



# Predicting who stays or leaves after the acquisition: *Target's top manager turnover*

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- KTH Royal Institute of Technology, Stockholm, Sweden
- Politecnico de Milano, POLIMI, Milan, Italy
- Universidad Politécnica de Madrid, UPM, Madrid, Spain

## **Abstract**

In acquisition of high-tech and knowledge intensive firms, scholars have paid special attention to top managers' status after the deal. Literature suggests that these managers in particular CEOs if kept in post-acquisition provide coordination capacity for the acquirer to transfer the knowledge and technology from the target to the acquirer while minimizing the disruptive effect of post-acquisition integration process. In addition, the acquirer benefits from human capital embedded in target's managerial resources; especially in high-tech and knowledge intensive firms where top managers are founders or patent holders. Although the above mentioned argument have been validated by empirical studies showing that top manager's turnover reduces the post-acquisition performance for the acquirers, multiple empirical studies have reported abnormal managerial turnover shortly after the acquisition. This thesis made an attempt to explain this puzzling phenomenon by investigating on the determinants of the top manager's turnover of the target in the post-acquisition period. The study finds that in case of CEOs, acquirers do not rely always on coordinating capacity provided by them in post-acquisition. Indeed, the acquirer's choice of provision of coordination is beyond the target's CEO retention. The choice of coordination depends on the existing level of coordination capacities and the acquisition's motivation. In addition, founder-CEOs are more likely to stay after the acquisition because of their valuable firm-specific human capital for the acquirer. However, this value diminishes by the maturity of the target. In addition, similarity in demographic characteristics of the two CEOs (of the acquirer and target) causes social attraction, collaboration and cooperation which ultimately increases the chance that the target's CEO retention. Finally, diversity within the target's top management team (TMT) directly increases their chance of departure after the deal. The diversity engenders social frictions, conflicts and coordination inefficiencies.

## **Keywords**

Acquisition, CEO turnover, TMT turnover, coordination, Founder-CEO, Similarity attraction, Diversity

*In loving memory of my father*

*My life-long mentor*

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Stockholm, December 2015

Keivan Aghasi

## **List of appended papers**

### **Paper A**

Aghasi, K. Brown T. & Rossi-Lamastra C., “The role of top managers in M&A: Reviewing thirty years of literature and setting directions for future research”

### **Paper B**

Aghasi, K., Colombo, C., Rossi-Lamastra, C., “Post-acquisition implementation of small high-tech firms: Looking beyond the surface”. This paper is presented in DRUID conference in Denmark, June 2014 and in AIIG conference in Bologna, Italy (October 2014)

### **Paper C**

Aghasi, K., Colombo, C., Rossi-Lamastra, C., ”Antecedents of target CEO departure in post-acquisition: The leading role of founder”. This paper is presented in DRUID conference in Denmark, in January 2014 and in R&D Management conference in Italy (July 2015).

### **Paper D**

Aghasi, K., “Similarity as an antecedent for target’s CEO turnover: Do birds of a feather flock together?”. This is my single-author paper and accepted in Accepted in AIIG conference in Vicenza Italy (October 2015).

### **Paper E**

Aghasi, K., Lougui, M., Brostrom, A., Colombo, C., “Why diverse top management teams break up in post-acquisition periods”. This paper is presented in DRUID conference in Rome, Italy (June 2015) and SMS conference in Denver USA (October 2015).

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# 1. Introduction

In acquisition of high-tech and knowledge intensive firms, scholars pay special attention to their top managers' status after the deal. Literature suggests that these managers in particular CEOs if kept in post-acquisition, provide coordination capacity for the acquirer to transfer the knowledge and technology from the target to the acquirer while minimizing the disruptive effect of acquisition (Cloudt, et al., 2006; Colombo & Rabbiosi, 2014; Graebner, 2004; Graebner, et al., 2010; Ranft & Lord, 2002). In addition, the acquirer benefits from human capital embedded in top managers; especially in high-tech firms, they might be founders or patent holders or in knowledge intensive firms for example the CEO of a law firm is also a lawyer (Buchholtz, et al., 2003; Coff, 2002; Wulf & Singh, 2011).

The empirical studies provide evidence for the aforementioned arguments by showing that managerial turnover causes decline in post-acquisition performance (Cannella & Hambrick, 1993; Krishnan, et al., 1997; Walsh, 1989; Zollo & Singh, 2004). However, multiple empirical studies report abnormal turnover shortly after the acquisition (Cannella & Hambrick, 1993; Iverson & Pullman, 2000; Kiessling & Harvey, 2006; Krishnan, et al., 1997; Walsh, 1988). This suggests a gap between the theory and practice. On one hand, the theory argues and empirical works have provided evidence for positive effect of targets' CEO retention on acquisitions' returns, and on the other hand, in practice acquirers tend to substitute them. Although some prior studies tended to close the gap by interpreting the turnover via agency theory and market for corporate control (See for e.g. Bergh, 2001 and Walsh, 1988), I believe such attempts had limited applicability for several reasons: Firstly, not all of the studies find evidence of acquisition for disciplining top managers (See for e.g. Walsh & Ellwood, 1991; Walsh & Kosnik, 1993). Secondly, and more importantly, in

acquisition of high-tech or knowledge intensive firms, the implicit assumptions behind the aforementioned theories such as separation of ownership and control are not valid as most of the acquisitions include small private firms that owner-managers run the firms. Finally, even in case of listed firms founder-managers (for e.g. founder-CEOs) are in charge of the firm in post-IPO, and some recent studies have provided evidence of stewardship rather than agency problem for such firms due to psychological attachment or reputation of the founder entangled with the success of the firm (Fahlenbarch, 2009; Gao & Jain, 2012). The following section briefly presents various theories explaining the managerial turnover in post-acquisition.

## **1.1 Background**

There are several theoretical lenses which explain the determinants of target's top manager turnover after the acquisition. They are presented in the following section:

The most common lenses are market for corporate control (Manne, 1965) and agency theory (Jensen, 1986; Jensen & Meckling, 1976; Jensen & Ruback, 1983). Both lenses argue that acquirers replace the target's top managers after the acquisition because of their prior poor performance and principal-agent conflicts of interest (Walsh & Ellwood, 1991; Walsh & Kosnik, 1993). In addition, acquirers replace the top managers to avoid any problem during integration and resistance against the changes in post-acquisition period (Buccholtz & Ribbens, 1994; Cannella & Hambrick, 1993; Walsh, 1989). Furthermore, target's top managers decide to leave after the acquisition because of their psychological perception against the acquisition. In particular, loss of autonomy, inferiority and ambiguity in their future career are among the reasons mentioned for the managers' decision for departure (D'Aveni & Kesner, 1993; Hambrick & Cannella, 1993; Lubatkin, et al., 1999; Very, et al., 1997). Additionally cultural differences, resulted in social frictions, influence on the manager's departure which is exacerbated in international acquisitions (Chatterjee, et al., 1992; Krug & Hegarty, 2001).

Borrowing insights from the organization design lens (Thompson, 1967; Tushman & Nadler, 1978; Van de Van & Delbecq, 1974), post-acquisition literature emphasizes on the coordination capacity of the target's top managers. Indeed, top managers facilitate the integration process and organizational changes, if they stay in post-acquisition period (Graebner, 2004 and 2009; Pablo, 1994; Ranft & Lord, 2002). The integration process diverts acquirer's managerial resources from the daily operation and the core business (Hitt, et al., 1991; Schoar, 2002); the target's top managers can be in charge of the post-acquisition integration instead of the acquirer's managers. In addition, if target managers stay, the cost of implementation becomes lower for the acquirer as they have better knowledge over the target's organizational structure, routines and processes (Graebner & Eisenhardt, 2004; Very, et al., 1997). Additionally, organizational disruptions as a result of changes imposed by the acquirer to the target reduce the employees' productivity and loss of autonomy; disruptions bring about lack of commitment and demotivation among the employees, which ultimately have negative influence on post-acquisition performance (Chatterjee, et al., 1992; Datta & Grant, 1990; Larsson & Finkelstein, 1999; Zollo & Singh, 2004).

Other than post-acquisition coordination capacity argument, based on RBV, human capital of target's top managers provides additional argument on post-acquisition performance and turnover. It argues that acquisitions are means to obtain resources to provide competitive advantage for the acquirer (Barney, 1991; Coff, 1997). Human capital of firm is considered as a source of competitive advantage (Ployhardt & Moliterno, 2011). The target's top managers are not only, as mentioned before, resourceful in organizing the target's human capital for the acquirer in post-acquisition but also they are part of the human capital of the firm (Buchholtz et al., 2003; Castanias & Helfat, 1991 and 2001; Carpenter et al., 2001; Coff, 1997 and 2002; Walsh & Ellwood, 1991 and Wulf & Singh, 2011). To the extent that the human capital is unique to the acquirer, the likelihood of turnover reduces in post-acquisition.

## 1.2 Problem statement

So far different theoretical arguments try to explain why there is an abnormal top managers' turnover after the acquisition and how such turnover affects the performance. In particular, market for corporate control, agency theory, and post-acquisition resistance are in favour of turnover for value creation whereas post-acquisition coordination capacity of target's top manager suggests turnover is value destructive. Human capital argument is also in favour of managerial retention to the extent that the managerial human capital is unique for the acquirer. The remaining question is which argument is valid. More precisely, if market for corporate control, agency theory and resistance hold, then it is expected that post-acquisition performance improves by the target's managerial turnover. Nevertheless, as explained earlier, studies mostly reported decline in performance. Similarly, if the argument related to coordination capacity holds, it is expected that the target's top managers stay after the acquisition. On the contrary, as explained before studies found the opposite. Even for the human capital supporting evidences are weak. For instance Wulf & Singh (2011) found weak links between human capital argument and CEO's turnover. The paper reported high rate of turnover in unrelated acquisitions even though lower relatedness suggests higher human capital uniqueness for the acquirer.

This all suggest that despite of much of the theoretical and empirical contributions in the last three decades, still managerial turnover in post-acquisition is a black box. The acquirer's rationale in dismissing or keeping the target's top managers is not clear. Recently Krug, et al. (2014) stated that none of the aforementioned arguments are dismissible; however a missing element in favouring one argument over the other is the context within which acquisition occurs. To my knowledge almost all of the empirical studies in managerial turnover in post-acquisition, regardless of the choice of the theoretical arguments, have treated all the acquisitions as homogenous corporate strategies. This homogeneity causes several problems. First, it causes violation of assumptions for certain theoretical arguments. For example as explained briefly in the introduction, market for corporate control and agency theory are not applicable for small firms (which are mostly private). In addition, other than the violation of assumptions, market for corporate control is based on the Anglo American corporate governance

in that ownership and control are separated. However, in many countries such as Germany and Japan, other stakeholders such as unions and institutional shareholders have stronger monitoring power over CEOs which results in lower agency problem. This makes generalizability of the results questionable.

