomy to acquired management in unrelated acquisitions than in related acquisitions. The results suggest that the extent of autonomy given to the acquired firm management not only depends on the type of acquisition, but also has an important effect on the outcomes of acquisition. In unrelated acquisitions autonomy was associated with superior performance, while in related acquisitions such relationship was not established.

Virany et al. (1992) explored the CEO and top management team replacement in the microcomputer industry. They argued that renewal among the executives in a turbulent environment is important for organizational success, while the stability among executive team leads to strategic inertia. Their findings suggest that the top performing firms either retained the incumbent CEO or promoted a new CEO from within, while allowing for substantial changes in the composition of other members of executive teams. Thus, both the change and stability were important to cope with uncertain, dynamic environment. Overall, empirical literature demonstrates that acquired top management active role in acquisition implementation can provide an element of stability for acquired employees and alleviate disruptive effect of acquisition organizational changes (Graebner 2004, Ullrich, Wieseke and Van Dick, 2005).

3. The Antecedents of acquisition implementation strategies

In this section we highlight the deal and firm-specific characteristics as drivers of costs and benefits that moderate the trade-offs between selected dimensions of post-acquisition reorganization. For this purpose we combine insights provided by the resource and competence based perspectives. The competence-based literature highlights that acquisitions of high technology entrepreneurs provide the unique technological capabilities of these firms to be combined with the complementary assets and capabilities of the acquiring firm (Teece 1986, Gans and Stern 2003). For instance,

due to use of the acquiring firm's brand and global distribution network, the expected return from an innovation developed by the acquired firm is greater than in a situation in which it would operate independently.

In a similar vein, resource-based view suggests that acquisitions are important practices through which firm's specific assets and capabilities are housed in one organization and merged with assets of the other organization to improve performance of the combined unit (Anand and Singh 1997, Capron et al. 1998, Ahuja and Katila 2001).

Starting from acquisition literature, we consider as the antecedents of the dimensions of acquisition implementation the motive of an acquisition (Puranam, Singh and Zollo 2006, and Puranam and Srikanth 2007), acquiring firm's prior acquisition experience (Zollo and Singh 2004, Puranam and Srikanth 2007), the interdependence between the two firms operationalized through the characteristics of the acquired firm's technology (Puranam, Singh and Chaudhuri 2009), dyad level characteristics such as the similarities in the products and markets between the two firms commonly referred to as the business relatedness (Koh and Venkatraman 1991, Coff 1999) and prior collaborations between the two firms (Porrini 2004, Agarwal 2006).

3.1 High-technology acquisition motives

Acquisition literature differentiates two fundamentally different motives driving the acquisitions of small high-technology firms. On the one hand, an acquisition may be instrumental to allowing the acquiring firm an access to existing technologies embodied in the technological artifacts of the acquired firm (e.g. a new product or patent). These artifacts can be exploited commercially in combination with complementary assets of acquiring firm such as brand, large scale production capacity or distribution channels. On the other hand, acquiring firm may aim to hinge on the technological capabilities of acquired firm to generate an ongoing flow of innovations, over and beyond those that acquired firm had already developed at the time of acquisition (Puranam, Singh and Zollo 2006, and Puranam and Srikanth 2007, Colombo et al. 2010). Certainly, an acquisition may be driven by both exploitative and explorative motives. Nonetheless, one of these motives generally prevails over another (Puranam, Singh and Zolo 2006). The exploration – exploitation concepts (March 1991, Levinthal and March 1993) provide framework for understanding of the needs of an innovative firm at different stages of product or technology development. Exploration is described as “the experimentation with new alternatives” having returns that are often uncertain or even negative. Exploitation is defined as “the refinement and extension of existing competencies, technologies and paradigms” showing returns that are positive and predictable (March 1991, Rothaermel and Deeds 2004). Rothaermel and Deeds (2004) argue that the distinction between exploration and exploitation can be observed on the basis of their diverse antecedents. While the antecedent of exploration is a desire to

discover something new, the antecedent of exploitation is the existence of an exploitable set of resources or assets under the control of the firm. In this sense, exploitation depends on and assumes prior exploration. The innovation trajectory of the firm can be observed in terms of ongoing, sequential exploration and exploitation. Viewed longitudinally, there are stages in the development of acquired firm's technological trajectory which are more exploration intensive, given that exploration activity is more pivotal than exploitation to innovate successfully. It has been argued that exploration is relatively more important if at the time of acquisition an acquired firm has not yet launched its first product (Puranam et al. 2006); if its technology is in early development or pre-product stage, acquired firm will be more exploration oriented. On the other hand, exploitation will dominate if acquired firm has a full product ready for commercialization.

In exploitation motivated acquisitions, the acquired firm's knowledge is articulated and teachable, codified to a great extent, it exists in a form of a concrete piece of technology, patent or a prototype. Such knowledge can be relatively easily communicated and described by using oral or written media (Zollo and Singh 2004). When acquired firm has a concrete piece of technology or full product, acquired top manager's role in guiding target innovation strategy and creating link between acquired and acquiring firms' employees to support smooth coordination may be less important. The information asymmetries and technological uncertainty between acquiring and acquired firms are lower in exploitation situation; the role of acquired leaders to encourage the completion of a product by setting goals for acquired firm is less important since the product is already completed (Graebner 2004). Thus, the likelihood of acquired CEO retention may decrease in exploitation motivated acquisitions.