The second problem is related to acquisition's motivation. Prior studies on managerial turnover have overlooked at the motivation of the acquisition. The motivations vary from economic of scale and scope, market entry, knowledge and technological acquisition, and increasing market power (See Trautwein (1990) for a review). The motivation as the driver of the acquisition affects the acquirer's decision related to keep or dismiss the target's top managers. The motivation affects the degree and type of post-acquisition changes necessary to the target (Haspeslagh & Jemison, 1991) and therefore, the importance of coordination capacity of the target's top managers for the acquirer. Additionally, the value of human capital for the acquirer is partly determines by what acquirers pursue in the acquisition. Human capital is multidimensional; based on managerial human capital literature the value of the manager's human capital like any other resources depends on its fit with the other firm's internal resources (Castanias & Helfat, 1991; Ployhardt & Moliterno, 2011). From this standpoint, certain dimension in human capital of a manager is valuable for one firm while it is not valuable for the other firm. Therefore, the value of the human capital of the target's top managers for the acquirer depends on its fit with the acquirer's resources. In other words, the acquirer may find certain dimension of the human capital valuable. Prior works studied the target's managerial human capital at aggregate level; this could be a reason of weak links between human capital and retention.

This thesis has investigated on the rationale behind the acquirers' choice regarding the status of the targets' top managers in post-acquisition period with respect to the above mentioned problems. In order to bring the context to the study, I focused on the acquisition of high-tech and knowledge intensive firms for several reasons. First, in this type of acquisition the costs imposed to the acquirer due to organizational disruptions and loss of autonomy would be more severe (Colombo & Rabbiosi, 2014; Graebner et al., 2010; Puranam et al., 2009; Ranft & Lord, 2002). As the knowledge is tacit and embedded in

target's employees, their departure due to loss of autonomy and demotivation lead to loss of knowledge for the acquirer (Coff, 1999; Grant, 1996; Kogut & Zander, 1992; Larsson & Finkelstein, 1999; Ranft & Lord, 2002). Even if loss of autonomy does not cause turnover, empirical studies show that at least the demotivation and lack of commitment lower their productivity in terms of R&D outputs (Kapoor & Lim, 2007; Parunchuri, et al., 2006). If the target's top managers stay after the acquisition, they can alleviate the negative effect of organizational disruptions and demotivation of employees in high-tech and knowledge intensive acquisitions (Graebner et al., 2010; Shanley & Correa, 1992). Second, in high-tech and knowledge intensive firms, human capital embedded in top managers is beyond just managerial capital as in many cases they also participate in the knowledge creation process of the firm; founder top managers are good examples as their human capital is beyond managerial skills and include technological know-how (Coff, 1999 & 2002; Colombo & Grilli, 2005; Fahlenbarch, 2009; Graebner et al., 2010). From this standpoint, retention of target's top managers after the acquisition is beneficial for the acquirer as they can contribute to technological know-how as well as managerial resource of the firm. Additionally, founder-managers especially founder-CEOs are interesting type of managers to study their turnover as stewardship and psychological attachment make them different from professional CEOs (Gao & Jain, 2012; Wasserman, 2003). High-tech and knowledge intensive industries are replete with the founder-CEOs, which provide ample opportunity to study their turnover. Additionally, this thesis focuses on small targets to close the asymmetric findings between most of the prior work on managerial turnover in large public US targets and few studies on managerial turnover in small targets.

The overarching research question of this thesis is "What are the antecedents of top managers' turnover in post-acquisition?" To answer the research question, the thesis consists of several papers. The first paper, A, systematically reviews the state of the art in the role of top managers' in M&A. The paper provides a picture of recent findings, the gaps and contradictory results. Based on the received knowledge about the topic presented and the future studies suggested in paper A, four empirical papers were devised to investigate on the target's managerial turnover. Three papers, B, C, and D focus on the turnover of the target's

CEO, and paper E focuses on the turnover of the target's top management team (TMT).

The rest of this draft is devised as the following: in the next section, a short summary of the papers is explained. The third section describes the methodology applied for each paper. The fourth section presents about the main findings of the papers; how the findings for each paper are connected to one another and how they contribute to answer the ultimate research question. The last section concludes the thesis.



## 2. Papers in summary

### 2.1 Paper A

#### ***The role of top managers in M&A- Reviewing thirty years of literature and setting directions for future research***

This paper has critically reviewed the earlier works on managerial studies in M&A. Many studies have been carried out on understanding the role of top managers of the acquirers or the targets in the acquisitions. The studies are divided into three categories; they are: Studies focused on managerial motive in engaging to the acquisition, on the role of managers in acquisition's value creation and capture, and managerial turnover as an acquisition outcome. The studies applied wide variety of theoretical lenses, including market for corporate control (Manne, 1965), agency theory (Jensen & Meckling, 1976), stewardship (Davis et al., 1997), hubris (Roll, 1986), upper echelon (Hambrick & Mason, 1984), relative standing (Cannella & Hamrbick, 1993), resource-based view and human capital (Barney, 1991 and Coff, 1997), and efficiency theory.

The empirical findings of this research strand are contradictory and mixed. This motivates a review of the literature that systematizes extant knowledge with the aim to comprehend the sources of contradictions, reflect on applied theories, and indicate directions for future research. This systematization is even more important given the multi-disciplinary nature of the field, where lack of communication between the disciplines may lead into losing the opportunity to cross-fertilize from multidisciplinary approaches.

In addition, current real-world heterogeneity in forms of M&A (e.g., acqui-hires, technological acquisitions, and mergers of equals), targets (e.g., entrepreneurial ventures, high-tech firms and family firms) and characteristics of top executives (e.g., founder executives) suggest that it is time to rejuvenate the field and reconsider the explicit and implicit assumptions behind the applied theories.

The paper addressed the above mentioned issues and concluded with some suggestions for future studies. It is carried out by a systematic literature review of 140 empirical studies published between 1983 and 2013 in respected journals across three disciplines namely: finance, economics and management available in “ISI Web of Science”.

## **2.2 Paper B**

### **Post-acquisition implementation of small high-tech firms- Looking beyond the surface**

The paper has provided new perspective in explaining the target’s CEO turnover in post-acquisition by focusing on the relevance of coordination capacity provided by her stay for the acquirer. The central assumption in this research is that firms choose their organizational structure to provide the necessary level of coordination. Based on the acquisition implementation (Jemison & Sitkin, 1986; Haspeslagh & Jemison, 1991) and organization design (Thompson, 1967; Tushman & Nadler, 1978; Van de Van & Delbecq, 1974) literature, this study investigates on the alternative mechanisms available for the acquirers to provide the required coordination capacity to transfer the knowledge and technology from the target. More specifically, this paper focuses on understanding under what circumstances certain mechanism prevalently becomes more attractive for the acquirer. In this regard the overarching research question is: “*What are the antecedents behind the acquirer’s choice of coordination mechanisms in acquisitions of small high-tech firms?*”

The paper focuses on the choice of structural integration on one end (the highest level of coordination capacity provided at the highest cost) and target’s CEO retention and keep the target as a separate subsidiary on the other end (the lowest level of coordination capacity provided at the lowest cost). The paper introduced three antecedents for the acquirer’s choice of coordination mechanisms, namely: *Component*

*technology, technological relatedness, and alliance.* The rationale behind choosing these antecedents is that they affect the benefits and costs of the coordination mechanisms and thus affect the acquirer's design of the acquisition implementation process. This research is based on empirical analysis of small high-tech acquisitions between 2001 and 2005. The paper found that when acquirer applies higher level of coordination capacity, then lower level of coordination capacity becomes redundant. In other words, the conditions that necessitates higher level of coordination, increases the likelihood of the target's CEO replacement. In particular, component technology requires high level of coordination between the two firms. Accordingly, the acquirer chooses coordination mechanisms that imposes such level of coordination to the target despite its higher costs. Conversely, technological relatedness and the existence of prior alliances between the acquirer and the target bring coordination capacity so the acquirer does not need to provide high level of coordination in post-acquisition. Therefore, it tends to choose mechanisms with lower coordination benefits and associated costs. In this regard, if the acquirer and the target are technologically related or have established an alliance prior to the acquisition, the coordination capacity provided by the target's CEO suffice for the acquirer. Henceforth, it is inferrable that, technological relatedness and alliance decreases the likelihood of CEO departure.

### **2.3 Paper C**

#### **Antecedents of target CEO departure in post acquisitions- The leading role of founder**

This paper studied the determinants of founder-CEOs' status after acquisition of their firms. Prior literature on managerial turnover in post-acquisition did not pay attention to the founder-CEOs. As explained earlier in the previous chapter, founder-CEOs have unique human capital which make their turnover different than professional CEOs. This uniqueness is resulted from her psychological attachment, and deep knowledge over technological know-how developed in the target.

Borrowing insights from the human capital (Becker, 1964) and managerial labour market (Castanias & Helfat, 1991; Harris & Helfat, 1997) and founder-CEO succession (Wasserman, 2003), this paper tries

to explain founder-CEO's turnover from human capital perspective. The three overarching interrelated research questions of this paper are: "*All else being equal is there any difference between professional and founder-CEO turnover in post-acquisition*" and if so "*What makes the difference between professional and founder-CEO turnover?*", and finally "*Under what circumstances, acquirers keep the founder-CEO?*"

This research is based on empirical analysis of small high-tech acquisitions between 2001 and 2005. The first finding of the paper is that founder-CEOs have lower turnover rate compare to professional CEOs in post-acquisition. The value of founders' firm specific human capital is to the extent that acquirers are willing to keep them when the targets are absorbed or relatedness between the two firm are high; the two conditions that respectively generic and industry specific human capital of the CEOs are not of interest for the acquirers. Moreover, the value of founder-CEOs' firm specific human capital is contingent to maturity of the target at the time of acquisition. Maturity reduces the value of firm specific human capital.

## **2.4 Paper D**

### **Similarity as an antecedent for target's CEO turnover: Do birds of a feather flock together?**

This paper has introduced new antecedent of target's CEO turnover. By borrowing insights from social categorization and similarity-attraction literature (Ashforth & Mael, 1989; McPherson, et al., 2001; Tajfel, 1982), this paper investigates on behavioral aspects of managerial turnover in post-acquisitions. In particular, the paper tends to determine to what extent demographic similarity between CEOs improves their (intergroup) relations which ultimately causes target's CEO retention in post-acquisition. The overarching research question of the paper is "*What is the effect of similarity between CEOs on the target's CEO turnover in post-acquisition?*"

Having controlled for individual characteristics of the target's CEO, the main finding of the paper is that demographic similarity between CEOs results in social attraction. Similarity improves the positive attitude of the acquirer and target to one another during the negotiation, as similarity increases the likelihood of the target's CEO

announcement of her stay in post-acquisition in the news. In addition, the paper found that similarity increases the problem with misjudgements of in the decision determining the status of the target's CEO (retention vs. replacement) in post-acquisition period. The misjudgement defined as the difference between what is announced in the news regarding the target's CEO stay and further collaboration with the acquirer and the target's CEO status in post-acquisition. The effect of similarity on retention announcement and misjudgement is weaker when the acquirer has more experience. This research is based on empirical analysis of small high-tech acquisitions between 2001 and 2005.

## **2.5 Paper E**

### **Targets' top management team diversity, a trap for the acquirers- A new perspective of managerial turnover**

This paper has investigated on the determinant of targets' TMT turnover in post-acquisition period. What differentiates this study from similar studies on managerial turnover such as (Cannella & Hambrick, 1993; Krishnan et al., 1997; Krug & Hegarty, 1997; Lubatkin et al., 1999) is introducing the collective determinants for individual turnover. The paper argued that managing a firm is a collective effort of top managers at team Level. The central element in team is coordination. It provides more realistic approach to both arguments of target's managerial coordination capacity and human capital that explained in previous sections. First, the top management team (TMT) coordinates the firm. The team is responsible for coordination in pre-acquisition and therefore is a potential candidate for coordination in post-acquisition. Second, team influences over human capital embedded in top managers. Considering human capital constitutes of individual demographic attributes and characteristics (Buchholtz, et al., 2003; Coff, 2002), at team level however, these demographic attributes propagate diversity. Diversity is a multidimensional construct and often considered as a double edge sword that affects the inter-group collaboration and cooperation and ultimately the coordination capacity of the TMT (Harrison & Klein, 2007; Lau & Murnighan, 1998; Pelled, 1996; Pelled, et al., 1999). Therefore, it is expected that the diversity determines the top managers' turnover in acquisition. The main objective of the paper

is to demystify the effect of ex-ante diversity of the target's TMT and the turnover in post-acquisition. The overarching research question in this paper is: "*What is the effect of ex-ante demographic diversity in target's TMT on determining the top manager's turnover in post-acquisition?*"

The paper focused on four dimensions of diversity at TMT namely: managerial status diversity, pay dispersion, education background and industrial tenure diversity. Following the operationalization of the diversity constructs suggested by Harrison & Klein (2007), the paper treated managerial status diversity as *separation*, pay dispersion as *disparity* and the last two constructs as *variety*. The empirical analysis was on 2164 top managers of 297 Swedish firms, acquired between 2001 and 2006 in knowledge intensive and high-tech sectors. Having controlled for individual characteristics (individual human capital), the main finding of the paper is that diversity among top management team members increases the top managers' turnover. Acquisitions as organizational disruptions trigger social conflicts among diversified teams, which increase the likelihood of their turnover in post-acquisition. Even positive side of diversity in the form of variety that increases the team's information processing capacity, creativity and problem solving capability is not valuable for the acquirer as it hampers coordination efficiency.

So far, a brief summary of the each paper is presented. The research question of each empirical paper was investigated by set of hypotheses; Table 5 has summarized them. The findings of the papers related to the hypotheses are discussed in more details.

*Table 1: The list of hypotheses tested in papers B, C, D, and E*

<b>Papers</b>	<b>Hypotheses</b>	<b>Description</b>
B	H.B.1	In acquisitions of small high-tech firms, acquisition of component technology increases the likelihood of structural integration compare to coordination via target CEO replacement and no action.
B	H.B.2a	In acquisitions of small high-tech firms, technological relatedness between the acquirer and the target increases the likelihood of taking no action compare to coordination via target CEO replacement and structural integration.
B	H.B.2b	In acquisitions of small high-tech firms, technological relatedness between the acquirer and the target negatively moderates the effect of component technology on likelihood of structural integration.
B	H.B.3a	In acquisitions of small high-tech firms, the existence of a prior alliance between the acquirer and the target increases the likelihood of taking no action compare to coordination via target CEO replacement and structural integration.
B	H.B.3b	In acquisitions of small high-tech firms, the existence of a prior alliance between the acquirer and the target negatively moderates the effect of component technology acquisition on the likelihood of structural integration.
C	H.C.1	If the target's CEO is a founder the likelihood of CEO departure decreases in post-acquisition.
C	H.C.2a	In acquisition of small high-tech firms, if the target's CEO is a founder the positive effect of relatedness on the target's CEO departure in post-acquisition is weaker.
C	H.C.2b	In acquisition of small high-tech firms, if the target's CEO is a founder the positive effect of absorption on target's CEO departure in post-acquisition is weaker.
C	H.C.3a	In acquisition of small high-tech firms, if the target is older, the negative effect of founder on the likelihood of CEO departure decreases in post-acquisition is weaker.
C	H.C.3b	In acquisition of small high-tech firms, if the target is larger, the negative effect of founder on the likelihood of CEO departure decreases in post-acquisition is weaker.

D	H.D.1	Similarity between the CEOs of the acquirer and the target decreases the probability of announcement of the target's CEO retention, when the deal is closed.
D	H.D.2	H2: Similarity between the CEOs of the acquirer and the target increases the probability of misjudgement about the decision related to the retention of the target's CEO in the post-acquisition period.
D	H.D.3a	Acquirer's experience in acquisition weakens the positive relationship between the similarity and probability of announcing the target's CEO retention, when the deal is closed.
D	H.D.3b	Acquirer's experience in acquisition weakens the positive relationship between the similarity and the probability of misjudgement about the decision related to the retention of the target's CEO in the post-acquisition period.
E	H.E.1	In acquisition of high-tech or knowledge intensive firms, ex-ante positional diversity of TMT increases the likelihood of the top manager turnover in post-acquisition.
E	H.E.2	In acquisition of high-tech or knowledge intensive firms, ex-ante income disparity in the TMT increases the likelihood of the top manager turnover in post-acquisition.
E	H.E.3a	In acquisition of high-tech or knowledge intensive firms, ex-ante educational background diversity increases the likelihood of the top manager turnover in post-acquisition.
E	H.E.3b	In acquisition of high-tech or knowledge intensive firms, ex-ante industrial tenure diversity increases the likelihood of the top manager turnover in post-acquisition.



### 3. Methods

This thesis is based on different sets of empirical analysis. Paper A is a systematic literature review. Papers B, C, and D shares the same empirical setting and paper E has different empirical setting. In the following section, the methodology for each paper is explained.

#### 3.1 Methodology for paper A

For this review study, the papers were collected from the “ISI WEB OF SCIENCE” database. The selection consisted of several steps. In the first step, the authors run a series of keyword inquiries on the database. The inquiries were dyadic combinations of words from two sets. The first set contains the following terms: *post-acquisition*, *acquisition*, *M&A*, *merger and acquisition*, *post-merger*, *merger*, and *takeover*; the second set contains: *CEO*, *top management team*, *TMT*, *top executive*, *top manager*, *manager*, *corporate elites* and *executive*.

In the second step, the search results were filtered based on the time horizon of 1983 and 2013 as well as the discipline of the journal, namely: finance, management, and economics. The authors believe that given the emergence of the empirical studies and the relevant theories that focused on the role of TMT in M&A in the mid 80’s, 1983 is a good starting point for collection. Some examples of considered journals belonging to management disciplines are *Administrative Science quarterly*, *Journal of Management*, *Journal of Management Studies*, *Management Science*, *Strategic Management Journal*, and *Organization Science*. In finance, some examples are *Financial Management*, *Journal of Finance*, *Journal of Financial Economics*, and *Review of Financial Studies*. In economics are *American Economic Review*, *Economica*,

*Rand Journal of Economics*. At this stage, we collected 325 articles.

In the third step, by reading through the abstracts, the authors excluded papers that did not explicitly focus on either M&A or TMT (in any form, e.g. CEO, functional manager). Then we read carefully the selected articles to check whether TMT and M&A have central position throughout the papers. For instance, we excluded studies whose focus was exclusively on the board of directors and firm's performance. Therefore, total number of articles reduced to 160. Finally, by removing conceptual papers, the final sample reduced to 140.

To increase the validity of the paper collected from the keyword inquiries, the authors followed Haleblian et al (2009) and performed a manual search for some selected journals based on the relevance to the topic in the same period (1983-2013) and cross-check its results with the results obtained from the keyword search. These journals are *Economica*, *Journal of Finance*, *Journal of Law & Economics*, *Organization Science*, and *Strategic Management Journal*.

### **3.2 Methodology for papers B, C, and D**

In these studies the focus are on acquisitions of small high-tech firms made by large listed firms in the period 2001-2005. In order to build the acquisition database, I relied on two databases widely used in the empirical acquisition literature: SDC Platinum belongs to Thompson and Zephyr belongs to Bureau Van Dijk. I selected all acquisitions that meet the following criteria.

First, the target operates in high-tech industries which conformed to OECD (1997) definition with the exclusion of aerospace and defense as few small firms operate in those industries. Accordingly, a firm actively operates in one of the following sectors, are considered to be high-tech: Drugs (283), Computer and office equipment (357), Electronic and other electrical equipment and components except computer equipment (36), Instruments (38) and Software programming (737). The SIC codes are available at both SDC Platinum and Zephyr. Second, as the main attribute of this study is acquisition of small firm by large firm, following Puranam & Srikanth (2007) and Puranam et al. (2009) I used the headcounts of employees. Since the majority of targets

and acquirers in the population are headquartered in USA, small and large firms have been defined according to USA Small Business Administration norm. Accordingly, the targets and acquirers should employ respectively less than 500 and more than 1000 personnel at the time of acquisition. Third, the acquirers were listed in a stock exchange while targets were both consist of listed and private firms. Fourth, the acquirer should own 100% of the equity capital of the acquired firms after the acquisition. Finally, both firms were headquartered either in the USA or in the EU, as the two database used for identifying M&A in this work offer considerable lower coverage of acquisitions in other countries. Additionally, the availability of individual information related to CEOs is considerably lower when it comes to other countries especially for small private firms. Overall, 749 acquisitions met the above criteria.

In order to understand the events related to the acquisition between acquisition announcement and effective date, the related news in the published online journals, daily newspapers and professional industrial magazines are used. Lexis Nexis is the database chosen to retrieve related news. These pieces of articles contain valuable information about the motivations behind the acquisition, top executives personal information, their titles and reflections about the acquisition from target and acquirer, as well as the acquirer's further decision related to formal organizational structure of the target in post-acquisition period (Ahuja & Katila, 2001). In total, news was gathered and variables were codified for 590 deals. In order to check the validity of codified variables from the news, two researchers independently codified them and the correlation between codifications is above 90%. After checking the discrepancies the correlation improved to 100%. Information related to accounting data and firms' characteristics such as foundation year and size were gathered from Orbis belong to Bureau Van Dijk.

In the next step, the individual data related to CEOs were collected. Initially, the target CEO's names were gleaned from their interviews and public statements about the acquisition in the news as well as searching for the name of the CEO from Bloomberg Businessweek Company Database. Then by cross searching the names in Capital IQ, and LinkedIn for each CEO a personal CV was gathered. In

some cases that CVs lack information, we have been able to extract additional information from other sources such as company's webpage. The variables related to the individuals such as age, tenure in the target, and their time of departure from the targets was codified from the CVs. In the following the description of the variables and their constructs are described. For Paper D, similar procedures have been applied to gather information related to the acquirer's CEO.

### 3.2.1 Variables constructed for paper B

**Dependent variable:** *Acquirer's coordination choice* is the dependent variable in the paper. It is constructed as the interaction of two variables namely, *CEO replacement* and *Structural integration*. CEO replacement is constructed following Bergh (2001), Cannella & Hambrick (1993), and Wulf & Singh (2011) as a binary variable defined as 1 if the CEO is replaced from the combined entity two years after the acquisition and 0 otherwise. As mentioned earlier, the information related to CEO's decision of departure or stay is gleaned from their biographies.

*Structural integration* is a binary variable equal to 1 if following the acquisition the target was structurally integrated within the organization of the acquirer, whereas it is 0 if it remains separately; that is the target became an autonomous subsidiary or business unit of the acquirer. Following Paruchuri, et al. (2006) and Puranam, et al. (2009), two methods were applied to codify this variable from the news:

1. *Acquirer's official announcements:* the news usually include acquirer's official announcement for the structural status of the target. Top executives of the acquirer (mostly CEO) announce the acquirer's official decision with regard to the structural form.
2. *Deal's description:* the deal's description in the news often covers the operational details of the transaction including the future formal structure of the target, lay-offs and etc.

If the announcements or deal descriptions report a statement such as: "*Centennial Technologies Inc. will be merged into Solectron's Technology Solutions Business Unit*", we conclude that structural integration had occurred, while if explicitly it is mentioned about

retaining the target as an independent entity, such as “*Heartport Inc. will become a wholly owned subsidiary of Johnson & Johnson and will continue to operate as a distinct operational unit after the acquisition*”, we recorded this as structural separation.