On the other hand, structural integration as a mechanism of enhancing coordination between acquiring and acquired firms, is conducive to exploitation. In exploration motivated acquisitions, structural integration may cause strong disruptive consequences through provoking the "loss of autonomy" feelings, departure of acquired key inventors and disruption of acquired innovative capabilities (Paruchuri, Nerkar and Hambrick 2006, Puranam, Singh and Zollo 2006, Puranam and Srikanth 2007). In exploitation motivated acquisitions, the negative effects of integration in term of "loss of autonomy" have less disruptive impact on acquired innovative capabilities since acquired firm has already developed a full technology or product. Thus, in the situation of exploitation, the coordination benefits accomplished through structural integration are greater than integration costs stemming from the "loss of autonomy" effect. Therefore the likelihood of integration may increase with the exploitation motivated acquisitions.

P1a. In exploitation motivated acquisitions the likelihood of structural integration increases.

P1b. In exploitation motivated acquisitions the likelihood of acquired top manager retention declines.

3.2 Acquisition experience

Prior literature on acquisitions has used research on learning curves originally developed to increase understanding of manufacturing processes (Epple, Argote and Devadas 1991, Lapre, Mukherjee and Van Wassenhove 2000) to test whether learning processes occur within acquisitions. This stream of literature attempts to link the accumulation of experience with different measures of acquisition performance to assess if the improvement in performance has occurred through experiential learning (Lubatkin 1987, Bruton et al. 1994, Pennings et al. 1994, Halebian and Finkelstein 1999, Hayward 2002, Zollo and Singh 2004). Success of serial acquirers, such as Cisco or Dessault Systemes, suggests that acquisition experience affects focal acquisition performance at least partly through building expertise in post-acquisition implementation (Puranam and Srikanth 2007). Firms may be able to learn to manage structural integration by simply conducting more acquisitions, at the same time developing integration capabilities. Puranam and Srikanth (2007) demonstrate that negative effects of structural integration on the ongoing use of target's technological capabilities are alleviated when acquiring firm has substantial acquisition experience since learning by doing helps acquiring firms to overcome organizational problems caused by integration. They argue that repeated acquirers may develop capabilities to enhance effective implementation of structural integration through strengthening of the coordination effect and weakening the disruptive consequences of the loss of autonomy effect. In particular, acquisition experience in high-technology sectors may be more relevant to learn to manage integration and mitigate its disruptive consequences rather than the overall acquisition experience. Thus we may expect that experience in conducting high technology acquisitions leads to greater integration capability for high-technology acquisitions. At the same time, with the improved capability of managing integration, an acquiring firm may also learn how to alleviate its disruptive consequences. This effect may reduce the need for acquired CEO to alleviate the disruptive effects of integration (Graebner 2004). Thus, with improved integration capabilities developed through high technology acquisition experience, the need for acquired CEO retention may decrease.

P2a. Experience in conducting high-technology acquisitions increases the likelihood of structural integration.

P2b. Experience in conducting high-technology acquisitions decreases the likelihood of acquired top manager retention.

3.3 Product and market relatedness

Relatedness represents the extent to which acquirer and target industries draw on similar forms of expertise (Coff 1999). Unrelated buyer may face severe information problem

in pre-acquisition evaluation of target, because he may lack the expertise needed to evaluate target. The information problem can be particularly prominent if unrelated acquirer intends to integrate target. Cohen and Levinthal (1990) emphasized shared knowledge and expertise as crucial factors that support firm's absorptive capacity, help communication, assessment of new information value and its assimilation. When acquiring and acquired firms have overlapping knowledge bases and related technological processes, the acquiring firm will be in a better position to recognize, value and apply the discoveries of the target in own production process (Kogut and Zander 1992, Grant 1992, Colombo et al. 2010). Coff (1999) argues that relatedness is particularly relevant when there are knowledge based assets involved, such as in technology acquisitions. Relatedness decreases the level of uncertainty and information asymmetry, implying also greater absorptive capacity (Coff 1999, Graebner 2004). Corporations may be more adept at managing businesses that rely on similar knowledge bases. Coff (1999) proposes scenario in which unrelated acquirers due to high information asymmetry do not intend to integrate, but rather use other strategies; relatedness would decrease the likelihood of structural integration. Related buyers are better able to access the target's competences and resources, since they have related knowledge bases. Thus, for related firms, structural integration would lead to less disruptive effects than in the case of low relatedness between two parties. Datta and Grant (1990) support this idea with finding that unrelated acquisitions result in less post-acquisition integration.

When relatedness is low, acquiring firm may have limited knowledge of the operations of target, thus it may be essential to retain acquired top manager who would support the acquisition implementation process. Moreover, for unrelated acquiring firm is more difficult to replace the target top manager with a suitable executive from within acquiring firm.

P3a. Relatedness increases the likelihood of structural integration.

P3b. Relatedness decreases the likelihood of acquired top manager retention.

3.4 Prior collaborations

Organizational learning literature emphasizes that prior alliance experience can contribute to firm's future acquisitions (Wang and Zajac 2007). Literature analyzing learning processes through alliances distinguishes between general partner experience and partner specific experience (Zollo, Reuer and Singh 2002), with the former resulting from allying across a diverse sets of partners while developing a general alliance capability, and the later resulting from repeatedly allying with the same partner over time and developing the mutual awareness. Here we focus on the partner-specific experience in the form of prior collaborations with the focal acquisition target.