Also following Puranam et al. (2009), to check the validity of the variable construct, the authors controlled for the list of registered subsidiaries of the acquirer in Orbis, to check whether the target is listed as a separate subsidiary or not.

The dependent variable in form of categorical variable is constructed from interaction of the above mentioned variables. *No action*, is the choice that acquirer keeps the target as a separate subsidiary and CEO stays after the acquisition (*Acquirer’s coordination choice=1*); *Coordination via target CEO replacement*, is the choice that acquirer keeps the target as a separate subsidiary and CEO is replaced after the acquisition (*Acquirer’s coordination choice=2*); *Coordination via structural integration*, is the choice that acquirer structurally integrates the target after the acquisition (*Acquirer’s coordination choice=3*).

***Independent variables:*** There are three independent variables in the paper; in the following, they are briefly explained:

*Technological relatedness:* For constructing the technological relatedness, one may rely on patents similar to studies such as Ahuja & Katila (2001), Grimpe & Hussinger (2014), Kapoor & Lim (2007), Parunchuri, et al. (2006) and Sears & Hoetker (2014). However, unlike the aforementioned studies, the sample includes many small software targets that usually had not filed any patent at the time of acquisition. In addition, some targets in other industries had been still at exploratory phase and without any patent at the time of acquisition. Therefore, comparing directly the patent base of firms is not feasible in this case. Alternatively, in this study, technological relatedness is constructed based on the correlation between acquirer’s technological patent portfolios five years prior to the acquisition and SIC codes of the target. For constructing this variable, the paper followed Dushnitsky & Leon (2005) and relied on Silverman (2002) concordance matrix. Initially, for each acquirer a patent portfolio five years prior to the acquisition

based on four digit IPC codes was constructed. Then, corresponding SIC codes for each IPC were collected, which results into an array of potential SIC codes for the portfolio. Technological relatedness is measured as the number of common SIC codes between target and the acquirer's portfolio corresponding SIC codes divided by total number of the target SIC codes. The data related to the acquirer's patent portfolio was gathered from Thompson Innovation database.

*Component technology:* Similar to Puranam et al. (2009), the paper assessed whether the acquired firm's technology was a component for the acquirer or a standalone product by examining press releases and article about the acquisition motives and its future development available in Lexis Nexis. For example, if it is reported in the article: "*Silicon Energy's solutions are already integrated with Itron's industry-leading MV-90 software systems ...*" or "*Parc's Route Server software will be incorporated into Cisco's Multiprotocol Label Switching (MPLS) Management product portfolio and will be made available as part of Cisco's IP Solution suits*" the acquisition was coded as component technology (*Component = 1*). One the other hand, if it was reported in the article that: "*KuDOS Pharmaceuticals is an excellent opportunity to acquire an established technology platform additive to our own oncology research capabilities*" or "*The addition of Chipcon's technical capabilities and leading RF (radio frequency) integrated circuits will complement Texas Instruments' existing low-power wireless product line*" then the acquisition was a standalone product (*Component = 0*).

*Alliance:* Following Porrini (2004), it is constructed as a binary variable equal to 1 if the acquirer and the target have established any prior alliance five years before the acquisition. The information related to prior alliance is extracted from press releases available in Lexis Nexis and cross-checked with Thompson SDC Platinum. For brevity the description of the control variables are not explained here but their description are available in Paper B. Table 2 summarizes all the variables and their definitions including the control variables.

Table 2: The variable description of paper B

Variable	Definition
Acquirer's coordination choice	It is a categorical variable: No action: if target's CEO stays after the acquisition and the target is kept as a separate subsidiary. Coordination via target's CEO replacement: if target's CEO is replaced while still it is kept as a separate subsidiary. Coordination via structural integration: if the target is structurally integrated.
Technological relatedness	It is measured as total number of common SIC codes between target and corresponding acquirer IPC family class divided by total number of target assigned SIC code
Component	It is equal to 1 if the acquirer intends to integrate certain target's technological artefact to its current product or on-going product development and 0 otherwise
Alliance	It is equal to 1 if target and acquirer have a prior alliance and 0 otherwise.
Product relatedness	It is measured as total number of common SIC codes between target and acquirer in the third digit level.
Target public	It is equal to 1 if target is a public company and 0 otherwise.
Target size	It is measured as total number of employees.
Relative size	It is measured as target number of employees divided by the acquirer number of employees.
Exploitation	It is equal to 1 if the target has patent, product or a prototype prior to the acquisition and 0 otherwise.
Target age	It is the target age in terms of years between the foundation year and acquisition year.
High-tech experience	It is measured as natural logarithm of total number of acquirer's prior experience in high-tech sectors, five years prior to the acquisition.
Non-high-tech experience	It is measured as natural logarithm of total number of acquirer's prior experience in non-high-tech sectors, five years prior to the acquisition.
Cross Border	It is equal to 1 if target and acquirer are headquartered in different countries and 0 otherwise.

### 3.2.2 Variables constructed for paper C

**Dependent variable:** *CEO departure* is the dependent variable for this paper and it is constructed similar to paper B.

**Independent variable:** *Founder* is a dummy variable that equals 1 if the CEO of target was also founder of the firm that is obtained from the collected CVs.

**Variables of interest:** The first variable, *Product relatedness* reflects the extent of the overlap of the operations of the target with those of the acquirer. Following Puranam & Srikanth (2007) it was calculated as the number of 3-digit SIC codes common to acquirer and target divided by the total number of 3-digit SIC codes assigned to the target. The first interactive variable is between founder and product relatedness (*Founder* × *Product relatedness*).

The second variable of interest is *Absorption*. It is a dummy variable; it is 1 if following the acquisition, the target is structurally integrated within the organization of the acquiring firm; and it is equal to 0 if it is kept as a separate subsidiary. The construction is similar to paper B. The second interactive variable is between founder and absorption (*Founder* × *Absorption*).

The third and fourth variables are Age and Size of the target. Target age is constructed as the difference between foundation year of the firm until acquisition (*Target age*) and size is constructed as number of employees at the time of acquisition (*Target size*). The two other interactive variables are between founder and respectively target's age and size (*Founder* × *Target age* and *Founder* × *Target size*). For brevity the description of the control variables are not explained here but their description are available in Paper C. Table 3 summarizes all the variables and their definitions including the control variables.

### 2.2.3 Variables constructed for paper D

**Dependent variables:** This paper has two dependent variables. The first dependent variable is *Announcement of retention*. Following Walsh (1989), it is a binary variable; it is 1 if the news states that the target's CEO stays after the acquisition. It is 0 if the news states that the target's CEO will leave the target after the acquisition. This announcement is made jointly by the CEOs of the acquirer and the target. The news related to the deals is collected from Lexis Nexis. The second dependent variable is *Misjudgement*. It is measured as the difference between what



is stated in the news regarding the target's CEO status and target's CEO status two years after the acquisition.

**Independent variable:** *Similarity in type* is a binary variable; it is equal to 1 if both CEOs are either internal or external CEOs. Following prior studies such as Carpenter et al. (2001) and Mackey et al. (2013), internal CEOs are defined as CEOs who are founder of the firm, or get promoted to become CEO from inside of the organization, or outsider CEOs with more than 10 years tenure in the firm. More detailed explanation of this variable is available in Paper D.

**Variable of interest:** A variable of interest is experience of the acquirer. It is measure as natural logarithm of total number of acquisitions made by the acquirer 5 years before the focal acquisition. The variable of interest is generated as interaction between acquirer experience and similarity in type (*Similarity in type* × *Acquirer experience*).

For brevity the description of the control variables are not explained here but their description are available in Paper D. Table 4 summarizes all the variables and their definitions including the control variables.

Table 3: The list of variables in paper C

<b>Variable</b>	<b>Definition</b>
CEO departure	It is a binary variable equal to 1 if the CEO is replaced from the combined entity two years after the acquisition and 0 otherwise.
Founder	It is a binary variable equal to 1 if the CEO is founder of the target, and 0 otherwise.
Product relatedness	It is measured as total number of common SIC codes between target and acquirer in the third digit level.
Absorption	It is a binary variable equal to 1 if the target is structurally integrated after the acquisition, and 0 otherwise
Target age	It is the target age in terms of years between the foundation year and acquisition year.
Target size	It is measured as total number of employees.
Product/patent	It is a binary variable equal to 1 if the target has patent, product or a prototype prior to the acquisition and 0 otherwise.
Target public	It is a binary variable equal to 1 if the target is a listed company and 0 otherwise.
CEO age	It is a binary variable equal to 1 if the CEO is near retirement (over 60) and 0 otherwise.
CEO tenure	It is constructed as number of years she appointed to be the CEO of the firm until the time of acquisition in logarithmic format.
CEO duality	It is a binary variable equal to 1 if CEO is also chairman of the firm, and 0 otherwise.
Cross Border	It is a binary variable equal to 1 if the target and acquirer are headquartered in different countries and 0 otherwise.
Alliance	It is equal to 1 if target and acquirer have a prior alliance and 0 otherwise.
Minority stake	It is a binary variable equal to 1 if the acquirer holds a minority stake before the focal acquisition, and 0 otherwise.
Acquirer experience	It is measured as total number of acquisitions made by the acquirer five years prior to the acquisition.
Acquirer size	It is measured as the natural logarithm of sales at the time of acquisition.

Table 4: The list of variables in paper D

<b>Variable</b>	<b>Definition</b>
Announcement of retention	It is a binary variable equal to 1 if the news states that the target's CEO stays after the acquisition, 0 otherwise,
Misjudgement	It is constructed as the difference between announcement of retention and whether the target's CEO stayed at least 2 years after the acquisition
Similarity in type	It is a binary variable equal to 1 if both CEOs are either internal or outsider CEOs
Acquirer experience	It is measured as total number of prior acquisition made by the acquirer 5 years prior to the focal acquisition
Age difference	It is measured as the relative difference between the acquirer's CEO and target's CEO age.
Target CEO duality	It is a binary variable equal to 1 if CEO is also chairman of the firm, and 0 otherwise.
Target CEO tenure (log)	It is constructed as number of years she has tenure in the target before the acquisition announcement.
Target public	It is a binary variable equal to 1 if the target is a listed company and 0 otherwise.
Target age	It is the target age in terms of years between the foundation year and acquisition year.
Target patent	It is a binary variable if the target has filed a patent prior to the acquisition and 0 otherwise.
Target size	It is measured as total number of employees.
Cross Border	It is a binary variable equal to 1 if the target and acquirer are headquartered in different countries and 0 otherwise.
Absorption	It is a binary variable equal to 1 if the target is structurally integrated after the acquisition and 0 otherwise.
Product relatedness	It is measured as total number of common SIC codes between target and acquirer in the third digit level.
Alliance	It is equal to 1 if target and acquirer have a prior alliance and 0 otherwise.
Minority stake	It is a binary variable equal to 1 if the acquirer holds a minority stake before the focal acquisition, and 0 otherwise.