Through prior collaborations a firm can become familiar with its partner's idiosyncrasies, find effective ways of working together and build mutual understanding (Colombo et al, 2010). In particular, alliances involving joint R&D, intensive communication and knowledge exchange between firms may have a potential to reduce information asymmetry characteristic for technological acquisitions. Thus, collaboration with target may increase the knowledge about its unique innovative capabilities and provide better perception of target's organizational routines and culture. Moreover, partner specific alliance experience supports the development of absorptive capacity between firms, ensuring greater ability of acquiring firm to recognize and assimilate the discoveries of target. Porrini (2004) found that prior alliance between acquirer and target benefits acquisition performance, suggesting that target-specific experience has a benevolent effect on target selection, valuation and structural integration. Agarwal et al. (2006) assess the impact of prior alliances on post acquisition coordination and integration. They find that prior social contact between firms has a positive effect on post-acquisition coordination since established communication allows for better mutual understanding. Therefore, we may expect that an existing alliance through pre-established coordination links alleviates and supports the process of structural integration. At the same time, due to established routines of cooperation and existing social contact between the two firms, the need for acquired top manager as a link between two firms may decline, decreasing the likelihood of acquired top manager retention.

P4a. Existing alliance with acquired firm increases the likelihood of structural integration in the focal acquisition.

P4b. Existing alliance with acquired firm decreases the likelihood of acquired CEO retention in the focal acquisition.

3.5 Interdependence and component technology

Interdependence, the need for coordination and integration have been important concepts in organizational design for several decades (Thomson 1967).

Interdependence can be defined as “the extent to which the elements upon which work is performed or the work processes themselves are interrelated so that changes in the state of one element affect the state of the others” (Scott 1992). The interdependence of tasks or domains often leads to the interdependence of organizations, since the need for interaction and coordination of cross-functional teams increases when interdependence is greater (Iansiti 1998, Chaudhuri et al. 2005). Thus, interdependence determines the necessary extent of coordination (Puranam, Singh and Chaudhuri 2009). Thomson (1967) proposed that greater technical interdependence requires greater resources devoted to coordination. Thus, the degree of interdependence determines

coordination costs and the extent of coordination between two entities. The important benefit of structural integration lies in enhancing of cooperation between acquiring and acquired firms by supporting alignment of interests towards the goals of integrated unit. The value of structural integration lies in its ability to support coordination of interdependence between organizations (Puranam, Singh and Chaudhuri 2009). Following Puranam, Singh and Chaudhuri (2009), we expect that when there is high degree of interdependence between the two firms, structural integration benefits the coordination of firms' activities, since the gains from coordination rise with interdependence while the costs of the loss of autonomy are not directly related to the extent of interdependence. Interdependence is important when target's technology represent a component of acquirer's system. In this case high degree of knowledge sharing between firms is needed for technological benefits to be realized, since the technological capabilities of acquiring and acquired firms are interdependent and often require certain adjustments in order to be combined.

P5. When target produces a component technology, the likelihood of structural integration increases.

3.6 Component technology and relatedness

Puranam, Singh and Chaudhuri (2009) argue that common ground operationalized through the existence of pre-acquisition patenting activity by acquiring and acquired firms in the same technology classes provides an alternative, informal coordination mechanism instead of structural integration when the target technology is a component to acquiring firm's system. The notion of the common ground is closely related to the notion of common knowledge; a knowledge that is known iteratively among interacting individuals. In contrast to structural integration that promotes coordination through formal mechanisms such as common authority, procedures and goals, common ground allows for rather informal coordination. It also increases absorptive capacity and understanding of the characteristics and the value of target technology. With common ground, the coordination occurs due to the fact that individuals in two firms share sufficient knowledge to enable each to adequately align their actions. In such a manner, informal coordination based on common ground can be a substitute for a formal structural integration.

In technology acquisitions, since similar product base relates to similar technological core, product relatedness may also moderate the likelihood of integration in acquisitions of component technology (Datta and Grant 1990, Puranam, Singh and Chaudhuri 2009).

P6a. Product relatedness decreases the likelihood of structural integration in an acquisition of component technology.

3.7 Component technology and prior alliance

Similarly to relatedness, pre-acquisition R&D alliance between acquiring and acquired firms may support the absorptive capacity of acquiring firm for acquired firm's technology. Existing alliance with acquired firm increases the awareness of its organizational routines, increases the knowledge of acquired firm's technology and reduces information asymmetry characteristic for technology acquisitions. Established routines of cooperation through alliance may serve as an alternative mechanism of informal coordination in an acquisition of component technology and decrease the likelihood of structural integration.

P6b. The existence of alliance between firms decreases the likelihood of structural integration in an acquisition of component technology.

4. Sample and Data

In keeping with prior literature, we define technology acquisition as an acquisition of small technology-based firm by large established firms to gain access to its technology and capabilities (Granstrand and Sjolander 1990, Puranam and Srikanth 2007, Puranam, Singh and Chaudhuri 2009). Acquisition events are identified from Zephyr with announcement dates in period from 01 January 1999 until 31 December 2004. Zephyr is a comprehensive record of the corporate deals published by Bureau Van Dijk, including mergers and acquisitions, initial public offerings, and venture capital deals. We bound the analysis to high-technology industries. An acquisition event is characterized as a high-technology acquisition if the acquired firm participated in one of the following sectors: Drugs (283), Computer and office equipment (357), Electronic and other electrical equipment and components except computer equipment (36), Instruments (38) and Computer programming (737). The definition of high tech industries conforms to the definition offered by OECD (1997) with the exclusion of aerospace and defense, which are excluded due to the fact that few firms in Europe operate in this industry.

Other selection criteria are the following: a) the headquarters of the acquirer and acquired firms were located in European Union or United States, b) acquiring firms are public companies, c) acquired firms had less than 1000 employees. In this manner I initially sourced 368 acquisition events.

In the second step, we collected articles published on these acquisitions from Lexis Nexis and online business press. Out of 368 acquisition events, the data on the status of acquired firm in respect to structural integration and acquired CEO retention were available for 156 events. Due to lack of information on these two dimensions in other acquisitions, we bounded the analysis to 156 acquisitions. Data on independent

variables are collected from the secondary sources, notably Zephyr, Lexis-Nexis, Thomson SDC and Amadeus.

4.1 The variables

Dependent variables

Structural Integration. To determine whether the acquired firms were left as separate subsidiaries (Integration=0) or were integrated (Integration=1), we examined acquisition announcement articles in Lexis Nexis and business press. When articles reported: “Under terms of the acquisition.... **Citrix** will integrate **Sequoia** along functional lines”, we concluded that the acquired firm was structurally integrated. Further, to corroborate this observation, we checked for the list of subsidiaries for each acquiring firm in Thomson Financial after the acquisition announcement. In cases when acquired firm was listed as a subsidiary, we conclude that there was no structural integration.

Target top manager retention. For each acquired firm we identified the name of the individual occupying the position of CEO in the fiscal year prior to the acquisition announcement. The definition we adopted for acquired CEO retention is whether the acquired CEO was reported in any capacity (as an officer or director of the combined firm) in the year following the acquisition completion. We sources this information from Lexis Nexis articles, SEC filings for US acquired firms and business press online.

Independent variables

Exploitation. Technology acquisitions are often instrumental to allowing acquiring firms access to existing technological artifacts of acquired firms (e.g. an innovative product, patent or prototype). These artifacts can be exploited commercially in combination with complementary assets (e.g. brand, large scale production capacity, distribution channels) of the acquiring firm. Following the previous literature, we label this type of acquisitions as exploitative (Puranam et al. 2006, Puranam and Srikanth 2007). Thus, we create a dummy equal to one for exploitation acquisition when acquired firm at the moment of acquisition had a concrete piece of technology (a product, patent or prototype).

Component. To assess whether the acquired technology was a component to the acquiring firm’s system, we examined the press releases about the acquisition. In accordance with Puranam et al. (2009), we construct a dummy variable equal to 1 if the acquired technology was to be used as a part of acquiring firm’s product system (component =1). For instance, when article reported: “...The Sequoia product, XML Portal Server, will become an important element of the Citrix solution...”, the acquired

technology was coded as component. Similarly, Analog Devices' statement: "... As a result of our acquisition of BCO Technologies, we are incorporating Silicon-on-Insulator technology (BCO product) into our next generation of inertial sensors..." resulted in coding the BCO technology as component. Thus measure could be improved through cross-checking by experts.

Product Relatedness. We measured the relatedness (Prodrel) of acquiring and acquired firms by the extent of overlap between the product codes assigned to acquiring and acquired firms by Thomson Worldscope. Following Puranam and Srikanth (2007) and Puranam, Singh and Zollo (2006), the extent of overlap was calculated as the number of 3-digit codes common to acquirer and target divided by the total number of product codes assigned to acquired firm. We did not use the patent based measure of relatedness since around 41 percent of acquired firms in this sample did not publish patents prior to the acquisition.

Alliance. We create a dummy for alliance equal to one if the existence of alliance between acquiring and acquired firms prior to the focal acquisition was reported in business press.

Hi-tech experience and Other experience. Acquisition experience is calculated as the number of acquisitions conducted by the acquiring firm before the focal acquisition. We partition the total acquisition experience on high technology (Hitechexp) and other non-technology acquisition experience (Otherexp). In high-technology experience we include only acquisitions of targets in the following industries: Drugs (283), Computer and Office Equipment (357), Electronic and other electrical equipment and components except computer equipment (36), Instruments (38) and Computer programming (737). We expect that high technology acquisition experience may be more relevant for experiential learning and building of acquisition capabilities in the context of high-technology acquisitions explored in this study.

Control variables

Relsize. We control for the relative size of acquisition calculated as a logarithm value of the number of acquired firm's employees divided by the number of acquiring firm's employees. Relative size may affect the selected degree of integration. Size of acquired firm can affect how it is treated by acquiring firm in terms of its organizational autonomy (Puranam, Singh and Chaudhuri 2009). On the other hand, larger acquiring firm may be more inclined to conduct the structural integration of target.

Aget. Aget is the acquired firm's age in the year of acquisition. The age of acquired firm may be considered as a proxy for its maturity (Chaudhuri et al. 2005).

Crossatlantic. We create a dummy variable (Crossatlantic=1) when the acquiring and acquired firms had headquarters located in different continents (EU acquirer and US target or US acquirer and EU target). The greater geographical and cultural distance may render the structural integration less likely and acquired CEO retention more likely.