### 3.3 Methodology for paper E

The empirical analysis is based on the data extracted from the Swedish matched employer-employee database collected by Statistics Sweden. This database contains longitudinal record of both firms' annual data and their employees' information. The paper focused on firms, acquired between 2001 and 2006, and followed the employees both three years

before and after the acquisition. In this study, the targets operating in high-tech, medium to high-tech and knowledge intensive industries were selected. The selection of firms was based on the congruence of their associated NACE code with the list of NACE codes provided by (OECD, 1997) for the aforementioned industries. The paper chose top managers as individuals who are reported as senior managers for the firm. We removed smaller targets by excluding the firms that have less than 50 employees at the time of acquisition and also some observations due to lack of data availability. The final sample for this study consists of 2164 top managers in 297 firms.

### 3.3.1 Variables constructed for paper E

***Dependent variable:*** Top manager's turnover is a binary variable; it is 0 if the top manager stays more than three years at acquirer's organization in post-acquisition and 1 if the top manager leaves the firm sooner than three years in post-acquisition similar to studies such as Bergh (2001) and Buchholtz et al (2003). Also later for robustness check the paper introduced turnover following some prior studies such as Lubatkin et al (1999), Wulf & Singh (2011), and Zollo & Singh (2004) as a binary variable for leave or stay 2 years after the acquisition and 1 year after the acquisition.

***Independent variables:*** There are four independent variables in the paper; in the following, they are briefly explained:

*Managerial status diversity:* For each top managers of the target, a binary variable is constructed. It is 1 if the top manager holds a C-Suite position in the target such as chief operating officer (COO), and alternatively 0 if the top manager is a head of a subsidiary, an SBU or a plant. Managerial status diversity, following Harrison & Klein (2007), treated as a separation, was constructed as a team level standard deviation of c-suit binary variable.

*Pay dispersion:* For each top manager of the target, we calculated salary as the average three consecutive years' annual salary before the acquisition. Pay dispersion, following Harrison & Klein (2007), was constructed as the coefficient of variation of average salaries at team level.

Table 5: The list of variables in paper E

<b>Variable</b>	<b>Definition</b>
Top manager Turnover	It is a binary variable equal to 1 if the CEO is replaced from the combined entity three years after the acquisition and 0 otherwise.
Managerial status diversity	It is a binary variable equal to 1 if the top manager holds a C-Suite position in the target, and 0 otherwise.
Pay dispersion	It is constructed as the coefficient of variation of average salaries in three consecutive years prior to the acquisition at team level.
Education background diversity	It is constructed as the Blau index of education majors of the team members.
Industry tenure diversity	It is constructed as the Blau index of industrial tenure of the team members.
Male	It is a binary variable equal to 1 if the top manager is male and 0 otherwise
Age & Age2	The CEO age and power of the age at the time of the acquisition.
Education level	It is a categorical ordered variable; no academic background equals to 0 and undergraduate education equals to 1 and graduate education equals to 2.
Salary	It is constructed as the average three consecutive years' annual salary.
Managerial experience	It is constructed as the normalized number of years the individual holds managerial position in the firm in the last 10 years.
Team size	It is constructed as natural logarithm of number of TMT members.
Gender diversity	It is constructed as number of male members divided by total number of the TMT.
Relative size	It is measured as target number of employees divided by the acquirer number of employees.
Distance	It is a binary variable equal to 1 if both firms are located in different province and 0 otherwise.

*Education background diversity:* For each top managers of the target, her education background is constructed as a categorical variable. There are seven major categories namely: Business administration, engineering, healthcare, humanity and art, natural science, social science, and other studies. Education background diversity, following (Harrison & Klein, 2007) was constructed as a team level Blau index (variety).

*Industrial tenure diversity:* For each top managers of the target, firstly, their tenure in different industries based on the first two digit NACE code were checked to identify the corresponding industry with maximum tenure. Then, similar to *Education background diversity*, Blau index is applied to calculate the variety at the team level. For brevity the description of the control variables are not explained here but their descriptions are available in Paper E. Table 5 summarizes all the variables and their definitions including the control variables.

## 4. Analysis

### 4.1 Findings of paper A

The paper as a literature review covers a broader area than the scope of the thesis; the review extended to the role of acquirer's top manager in M&As. The paper found several gaps and mixed results and accordingly presented several areas for future studies. For the sake of brevity, here I only present the findings related to the target's top managers in M&As; they are described in the following:

***TMT in details and acquisition contingencies:*** Most studies conducted in acquisition and TMT, includes only the strongest and highest rank member, which is CEO. Even in studies that look at top managers, the main overview is at the team level rather than individual level. Consequently, our insight on acquisition and top managers is restricted to the CEOs or TMT (Menz, 2012). For future study, the paper suggests more researches on other executives at individual level in particular when studying turnover, and the moderating roles of human capital and managerial experience in acquisitions. What is missing in prior studies is the important fact that not all target's top managers are equally important for the acquirer. Especially, neglecting individual differences and managerial functional positions generate contradictory results. For example in technologically motivated acquisitions, acquirer might be more interested to keep chief technology officer (CTO) of the company compare to other functional managers. Similarly, acquirers might be more interested in managers with technical background in this type of acquisitions.

In addition, deeper investigation at individual attributes results in better understanding of team level demographic characteristics. For instance, diversity is reported to have both positive and negative effect on post-acquisition outcome. Based on the studies on diversity of TMT and firm performance (See for e.g. Nielsen, 2010), diversity has different dimensions namely: educational background, functional experience, ethnicity, gender and race. When considering diversity of TMT, scholars should acknowledge these dimensions and expect different result when focusing on each of them (Harrison & Klein, 2007). Additionally, these dimensions have interactive effect on one another and therefore on acquisition outcome (Higgins & Gulati, 2006), which all suggest more comprehensive study on the diversity of TMT and acquisition. Another interesting road to explore, is studying similarity and dissimilarity between acquirer and target's TMT. Assuming any meaningful achievement from acquisition requires both teams' commitment and collaboration, it is worthy to study the effect of homophily (McPherson et al, 2001) on acquisition outcome and the target's turnover. On one hand, similarity attraction theory suggests that similarity between TMTs decreases social frictions, conflicts and miscommunications between the teams, on the other hand information decision making perspective suggests that varieties empower information processing (Pelled, 1996). Understanding the contingencies of similarity and dissimilarity between TMTs and acquisition outcome and turnover is yet another fruitful area for future studies. This is in particular very important, because every deal has two sides (target and acquirer), focusing on managerial influence of one side would not provide us of a full picture of M&A and managerial behaviours.

Another missing element in studying TMT, is organizational design aspect (here post-acquisition organizational structure). In organization design literature, aspects such as centralization or decentralization play an important role on both the size and structure of TMT (Collis et al, 2007). Therefore, in studying TMT turnover, there is a difference between centralized and decentralized organizations. Borrowing literature from post-acquisition corporate restructuring (See for e.g. Haspeslagh & Jemison, 1991), one interesting area would be bridging two streams of literature to understand the interplaying effect of post-acquisition organizational structure and TMTs turnover. More



specifically, it would be interesting to examine the role of target's top managers in post-acquisition according to extent of decentralization of organizations. Keeping the acquired subsidiaries, strategic business units or plants as autonomous entities requires granting more autonomy to the units compare to the case of absorption or integration with the acquirer's current units. Therefore one expects that top managers in charge of these autonomous entities are less likely to be replaced in post-acquisition compare to top managers in c-suit positions.

***Theoretical assumptions revisited:*** Most of the empirical works in target's top managers chose market for corporate control and agency theory for their studies. However generalizability of the findings related to agency theory and market for corporate control is questionable. As Jensen & Meckling (1976) concluded: "*The level of agency costs depends, among other things, on statutory and common law and human ingenuity in devising contracts. Both the law and the sophistication of contracts relevant to the modern corporation are the products of a historical process in which there were strong incentives for individuals to minimize agency costs.*" Empirical studies that used agency theory (on either acquirer or target) and market for corporate control are based on the Anglo American corporate governance in that ownership and control are separated. While, in other countries such as Germany or Japan, other stakeholders such as union and institutional shareholders have stronger monitoring power over top executives which results in lower agency problem. This makes generalizability of the results in market for corporate control and agency theory under question. Therefore, for the future studies it is interesting to check whether the findings related to US firms are also valid elsewhere and if not, what is an alternative theory that suits non-Anglo American firms? The second even more severe problem with market for corporate control is its validity. Many studies showed that acquirers prefer to buy good performers rather than bad performers. Even in case of corporate raiders, Walsh & Kosnik (1993) did not find evidence of market for corporate control. All in all, this suggests that researchers should be cautious when using this theory, as acquisitions occur and target top managers are replaced not because of their bad performance.

***Acquisitions as heterogeneous corporate strategies:*** As

explained in the introduction, M&A literature suggests that acquisitions may occur for various reasons. The acquisition's drivers can vary from economic of scale and scope, market entry, diversification, and acquiring new knowledge and/or technology. Studies at the intersection of TMT and M&A treat all acquisitions homogenously in terms of drivers and motivations and therefore used one proxy for performance measurement. However, performance in M&A literature is, as Zollo & Meier (2008) put it, a multifaceted construct that there is no single proxy to capture all aspects; they are both short and long term proxies across different levels namely: task, acquisition and firm. Some examples of these proxies are financial and accounting returns, customer and employee retention and innovation outcome (Zollo & Meier, 2008). Having said this, most of the studies on TMT and acquisition performance only focuses on proxies based on event study. Over 80% of the studies in our sample constructed performance as stock market reaction to the acquisition announcement and formed a cumulative abnormal return (CAR) or premium paid. While both proxies capture short term value in the acquisition (financial return) at firm level, it cannot reveal or connect to long term performance or return of the firm (Bodolica & Spraggon, 2009). From this standpoint, studies that focus on target TMT turnover and M&A performance, suffer from linking turnover (which happens usually up to five years after the acquisition) with this measurement. In addition, studies that focus on moderating role of various corporate governance methods such as board monitoring, compensation structure and payment policies similarly may suffer from the same misspecification of econometric model. Alternatively, when studying effectiveness of various corporate governance mechanisms and managerial interest in engaging into M&A activities it is vital that researchers use multiple constructs for performance to extend the so called outcome to long-term returns as well as non-financial metrics such as employee, top manager, and customer retention and innovation outcome.

***Heterogeneity in the targets:*** The choice of empirical settings, as described in the earlier section, in the intersection of top managers and M&A hinders generalizability of the findings. While over two third of global M&A transactions involve acquisition of small and private firms

(Zollo & Singh, 2004), almost all studies focus on acquisition of public firms. The TMT structure, corporate governance, and many assumptions behind theoretical scopes used in studies are different when it comes to small and private firms (Capron & Shen, 2007). Agency theory and market for corporate control does not apply to private firms. Because unlike public firms, all owners should consent for the acquisition in private firms, and usually top executives hold a share in the firm. In addition, since ownership and control are not separable from one another, there is an alignment between top executives' interests and the shareholders' interests (Colombo & Rossi-Lamastra, 2013). Stewardship theory seems more appropriate in studying and understanding TMT in private firms. It would be interesting to understand the difference between the role of TMT in post-acquisition of private firms, the effect of their turnover on the post-acquisition performance and their motivation or psychological perception about the acquisition.

## **4.2 Findings of paper B**

Acquirers choose their acquisition implementation strategy based on the required level of coordination. Highest level of coordination is not always the best choice as there are costs associated to it. Some are short-term and immediate costs of implementing changes in the organization (Hitt, et al., 1991; Schoar, 2002). Some are long-terms costs related to organizational disruptions and loss of autonomy for the target, which are especially worrisome in acquisitions of small high-tech firms (Haspeslagh & Jemison, 1991; Puranam, et al., 2009). In sum, there is a cost-benefit trade-off for the acquirer in choosing certain mechanisms to provide coordination.