5. Methodology

To test the propositions we use the bivariate probit model. The bivariate probit model is a generalization of the probit model used to estimate two correlated binary outcomes jointly. The assumption is that the dimensions of acquired firm structural integration and acquired top manager retention are correlated.

The two equations are assumed to have errors that consist of two parts: a part () that is common to both equations, and a second part () that is unique to that equation.

$$(5.1)$$

$$(5.2)$$

Thus, each now depends, in part on the value of , and this in turn means that and will be interrelated.

In the case of two errors' correlation, we commonly use a bivariate normal distribution: for two standard normally distributed errors density will be

$$\phi(u_1, u_2) = \frac{1}{2\pi\sigma_{u_1}\sigma_{u_2}\sqrt{1-\rho^2}} \exp\left[-\frac{1}{2}\left(\frac{u_1^2 + u_2^2 - 2\rho u_1 u_2}{1-\rho^2}\right)\right] \quad (5.3)$$

where is a correlation parameter denoting the extent to which the two errors covariate.

If = 0 the two errors are independent, thus the two equations can be estimated separately.

If the two errors are correlated, the probability of one will depend on the probability of the other; the two equations are dependent and they should be estimated simultaneously.

The statistical estimation may be described with the following system of equations

$$(5.4)$$

$$(5.5)$$

The first equation shows that structural integration (I) is chosen in the acquisition j of the firm i as a function of a vector of the deal and firm specific characteristics. Similarly, the second equation shows that acquired CEO retention (R) is chosen in the

acquisition j of the firm i as a function of a vector of the deal and firm specific characteristics.

6. Results

The Tables 6.1 and 6.2 show the descriptive statistics and correlations.

Since we use regression analysis to test the propositions, we check for multicollinearity by using the variance inflation factor (VIF) analysis. VIF measures how much the variance of the estimated regression coefficient is “inflated” by the existence of correlation among the independent variables in the model. A general rule of thumb is that a value of VIF exceeding 10 represents an indication of serious multicollinearity problems. For independent variables the mean VIF is 1.34, suggesting that multicollinearity is not the issue.

Bivariate probit model results. The Table 6.3 shows the results of bivariate probit model with the dependent variables Structural Integration (Integrated=1) and Target Top Manager Retention (Retention=1). The Model 1 in the Table 6.1 is the basic model including the control variables. In the Model 2 we include the propositions variables as antecedents of structural integration and top manager retention: dummy for exploitation motive (Exploitation=1), acquiring firm’s experience of conducting high technology acquisitions (Hitechexp) and experience of conducting other, non high technology acquisitions (Otherexp), measure of the product relatedness of the two firms (Prodrel), dummy for the existence of the prior collaborations between the two firms (Alliance=1) and dummy for acquisitions of component technology (Component=1).

In the Model 3 we include the interaction terms of component technology with product relatedness (Component_prodrel) and alliance (Component_alliance).

The basic Model 1 is overall not significant. In Model 1, the only significant coefficient is the coefficient of \ln Relsize, suggesting that likelihood of structural integration decreases for greater relative size. Thus, controlling for the size of the acquiring firm, larger acquired firm is less likely to become integrated into the structure of acquiring firm. The Model 2 including the variables of propositions (P1-P5) is overall significant ($p < 0.05$). In respect to estimation results in the block of structural integration, the propositions of exploitation motive (P1a), acquisition experience in high-technology sectors (P2a) and product relatedness (P3a) are supported. The likelihood of structural integration increases in exploitation motivated acquisitions ($p < 0.05$), when acquiring firm has greater high-technology acquisition experience ($p < 0.05$) and when the two firms are product or market related ($p < 0.1$). The coefficient of the prior alliance is, in contrast to the proposition (P4a), negatively correlated with likelihood of integration, but not significant. The coefficient of the component technology is positively correlated with the likelihood of integration as proposed (P5), but not significant.

The results of the Model 2 in the block of acquired top manager retention show support for the propositions of the exploitation motive (P1b) and product relatedness (P3b). The

likelihood of acquired top manager retention decreases in exploitation motivated acquisitions ($p < 0.1$) and when the two firms are product related ($p < 0.01$). The coefficient of acquired firm's age (A_{get}) is negative and significant ($p < 0.1$), suggesting that CEOs of older acquired firms are less likely to be retained.

The Model 3 incorporates all the propositions including the interactions (P1-P6). Overall, the Model 3 is fitted ($p < 0.05$). The estimation results in the block of integration support the propositions of the exploitation motive (P1a), acquisition experience in high-technology sectors (P2a), product relatedness (P3a), acquisitions of component technology (P5), interaction of component and product relatedness (P6a). The likelihood of structural integration is greater in component technology acquisitions ($p < 0.1$). As proposed in P6a, the likelihood of integration decreases in component technology acquisitions when acquiring and acquired firms are related. The coefficient of prior alliance (P4a) is significant ($p < 0.1$), however negative, suggesting that existing alliance between the firms decreases the likelihood of structural integration. It is possible that existing alliance provides a form of coordination between two firms and replace the structural integration as a coordination mechanism. The interaction of component and alliance is positive, in contrast to the proposition (P6b), but not statistically significant.

Regarding the results of the Model 3 in the block of acquired top manager retention, similarly as in the Model 2, the propositions of exploitation motive (P1b) and product relatedness (P3b) are supported at the same significance level as in the Model 2. The coefficient of acquired firm's age (A_{get}) is also negative and significant ($p < 0.05$).

It can be argued that the data used in this study are able to replicate the results of prior studies. Similarly as Puranam, Singh and Zollo (2006) and Puranam and Srikanth (2007), results of this study show that exploitation of existing acquired firm's technologies motivates structural integration. The new finding is that exploitation also motivates the replacement of acquired CEO. It seems that the link between the two firms created by acquired CEO is less needed when acquired firm has a product ready for commercialization. In such a context, the role of acquired CEO to set goals for acquired firm and maintain organizational momentum following the acquisition (Graebner 2004) may be less important. In respect to acquisition experience variable (P2), findings show that acquiring firm may build integration capabilities through acquisition experience in high technology sectors. Acquisition experiences in other sectors do not matter for building of structural integration capabilities relevant for high technology acquisitions. These results are different from Puranam and Srikanth (2007) who found that total acquisition experience matters in building of integration capabilities relevant in high technology acquisitions. We estimated the models with inclusion of the total acquisition experience, however the coefficients were not significantly related to the likelihood of acquisition implementation strategies. It is possible that these differences draw from differences in the samples. While Puranam and Srikanth (2007) include in their sample acquisitions of firms in pharmaceutical and

information technology sectors, the sample of this study accounts for a greater variety of high-technology sectors. Regarding the product relatedness proposition (P3), its positive correlation with likelihood of integration is aligned with arguments posed by Coff (1999). Coff (1999) argues that lower relatedness creates substantial difficulties particularly in situations when structural integration is needed. Low relatedness increases the uncertainties about the value of acquired firm's technology, its quality, transferability and synergy potential. Thus, it is easy to imagine that integration is less likely to be conducive in the case of low relatedness between firms. The negative correlation of product relatedness with acquired top manager retention is intuitive. Acquiring firm may strive to keep acquired executives to the extent it lacks familiarity with acquired firm's business, leading to higher acquired executives departure rates in a situation of greater relatedness. However, Hambrick and Canella (1993) found exactly opposite. Their results suggest that in highly related acquisitions the departure rate of acquired executives was very low, while unrelated acquisitions had high departure rates especially in the first months following an acquisition. They argue that such counterintuitive result may draw from cultural gap that is positively correlated with low relatedness in an acquisition (Chatterjee et al. 1992).

This study does not support the arguments of prior literature regarding the positive effects of past collaborations on the likelihood of integration (Porrini 2004, Agarwal et al. 2006). Conversely, we found that structural integration is less likely when alliance existed between acquiring and acquired firms. Porrini (2004) does not directly observe the relationship between integration and alliance, but tests the effects of alliance on post-acquisition performance. She finds a positive relationship of alliance with performance and argues that acquired firm specific experience is an advantage-producing resource, benefiting selection, valuation and integration in acquisitions. Porrini (2004) also argues that different types of alliances have different effect on performance. In particular, licencing alliances alone do not significantly affect acquisition performance. Alliances accounting for previous R&D, technology transfer, manufacturing and marketing efforts are those with the most beneficial effects on performance. The argument that acquiring firm may learn through an existing alliance with acquired firm does not contradict the findings of present study. Learning about acquired firm through an alliance can support building of an informal type of coordination between the two firms and reduce the need for structural integration as a formal coordination mechanism. Agarwal et al. (2006) split the impact of an alliance on the subsequent post-acquisition collaboration to two different effects: prior resource interdependence and prior social contact effects. They found that the effect of prior social contact on coordination is unambiguously positive. On the other hand, the effect of resources interdependence in an alliance setting may not be beneficial to post-acquisition coordination (Agarwal et al. 2006). The last finding may be explained by the routines developed in mixed-motive environment of an alliance. Alliances may be motivated by several seemingly contradictory goals along the dimensions of cooperation-competition,

rigidity–flexibility and short-long term orientations. In particular, routines that may develop in the alliance between firms as they compete for appropriating value, if persistent, can hamper post-acquisition coordination (Das and Teng 2000, Agarwal et al. 2006). The coordination routines developed in mixed-motive alliances may be conducive to segmented and distinct interests of the two parties and may not be appropriate for development of close coordination routines required for structural integration.

The present study replicates the findings by Puranam, Singh and Chaudhuri (2009) pertaining the acquisitions of component technology. Likelihood of integration is greater in acquisitions of component technology. However, the likelihood of integration declines in component technology acquisitions if two firm are related. Puranam, Singh and Chaudhuri (2009) measure relatedness in terms of pre-acquisition patenting activity by the acquiring and acquired firms in the same technological classes to capture the proximity of their knowledge bases. Findings of present study demonstrate that product relatedness may also decrease the likelihood of integration in component technology acquisitions.

When estimating bivariate probit model, the correlation between the two outcome variables is established. The Wald test of the null hypothesis that the model consists of the two independent equations can be rejected ($p < 0.01$). The two probit equations are dependent and they should be estimated simultaneously. The correlation is negative, suggesting that on average acquiring firms implementing structural integration replace acquired top manager. Thus, the two dimensions of acquisition integration and acquired CEO retention are substitutes.