The paper investigated on the antecedents behind the acquirer's choice of coordination mechanisms in acquisition implementation when the target is a small high-tech firm. First, in line with Puranam et al (2006) and (2009), the paper found that component - as a form of reciprocal interdependencies between the acquirer and the target - increases the likelihood of structural integration. This coordination mechanism provides the highest level of coordination at the high cost (Haspeslagh & Jemison, 1991; Pablo, 1994 and Van de Van & Delbecq, 1974). As interdependencies demand high level of coordination between the two firms, the acquirer chooses structural integration that provides

the necessary level of coordination despite of the costs. However, these costs make acquirer to resort to structural integration only when it is mandatory. If coordination capacity exists between the acquirer and the target before the acquisition, then the acquirer chooses alternative mechanisms, which provide lower level of coordination but maintain the costs at lower level as well. Along this line of reasoning, the paper argues that technological relatedness between the acquirer and the target can be interpreted as an existing coordination capacity. It increases the absorptive capacity of the acquirer in knowledge transfer (Cohen & Levinthal, 1990; March, 1991) and creates a common ground between the two firms that facilitates coordination (Grant, 1996; Kogut & Zander, 1992). In line with these arguments, the findings suggest that when technology relatedness between acquirer and target is high, the acquirer keeps the target as a separate subsidiary and the target's CEO in charge to act as a coordinator. Additionally, the existence of prior alliances between two firms results in creating certain coordination capacity, which the acquirer can leverage in acquisition implementation (Tsai, 2001 and Yang, et al., 2011). In other words, when a prior alliance between the acquirer and the target exists, the acquirer tends to keep the target as a separate subsidiary and keep the CEO in charge. The coordination capacity provided by technological relatedness and alliance is considerable enough that even in case of interdependency, structural integration as a desired choice of coordination mechanism loses its benefits over the associated costs for the acquirer.

### **4.3 Findings of paper C**

This paper studied the determinants of the target's CEO departure (or retention) after the acquisition of high-tech firms with special investigation on the effect of CEO being founder of the firm (the so-called founder-CEO). The result of empirical indicates that being founder of the target decreases the probability of CEO departure. This suggests that human capital embedded in founder-CEO is valuable for the acquirer. As explained before, we can divide the managerial human capital into general and specific. The interaction between absorption (structural integration of the target) and founder CEO reveals that CEO being a founder is so valuable for the acquirer that even if the acquirer decides to absorb the target, the acquirer prefers to keep the CEO. This finding brings a new insight to post-acquisition CEO turnover literature.

By ruling out soft coordination role for the founder-CEO in absorption, general managerial skills of this type of CEOs to serve as transitional manager are undermined, while specific skills are more attractive for the acquirer. Additionally, the interaction between founder and product relatedness reveals that when the target CEO is also a founder of the company, it is more likely that the CEO stays afterwards even in highly related acquisitions where industry specific human capital is redundant.

Also the paper showed that the value of the founder-CEO's specific human capital is contingent to the maturity of the target. The more mature the target is, the less valuable the firm specific human capital is for the acquirer. The paper confirmed this argument by finding that as the target ages, the likelihood of founder-CEO departure increases. Additionally, for robustness check this paper control for alternative explanations of departure or retention. In particular, the paper controlled for agency problem, psychological attachment, and market for corporate control; the paper did not find any evidence of them. Also the paper controlled for how valuable might be other sources of generic human capital such as founder's education background for the acquirer instead of firm specific human capital to encourage the acquirer to keep the CEO. The paper did not find any evidence of it. The robustness of the results strengthens the main findings of the paper.

#### **4.4 Findings of paper D**

The first finding of the paper is that similarity in managerial style between CEOs of the acquirer and target increases the likelihood of positive attitude toward the acquisition and post-acquisition implementations. In particular, the paper found that similarity in being an external or internal CEO increase the chance of pronouncing further collaboration of the target's CEO in post-acquisition when the deal is closed. This finding confirms the argument of the paper that as social categorization theory (Ashforth & Mael, 1989; Tajfel, 1982) suggests individuals who share similar characteristics, are more likely to collaborate and trust each other.

Additionally, the paper found that similarity in style increases the chance of misjudgment. As similarity brings about initial trust

between individuals, they become short sighted to evaluate the deal and post-deal decisions and their consequences comprehensively. Literature on trust and inter-organizational relations suggested that trust increases the chance of opportunistic behavior, as trust is asymmetrical in nature (individual A may find individual B trustworthy whereas individual B does not necessarily share the same opinion about individual A) (Gulati, 1995; Schoorman et al., 2007). In this regard, based on the multiple case studies of acquisitions in high-tech and knowledge intensive industries Graebner (2009) reported that initial trust between the target and the acquirer also increases the chance of acquirer's deceit and the target's vulnerability. If the target trusts asymmetrically the acquirer, the target (especially the top managers) becomes vulnerable in post-acquisition. If the acquirer trusts asymmetrically the target, there is a chance that the acquirer gets deceived about the true potentials of the target in collaboration and cooperation in post-acquisition. In both scenarios, the target's CEO leaves after the acquisition. This paper have not distinguished in case of CEOs' similarity what would be the more likely scenario; whether deception or vulnerability causes the target's CEO departure in post-acquisition, though announced otherwise when the deal is officially closed. Misjudgment presented in the paper, asserts a broader argument that include also asymmetrical notion of trust. Indeed, trust may bring about deception, which causes misjudgment for both CEOs; but also trust brings about social and behavioral biases, which engenders misjudgment about the post-acquisition implementation's complications and the coordination capacity provided by the target's CEO. In the similar line, Rogan & Sorenson (2014), by borrowing insights from inter-organizational trust literature, have recently reported that when the acquirer and the target share indirect common ties through a third party (common customers), it is more likely that post-acquisition performance declines. They asserted that biases cause performing poor due diligence and false sense of security. All in all, this paper suggests that although similarity between CEOs increases trust, collaboration and cooperation and decreases the likelihood of the target's CEO departure in post-acquisition, it also has a dark side of misjudgment caused by either opportunistic behavior or biases, which results in the target's CEO departure.

Finally, the paper found that experience as acquirer's capability moderates the effect of similarity on announcement of retention and misjudgment. More experienced acquirers are more robust to the effect of similarity on determining the targets' CEO status in post-acquisition period. The experience reduces the probability of making bad decisions regarding the post-acquisition integration process.

#### **4.5 Findings of paper E**

The paper has shown that in general ex-ante diversity in TMT increases the top manager's turnover in post-acquisition. First, positional diversity of TMT as form of separation increases the turnover. This finding validates the argument related to the effect of separation on social friction, categorization and sub grouping, which increases the turnover in post-acquisition. In addition, based on theory of faultline proposed by Lau & Murnighan (1998), acquisitions as disruptive events activate the separation between C-Suite and non-C-Suite members as a form of faultline, as issues like career concern and relative standing increases rivalry between these two groups inside TMT. Acquisition changes the organizational structure of the target including norms, routines, and delegation of autonomy based on post-acquisition integration and implementation literature (Puranam et al, 2009; Sears & Hoetker, 2014; Zollo & Singh, 2004). This finding also suggests that ex-ante organizational structure of the target determines top managers' turnover in post-acquisition. Following the arguments proposed by Argyres (1995), Child (1972), Chandler (1991), and Guadalupe et al (2013), as the TMT composition is the reflection of organizational structure, and number of general managers as non-C-Suite members of TMT represents the degree of decentralization of the firm, it is inferable that targets with decentralized structure are more likely to face turnover.

Secondly, the paper found that ex-ante pay disparity increases the top managers' turnover in post-acquisition. This finding confirms the argument that pay disparity hampers information processing capability of TMT as team members are less collaborative and withhold information necessary for decision making (Eisenhardt & Bourgeois, 1988; Pfeffer & Langton, 1993).

Finally, the paper found that diversity as variety causes turnover of top managers in post-acquisition. Here the argument is that variety hampers efficiency in decision making, communication, and coordination between top managers. In this case, the acquirer replaces the target's top managers after the acquisition to prevent such inefficiencies. The results assert that diversity in industrial background, as a form of variety, increases the probability of turnover, however we did not capture similar effect on education background as another form of variety. Such difference between the results of the two variety constructs confirms the argument presented by Bell et al. (2011) and Harrison & Klein (2007), that conceptualization of diversities of all task related attributes into a unified diversity index, does not give proper insight to the researchers. As the attributes are independent from one another, their diversity at team level has independent and somewhat different effect. One possible explanation for not finding expected effect for education background on turnover can be related to the diminishing effect of time on education background, especially considering the fact that the average age of top managers in the sample is 45. It would be noteworthy to mention that, Bell et al. (2011) in their meta-analysis did not find also strong positive effect of variety in education background as a surrogate of knowledge of team on the overall performance, and the paper also provided similar argument that the team members are years away from the time that they completed their education. This explanation is also in line with the notion of the importance of dynamism in organizational demography, suggested by Lawrence (1997) that some of the easily measurable attributes may not be as influential as it appears when considering its effect over time.

#### **4.6 Findings of the thesis**

So far the findings of the five papers separately have been described. In this last part of section 4, the connection of the findings across the papers is described. Table 6 have summarized the connections.

Paper B is a direct response to the suggestion of paper A regarding the interplaying effect of other organizational design aspects of post-acquisition implementation and the turnover of the target's top managers in post-acquisition phase. In particular paper B introduced



the interplaying effect of the target’s post-acquisition organizational structure and the target’s CEO replacement or retention. Paper C differentiates between founder-CEOs and non-founder-CEOs in their post-acquisition turnover. From this standpoint, this paper reflects on the suggestion provided by paper A that there is a heterogeneity in the target’s top managers, and studies should appreciate such variety when studying managerial turnover.

Table 6: The summary of findings and connection with other hypotheses

<b>Papers</b>	<b>Hypotheses</b>	<b>Result</b>	<b>Connections with other hypotheses in other papers</b>
B	H.B.1	Confirmed	H.C.2b, H.E.1
B	H.B.2a	Confirmed	H.E.1
B	H.B.2b	Confirmed	H.C.2b, H.E.1
B	H.B.3a	Confirmed	H.C.2b, H.D.1, H.E.1
B	H.B.3b	Confirmed	H.C.2b, H.D.1, H.D.2, H.E.1
C	H.C.1	Confirmed	
C	H.C.2a	Confirmed	
C	H.C.2b	Confirmed	H.B.1, H.B.2a, H.B.2b, H.B.3a, H.B.3b
C	H.C.3a	Confirmed	H.E.3a
C	H.C.3b	Not confirmed	
D	H.D.1	Confirmed	H.B.3a, H.B.3b, H.E.1
D	H.D.2	Confirmed	H.B.3a, H.B.3b, H.E.1
D	H.D.3a	Confirmed	
D	H.D.3b	Confirmed	
E	H.E.1	Confirmed	H.B.1, H.B.2a, H.B.2b, H.B.3a, H.B.3b, H.D.1, H.D.2
E	H.E.2	Confirmed	
E	H.E.3a	Confirmed	H.B.1, H.B.2a, H.B.2b, H.B.3a, H.B.3b, H.C.3a, H.C.3b, H.C.3c
E	H.E.3b	Not Confirmed	

As paper B, C, and D focuses on the target's CEO turnover in post-acquisition, paper E expands its domain of study to include non-CEO top managers. This is in line with the suggestion provided by paper A that most of received knowledge in managerial turnover is asymmetrically obtained from the CEO's studies and it is time to reduce this gap by including other top managers as well.