7. Discussion and Conclusion

The purpose of present study was to examine the interdependencies between the two important dimensions of acquisition implementation process. The main contribution of this study is in simultaneous accounting for two acquisition implementation dimensions with an aim to empirically test if these two dimensions are complementary or substitutive. Prior acquisition implementation literature has dominantly focused on analyzing the differences of structurally integrating acquired firm vs. keeping it separated as a subsidiary (Paruchuri, Hambrick and Nerkar 2006, Puranam, Singh and Zollo 2006, Puranam and Srikanth 2007, Kapor and Lim 2007, Puranam, Singh and Chaudhuri 2008). Dominant focus on the structural aspects fails to recognize the importance of other important human dimensions of acquisition implementation, such as the role of acquired top manager during acquisition implementation (Hambrick and Canella 1993, Bergh 2001, Ranft and Lord 2002, Graebner 2004). In this study we argue that it is important to consider beforementioned two dimensions simultaneously, since there may exist important interdependencies in the effects of these two

dimensions. Prior literature emphasized two dimensions as a coordination mechanisms that allow for different, specific types of coordination and alignment of the two organizations participating in a merger or acquisition. For instance, the major benefit of structural integration is in allowing for close coordination of structures, information systems and procedures of two organizations, resulting in aligning both organizations towards the goals of integrated unit (Puranam, Singh and Chaudhuri 2009). On the other hand, the major costs of structural integration lie in the “loss of autonomy” effect, since integration can disrupt incumbent organizational routines and capabilities of acquired employees, causing increased turnover and resulting in the decline in performances of acquired firm (Puranam, Singh and Chaudhuri 2009).

Acquisition literature also argues that the role of acquired CEO as a soft coordination mechanism is prominent at acquisition implementation (Graebner 2004). Graebner (2004) found that acquired executives benefit the process of acquisition implementation by conducting specific “mobilizing and mitigating” actions. Acquired leaders through mobilizing actions supported acquisition implementation by providing guidance for their firm and motivating accelerated coordination of acquiring and acquired organizations. Mitigating actions by acquired leaders were aimed to minimize the negative consequences of integration changes and protect acquired firm’s employees from negative outcomes related to acquisition implementation (Graebner 2004).

This study shows that integration and acquired CEO retention are substitutive strategies. In the present study CEO retention does not represent an important dimension when structural integration is conducted; the role of acquired CEO as a “mitigator” of disruptive consequences of integration is less prominent (Graebner 2004).

The present study findings are consistent with the most of the findings of prior literature pertaining the likelihood of structural integration (Coff 1999, Agarwal et al. 2006, Puranam, Singh and Zollo 2006, and Puranam and Srikanth 2007, Puranam, Singh and Chaudhuri 2009). The new finding is that two dimensions of acquisition implementation have some common antecedents. Both, the propensity of conducting structural integration and acquired top management retention are correlated with exploitation motivation and product relatedness of two firms.

The limitations of this study suggests some directions for future research.

First, this study, unlike some other studies (Roethaemel and Deeds 2004), does not directly measure the exploitation motivation and uses a proxy measure of exploitation instead. Moreover, we were not able to deduce the exploration motivation proxy from descriptions of acquisitions activities. Although it can be argued that concepts of exploration and exploitation are somewhat abstract and pose challenges of measurement and data gathering, future studies can significantly contribute to the literature by devising creative measures of exploitation and exploration.

Second, due to data limitations in present study acquired top management retention variable is bounded to acquired CEO retention. This measure could be improved by considering the situation of the whole acquired top management team following an

acquisition. In particular, in the case of acquired top manager replacement, it would be interesting to track where the new director of acquired unit comes from, whether he is related to acquired, acquiring organization or is an outsider. This information would contribute to the precision of CEO retention measure.

Third, we focus on acquisitions of small firms by large incumbents. The “mergers of equals” often having as underlying motivation efficiency gains from economies of scale or scope through combining complementary product lines or alignment of operations might require greater integration efforts, while the role of acquired CEO in acquisition implementation process might not be as prominent as in small high technology businesses. Propositions of this study are rather applicable for small firms where CEO is often a founder as well, designing the overall innovation strategy of the acquired business. In particular, in future study would be interesting to track if acquired CEO was the founder of the acquired company and test whether this aspect would affect the likelihood of acquired CEO retention.

Fourth, we focus on high technology driven acquisitions, thus the results cannot be generalized to other less technology intensive sectors. Structural integration as a coordination mechanism may have greater disruption effects in technology sectors due to motivation of technology acquisitions regarding acquisition of technological knowledge embedded in acquired personnel. Acquired personnel in technology acquisitions is of great importance, and its potential disruptions driven by extensive integration efforts may lead to greater risks in terms of accomplishment of the purpose of an acquisition than in the case of acquisitions in non-technology sectors. It would be interesting to understand the dynamics of acquisition implementation dimensions in other, non technology driven sectors.

Fifth, incorporating the measures on the past performance of acquired firm (e.g. acquired firm’s growth or return on assets in years prior to acquisition) may significantly contribute to the model and allow for testing of new propositions. Past performance of acquired firm may be correlated with the quality of its top management, thus also affect the likelihood of acquired CEO retention (Zollo and Singh 2004).

In spite of these limitations, the present study significantly improves our understanding of the post-acquisition implementation process and its important dimensions. In high technology acquisitions intensive structural integration makes acquired CEO more redundant. This implies that the role of acquired CEO to alleviate the negative consequences of structural integration is less significant. Moreover, the role of acquired CEO may be bounded to “soft coordination” mechanism through motivating accelerated coordination in acquisitions with low degree of integration.