Paper B introduced three different choices for providing required post-acquisition coordination level. Paper B argued that in case of structural integration, retention of the target's CEO does not have any coordination reason. Paper C provides an alternative reason for this scenario, which is the value of human capital of the target's CEO for the acquirer. More specifically, H.C.2b shows that the human capital of the founder-CEO is valuable to the acquirer to the extent that even in case of structural integration, the acquirer is willing to keep them. From this stand, H.C.2b complements the findings of paper B including H.B.1, H.B.2a, H.B.2b, H.B.3a, and H.B.3b. In addition, H.B.2a and H.B.2b argued that technological relatedness as a form of common ground increases the available coordination capacity and consequently reduces the level of coordination capacity needs to be provided, so in this case the acquirer relies more on the target's CEO to coordinate in post-acquisition. The findings in paper E provide additional insight to paper B. In particular, based on the findings of H.E.1 and H.E.3a, paper E inferred that the first priority for the acquirer is providing coordination capacity for knowledge transfer in post-acquisition phases. Therefore, the value of human capital embedded in the target's TMT for the acquirer is to the extent that does not hamper coordination. In other words, acquirer places higher priority for coordination rather than the managerial human capital embedded in the target's top managers, in determining their status (replacement or retention) after the acquisition.

The maturity arguments provided in H.C.3a and H.C.3b in paper C are in line with the variety argument provided in H.E.3a in Paper E. Paper C inferred that the acquirer keeps the target's founder-CEO because of her firm-specific human capital; more importantly, the value for the acquirer depends on the maturity of the target at the time of acquisition. If the target reaches to certain maturity level in terms of age, the firm-specific human capital of the target's founder-CEO loses its

value for the acquirer. So it appears that the acquirers in general are not interested in hiring the target's founder-CEO for the potential technological development in future but rather for the current technological advancement at hand. Similarly paper E in H.E.3a also reported that the variety in human capital of the target's TMT is not interesting for the acquirer despite of its benefit for creativity, problem solving, and innovation for future. Both arguments suggest that the value of human capital of the target's top managers is contingent for the acquirer.

Similarity arguments provided in H.D.1 in paper D are in line with the separation argument provided in H.E.1 in paper E. Paper D proposed that similarity in characteristics of CEOs increases future collaboration and cooperation, and decreases conflicts and social frictions, therefore it is expected that similarity decreases the likelihood of the target's CEO turnover. Paper E argued that dissimilarity in managerial position (c-suit vs. non-c-suit positions) causes separation between the target's top managers, which increases their turnover in post-acquisition. Putting together both findings suggests the prevalence of positive effect of dissimilarity on managerial post-acquisition turnover.

## **5. Discussion and Conclusion**

### **5.1 Deeper look into findings of paper B**

The paper offers several contributions to the literature of acquisition implementation (Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986; Ranft & Lord, 2002; Schrivastava, 1986; Schweitzer, 2005). First, it shows that cost-benefit trade-off drives the acquisition implementation choices of the acquirer. Prior studies have captured mainly the effect of acquisition implementation on post-acquisition performance (See for e.g.: Bauer & Matzler, 2014; Datta & Grant, 1990; Pablo, 1994; Parunchuri, et al., 2006; Puranam, et al., 2006; Zollo & Singh, 2004). However, directly linking acquisition implementation to post-acquisition performance does not give a comprehensive picture in understanding the rationale behind the acquisition implementation choices. In particular, prior works on the topic have overlooked the fact that there is no dominant acquisition implementation strategy and acquirer chooses their strategy based on the required level of coordination (Haspeslagh & Jemison, 1991; Schweitzer, 2005). The authors of this paper provide an explanation for the rationale behind the acquirer's choice of acquisition implementation by borrowing concepts from the organization design literature (Mintzberg, 1980; Thompson, 1967; Tushman & Nadler, 1978; Van de Van & Delbecq, 1974). The only exception that focused explicitly on acquisition implementation is Puranam et al. (2009). However, the work of Puranam and colleagues presented only a dichotomy of structural integration vs. separation as two choices in front of the acquirer, while the paper presented that the choice is beyond this dichotomy. A missing element in most of the empirical works on acquisition implementation is the role of target's top executives in general and of CEO in particular as a coordinator in post-acquisition; the only exceptions are the in-depth case studies by Graebner (2004) &

(2009) and Ranft & Lord (2002). The literature on CEO's retention or replacement in post-acquisition is mainly disconnected from that on structural integration. To my knowledge, this is the first paper based on an empirical large sample, which bridges the aforementioned two streams of literature to investigate on the acquirer's rationale behind choices related to acquisition implementation. The empirical studies mainly captured the effect of CEO's departure on post-acquisition performance (Bergh, 2001; Buchholtz, et al., 2003; Cannella & Hambrick, 1993; Hambrick & Cannella, 1993; Wulf & Singh, 2011). Our finding is complementary to this stream of literature by showing that if the target's CEO stays and acts as a coordinator the costs of implementation specifically those related to loss of autonomy and organizational disruptions is lower and consequently performance is higher.

Finally, the paper contributes to the literature of technological acquisitions. This literature pays special attention to the effect of technological relatedness on post-acquisition outcome, and have reported positive effect of relatedness (Ahuja & Katila, 2001; Cassiman, et al., 2005; Cloudt, et al., 2006; Grimpe & Hussinger, 2014; Makri, et al., 2010; Sears & Hoetker, 2014). In addition, prior alliance between the target and acquirer and its effect on acquisition outcome is another interesting topic in this type of acquisitions. The empirical studies suggested that post-acquisition performance is higher when both firms established an alliance before the acquisition (Porrini, 2004; Yang, et al., 2011 and Zaheer, et al., 2010). The findings of this paper on technological relatedness and alliance as coordination capacity complement both streams of empirical studies by proposing a possible explanation on the mechanism behind higher post-acquisition performance. Coordination capacity provided by alliance and relatedness reduces the attractiveness, and consequently the probability of application, of mechanisms that provide higher level of coordination at higher costs caused by loss of autonomy and organizational disruptions. Accordingly, it is reasonable to expect that this coordination capacity is associated with higher post-acquisition outcome.

This study has certain limitations, which also lead into some suggestions for future studies. First, the paper has only focused on CEO

replacement or retention as the highest rank senior executive of the firm. This approach fits well with the context of acquisitions of small high-tech firms, where the CEO has high-managerial discretion and a strong symbolic role. However, it would be interesting to extend this study further to include top management team replacement or retention as a whole or the effect of certain top executive replacement or retention. As an example, in the context of acquisitions of small high-tech firms, top executives involved in R&D activities (such as the chief technology officer) may play a significant role in post-acquisition implementation. A similar argument holds for the other dimension: structural integration. In line with Puranam et al. (2009), this work takes into account only two forms of integration (structural integration vs. separation), which is common for acquisitions of small firms. However, integration choices are not bounded into total separation or full integration; hybrid approaches are practical in acquisitions of larger firms (Schweitzer, 2005). Therefore, another future area of investigation can be studying more general form of integration. Additionally, it would be of interest to study coordination mechanisms deeper. Particularly, in case of coordination via CEO replacement, further research should investigate on who would be appointed to be in charge of the unit; whether someone from target takes the position or someone from outside is in charge. Finally, this study did not differentiate between CEOs based on their individual characteristics, skills and capabilities. Especially in small high-tech firms, it is likely that CEOs may have firm specific human capital such as technological know-how and technical skills. More specifically, some CEOs are also founder of the company or patent holders, and acquirer may perceive these individuals as key personnel, which increases the probability of their retention in post-acquisition. Thus, it is interesting to disentangle the effect of these CEOs from professional CEOs when studying CEO replacement or retention as a coordination mechanism.

## **5.2 Deeper look into findings of paper C**

The first contribution of the paper is to post-acquisition target's CEO turnover literature. This study introduces a new determinant of the target's CEO turnover. Here the paper showed that founder-CEOs are different in post-acquisition turnover than professional CEOs and what makes the difference is the firm specific human capital of founder-

CEOs. These findings on founder, suggest more in-depth studies on their retention on post-acquisition. The research, is extendible to other founder executives to first understand whether there is a difference between founder CEO and other founder managers for the acquirers and second, whether acquirers are willing to keep the founding team as a whole or founders individually.

The second contribution of this paper is to founder-CEO succession literature. Based on the study conducted by Wasserman (2003), it is a common wisdom that founder-CEOs usually face with the so called “success paradox”. Founder-CEOs are usually substituted by professional CEOs as their firms grow organically. Many studies (for e.g. Boeker & Fleming, 2010; Boeker & Karichalil, 2002; Certo et al., 2001; Jayaraman et al., 2000) proposed that the maturity of the firm necessitates different skills that usually founder-CEOs do not possess. This paper shows that in case of acquisition (the exit mode), as an alternative to organic growth, founder CEOs have similar faith.

The third contribution of the paper is to the literature of managerial human capital. Based on the categorization of human capital into generic, industry specific, and firm specific human capital proposed by Becker (1967), the paper showed that acquirers find firm specific human capital of founder-CEOs more valuable compare to two other types. Our finding is in line with the recent studies conducted by Ployhardt & Moliterno (2011) and Mackey et al (2013) that suggest human capital of the CEO at abstract level does not provide any meaningful results for the firms. The human capital should strategically fit to the firm’s resources. Therefore, certain human capital fits to one firm while it does not fit to another firm. The paper suggests that firm specific human capital of the target’s founder-CEO under certain circumstances strategically fits (acquisition and maturity contingencies) with the acquirer’s resources. The argument about the value of firm specific human capital of founder-CEOs contingent on the maturity of the target for the acquirer opens up interesting areas for future studies. The first is investigating on the founder-CEO’s position in the acquirer organization. In particular it is worthy to check whether the founder-CEO stays in the target and takes role in R&D department, product development or serves at higher strategic position. If the founder-CEO in post-acquisition continues working in the target or in the product

development, then the argument about the value of firm specific human capital becomes stronger. In addition, based on the maturity argument, the value of firm specific human capital for the acquirer is till certain stage of the target's maturity in post-acquisition. From this stand, for future study another direction is investigating on whether the founder-CEOs' employment contract with the acquirer is contingent on the target's product development advancement in post-acquisition era.

### **5.3 Deeper look into findings of paper D**

This paper has several contributions to the extant literature. This paper introduces new antecedent for the CEO's turnover to the literature by providing a behavioral argument behind the target's CEO turnover. The paper asserted that similarity between the acquirer and the target CEOs decreases the likelihood of the target's CEO departure. Acquisition as a formal contract includes two parties. On one side, the acquirer's CEO as the buyer, and on the other side, the target's CEO as the seller interact, negotiate and finalize the deal. Based on similarity-attraction and social categorization literature (Ashforth & Mael, 1989; McPherson, et al., 2001; Tajfel, 1982), individuals tend to connect, cooperate and collaborate easier with other individuals when they share similar characteristics. Such similarities are surrogate for similarity in values, norms, and beliefs which reduces social conflicts and frictions (Pelled, 1996), increases collaboration and cooperation (Tsui & O'Reilly, 1989) and establishes trust between individuals (Li & Hambrick, 2005).