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Table 6.1 Descriptive statistics

Variable	n	Mean	Std. Dev.	Min	Max	Description
Integration	156	0.275	0.4482	0	1	Coded =1 if acquired firm is structurally integrated, else =0
Retention	156	0.641	0.4812	0	1	Coded =1 if acquired firm's CEO is retained as an officer in year following the acquisition, else =0
Product relatedness	156	0.638	0.4278	0	1	The number of common codes assigned to acquiring and acquired firms by Thomson Worldscope (3-digit) divided by the sum of codes assigned to acquired firm
Alliance	156	0.243	0.4306	0	1	Coded =1 if prior to acquisition existed alliance between acquiring and acquired firms, else=0
Component	156	0.217	0.4141	0	1	Coded=1 if acquired firm's technology represents a component to acquiring firm's system, else =0
Exploitation	156	0.775	0.4185	0	1	Coded =1 if acquired firm had a full product, completed technology or a patent prior to acquisition, else =0
Hitechexp	156	13.173	18.522	0	95	The number of acquiring firm's prior acquisitions in high-technology industries
Otherexp	156	3.730	5.898	0	43	The number of acquiring firm's prior acquisitions in other, non high-technology industries
Crossatlantic	156	0.179	0.3849	0	1	Coded = 1 if acquiring and acquired firms come from two different continents, else = 0
Aget	156	14.929	12.252	1	76	The age of acquired firm's in the year of acquisition
Relsize	156	0.053	0.0925	0.0001	0.601	Number of acquired firm's employees divided by the number of acquiring firm's employees

Table 6.2 Correlations

	1	2	3	4	5	6	7
1 Integration	1						
2 Retention	-0.4056	1					
3 Product relatedness	0.1777	0.2263	1				
4 Alliance	0.0176	-0.0511	-0.1383	1			
5 Component	0.0913	-0.0066	-0.0264	0.3515	1		
6 Exploitation	0.2286	0.1462	-0.0292	0.1262	0.2095	1	
7 Hitechexp	0.2833	0.056	0.0768	0.3247	0.2019	0.2056	1
8 Otherexp	0.0331	-0.0862	-0.2382	0.1377	0.0163	0.0329	0.5072
9 Crossatlantic	-0.1016	-0.0714	-0.1916	0.0459	0.0768	0.0914	0.0029
10 Aget	0.02	0.094	-0.1032	0.0363	-0.133	-0.105	-0.0199
11 Relsize	-0.0779	0.1264	0.1754	-0.159	-0.0961	-0.2631	-0.2585

	8	9	10	11
8 Otherexp	1			
9 Crossatlantic	0.0811	1		
10 Aget	0.0304	-0.0657	1	
11 Relsize	-0.2499	-0.0236	0.285	1

r above 0.10 significant at $p < 0.1$, r above 0.13 significant at $p < 0.05$, r above 0.18 significant at $p < 0.01$ (one tailed)

Table 6.3 Bivariate Probit: Likelihood of Structural Integration and Acquired CEO Retention

	Structural Integration = 1			Target's CEO retention=1		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Prodrel P3		0.544 (1.74)*	1.071 (2.55)**		-0.778 (-2.57)***	-1.092 (-2.96)***
Alliance P4		-0.429 (-1.27)	-0.780 (-1.62)*		0.156 (0.54)	0.406 (1.12)
Component P5		0.286 (0.96)	1.062 (1.65)*		0.004 (0.01)	-0.385 (-0.62)
Comp_Prodrel P6a			-1.290 (-1.94)*			0.846 (1.34)
Comp_Alliance P6b			0.455 (0.67)			-0.549 (-0.88)
Exploitation P1		0.719 (2.11)**	0.694 (2.03)**		-0.540 (-1.90)*	-0.528 (-1.85)*
Hitechexp P2		0.017 (2.18)**	0.014 (1.70)*		-0.001 (-0.24)	0.001 (0.12)
Otherexp		-0.015 (-0.57)	-0.005 (-0.20)		0.019 (0.69)	0.013 (0.48)
Crossatlantic	-0.446 (-1.46)	-0.358 (-1.12)	-0.440 (-1.33)	0.229 (0.82)	0.103 (0.35)	0.139 (0.46)
AGET	0.005 (0.58)	0.012 (1.30)	0.016 (1.58)	-0.008 (-1.03)	-0.017 (-1.88)*	-0.019 (-2.01)**
Lrelsize	-0.113 (-1.81)*	-0.090 (-1.09)	-0.119 (-1.39)	-0.002 (-0.04)	0.049 (0.65)	0.061 (0.79)
Constant	-1.082 (-3.15)***	-2.229 (-3.94)***	-2.695 (-4.20)***	0.445 (1.38)	1.683 (3.26)***	1.909 (3.40)***
anthrho	-0.721 (-4.40)***	-0.660 (-3.92)***	-0.627 (-3.68)***	-0.721 (-4.40)***	-0.660 (-3.92)***	-0.627 (-3.68)***
N	156	156	156	156	156	156
Wald Chi2	7.25	31.39**	35.76**	7.25	31.39**	35.76**
Log Likelihood	-177.39	-162.98	-159.79	-177.39	-162.98	-159.79
Wald rho	25.39***	17.43***	15.10***	25.39***	17.43***	15.10***

*p<0.10, **p<0.05, ***p<0.01 (one tailed)