The empirical setting for the paper brought unique opportunity for testing the similarity effect. There is a size difference between the acquirer (large incumbent) and the target (small firm). This resolves two potential problems. First, it is easier to assume that when the deal is closed, the acquirer's CEO assumes control over the target and consequently is in charge of all the decisions related to post-acquisition changes to the target. In other words, there is a clear power imbalance between the two CEOs in post-acquisition. In case of merger of equal size (MOEs), although like any other deal there is an acquirer (buyer) and a target (seller), decision making is more complicated and is not in the hand of the acquirer's CEO entirely as the target's CEO has also some influences (See Wulf, 2004 for a review on MOEs). The power balance in MOEs imposes value threat rather than attraction. When



both CEOs have similar power and similar characteristics, the more likely scenario is to expect CEO's departure for competitive threat (See for e.g. Duguid et al., 2012); furthermore, RBV and efficiency theory suggest replacement due to redundancy at senior managerial positions. For the future study, it is interesting to evaluate whether similarity results in attraction or threat and redundancy. Second, in case of MOEs the deal involves top managers of firms as well as influential shareholders and board members, therefore it is expected that the effect of similarity between CEOs on the target's CEO departure is not as strong as this setting. For future study it would be interesting to evaluate the effect of similarity between TMTs of both firms in case of MOEs on post-acquisition managerial turnover similar to the study conducted by Li & Hambrick (2005) on the effect of similarity between fractional groups in Sino-American joint ventures.

This paper also contributes to the literature of trust in acquisition. To my knowledge, all the empirical works so far have captured the effect of inter-organizational trust on the acquisition. For instance, the effect of prior alliance (Porrini, 2004), indirect or direct network ties (Graebner, 2009 and Rogan & Soresnson, 2014), and multiple exchanges (Lee, 2012) on the acquisition. This paper has provided a new perspective by linking trust at the individual level (between CEOs) on the acquisition. For the future study, it is interesting to investigate on the relative strength of interpersonal to inter-organizational trust on the acquisition; more specifically, the moderating and mediating role of similarity (or dissimilarity) between CEOs on the effect of inter-organizational trust such as prior alliance or common ties on the acquisition.

#### **5.4 Deeper look into findings of paper E**

The main conclusion of this paper is that ex-ante diversity in TMT in pre-acquisition directly determines the targets managerial turnover in post-acquisition. The team view brings a fresh perspective toward the turnover. In this regard, although prior studies on acquisition implementation argue that the target's top managers can be resourceful for the acquirer to minimize the negative effect of organizational disruptions exerted to the target while acting as coordinators between the target and the rest of the acquirer's organization, TMT's

demographic composition reduces such coordination capacity and therefore the acquirer prefers to replace the top managers and exert more organizational disruptions to target to provide the necessary level of coordination capacity. In other words, the benefit of providing coordination capacity by replacing the TMT is higher than its associated cost with the disruptions. This argument holds even in acquisition of high-tech and knowledge intensive firms, that the cost of disruptions is higher; as the employees' departure due to such disruptions is associated with loss of knowledge for the acquirer. In this respect, our findings respond to some extent to studies such as Cloodt et al (2006), Parunchuri et al (2006), and Kapoor & Lim (2007) that question why acquirers go to great length in choosing disruptive implementation strategies such as organizational integration that lower inventors 'productivity, R&D outputs and future innovations in the acquired units. In addition, this explains why although studies such as Graebner (2004), Graebner et al (2010), and Ranft & Lord (2002) suggested the opportunity of exploiting coordinating capacity present in retention of targets' top managers for the acquirers, in practice they choose not to rely on such capacity. Another inference from the results is that, even though diversity in the form of variety supports creativity, knowledge development and innovation based on information process view, it reduces coordination efficiency to transfer the knowledge already created in the target. This insight also explains why managerial turnover in acquisition of high-tech and knowledge intensive firms are still higher than normal regardless of the human capital embedded in managerial resources. Accordingly, this paper provides complementary explanation to the studies such as Bergh (2001), Buchholtz et al (2003), and Wulf & Singh (2011), which linked human capital to turnover. The paper also provides a new antecedent of target's managerial turnover, which is ex-ante organizational structure of the target before the acquisition. The paper found that targets with decentralized structure (for instance matrix organizations) face with higher managerial turnover. Empirically the paper confirmed the proposition presented by Argyres (1995) and more recently Ricardo et al (2008), who suggested that centralized organizational forms are more suitable for technology development as this organizational form facilitates knowledge transfer via centralized coordinating mechanisms. This argument also validates a recent observation reported by Guadalupe et

al (2013) that in the last two decades, US large firms have shifted from decentralized to centralized forms. If this argument is correct, then it is expected to see more centralized organizational form for the targets in post-acquisition rather than just replacing top managers. In other words, the acquirers reduce TMT's size of the targets (lay-offs) rather than substitute them. For the future studies, it would be interesting to validate this argument.

This paper also contributes to the literature of TMT's diversity. The first contribution is to the environmental contingency studies by showing that acquisition has disruptive effects on the organizations. The paper argued that the changes in the norms, values and routines in the organization, and consequently in the TMT, clearly activate the diversity in the form of separation. The finding is in line with the theory of faultline proposed by Lau & Murnighan (1998). Prior empirical studies such as Li & Hambrick (2005) and Pearsall et al (2008) focused on activation of faultline when the team is forming. This study complements them by showing that faultline can be activated also when roles, routines and to some extent goals of the team change even though the team has performed for a long period. In addition, prior studies on faultline mainly focused on visible demographic characteristics (such as age, gender, and race). Our finding on managerial position diversity is a response to a call by Bell et al. (2011), Hutzschenreuter & Horstkotte (2013), and Rico et al. (2007) to investigate on the diversity faultline of task related characteristics. Here, we focused on the ex-ante diversity of the target's TMT, and the diversity faultline for the target; however acquisition has a disruptive effect on the acquirer's organization as well, though it is less pronounced than the target. In future studies, it would be interesting to investigate on how and to what extent acquisition also activates the diversity faultline inside the acquirer's TMT. In addition, in mergers of equals that both acquirer and target are relatively equal in terms of size, sales and market power Wulf (2004), it is more likely that both TMTs merge together and form a new TMT. The conflict, social categorization, rivalry across the former teams also suggests a fruitful for area for future scholars interested in studying the effect of diversity in team formations and performance.

Another interesting insight from the result is the importance of acquisition as an environmental contingency; it is to the extent that

although variety is beneficial intrinsically to the team's decision making effectiveness based on the information process view, it can be harmful when the environment changes. From this standpoint, this paper complements prior studies such as Mihalache et al (2013) Van der Vegt & Bunderson (2005) reporting that diversity in the form of variety harms decision making efficiency and coordination especially in the contexts that they are more important than creativity.

## **5.5 Discussion and conclusion of the thesis**

Recalling the overarching research question of the thesis “*What are the antecedents of top managers’ turnover in post-acquisition?*” the compilation of five papers tend to answer it. This thesis revolves around understanding the rationale behind the turnover of target's top manager after the acquisition. In particular, under what circumstances the acquirer keeps the target's top managers or replaces them; in case of retention, what would be the main interest for the acquirer. As described in the introduction and also argued in paper A, the existing empirical work on the target's managerial turnover and acquisition have not provided a clear picture. Empirical studies have applied several theoretical arguments for explaining the turnover. Some are in favour of turnover, whereas some are against turnover for value creation in post-acquisition. Lack of context as recently asserted by Krug et al (2014) and explained in paper A is the main culprit. None of the arguments are intrinsically dismissible, but what makes the difference on validity of the certain argument over the others is the context; the context within which acquisition occurs (the target's firm characteristics, managerial characteristics and industrial characteristics) also the context regarding the acquisition category defined by the driver behind it (motivation). This thesis paid especial attention to context to unravel the determinants behind the target's managerial turnover. Henceforth as explained earlier, the thesis focuses on knowledge intensive and high-tech industries, where knowledge is mostly tacit and embedded in human capital (Argyres, 1995 and Kapoor & Lim, 2007) and any meaningful return from this type of acquisition depends on the target's employees and managers further collaboration with the acquirer in post-acquisition (Graebner, 2009). In addition it is safe to assume that acquirers pursue technology and knowledge acquisition even if other

motivations such as market entry and increasing market power also drives the acquisition (Ahuja & Katila, 2001; Graebner et al., 2010). Finally, by focusing on the small targets in three of the empirical papers and non-Anglo American acquisitions in the other paper, it is easier to dismiss market for corporate control and agency problems as a source of the managerial (in particular the CEO) turnover.

This thesis pays an especial attention to two other important theoretical arguments namely: post-acquisition coordination capacity and human capital. Paper B and C investigated on both arguments, which the conclusions and contributions have been discussed in great length in section 5.1 and 5.2. Also the thesis introduces two new determinants on turnover. First is the similarity in demographic characteristics between the CEOs of the acquirer and the target. The second determinant is ex-ante diversity in target's TMT. Respectively sections 5.3 and 5.4 have discussed them in great details. Going back to the research question and putting the findings of all papers together, it is inferable from the thesis that for the acquirers at least in acquisition of high-tech and knowledge intensive firms, the main integral element is providing the coordination capacity necessary to transfer the knowledge from the target to the rest of its organization. Although the target's top managers are potentially resourceful for providing some level of coordination capacity, the value of such capacity depends on the acquirer's choice of mechanism to provide the necessary level of coordination. If the acquirer decides to rely on certain mechanisms to provide higher level of coordination other than the capacity provided by the target's managerial resources, then the presence of top managers including the CEO becomes redundant after the acquisition. Indeed, their presence can potentially become detrimental to the post-acquisition implementation process because of their resistance toward the changes as some scholars suggested (For e.g. Buccholtz & Ribbens, 1994). Alternatively, removing their coordinating role also engenders lower status or inferiority in post-acquisition which forces them to leave after the acquisition as prior studies suggested (For e.g. Cannella & Hambrick, 1993). This explains why there is a gap between practice and the findings of studies such as Graebner (2004), Pablo (1994), and Ranft & Lord (2002). Those studies took for granted the value of coordination capacity in the target's managerial resources for the acquirer.

The second important finding of the thesis is that the value of human capital embedded in target managerial resources is to the extent that it does not hamper coordination. The case of variety in paper E provides a strong evidence for this conjecture; as variety causes decision making process lengthier and coordination inefficient, the cost of such inefficiency is greater than the benefits of variety in problem solving and creativity usually highlights in information processing theory. Finally, the human capital of managerial resources should fit to the acquirer's need and internal resources; otherwise generalization of value of human capital does not provide any meaningful result. A good example for this inference is provided in paper C. The paper asserted that the acquirers are willing to keep the targets' founder-CEOs neither for their industry-specific nor for their general human capital; acquirers find their firm-specific human capital valuable. However, the value of firm-specific human capital is limited to the state of maturity of the target at the time of acquisition. Overlooking on the multidimensional aspect of human capital and the fit can be a reason why prior studies on human capital did not find a solid evidence of human capital in determining managerial turnover (See for e.g. Buccholtz et al., 2003; Wulf & Singh, 2011).

In this chapter, for each empirical paper some directions for further studies have been addressed. The findings of the thesis as a whole also open up new areas worthy to investigate. This study helps to predict under what circumstances, top managers stay (or leave) after the acquisition as suggested by the thesis' title. In particular as most of the work has been done on CEOs, it is better to say which type of CEO and under what circumstances stays or leaves after the acquisition. However, the title can be interpreted as who among the top managers in a target would stay or leave after the acquisition. This is also a different but interesting research question to tackle for the future studies. For example as stated in paper A, it would be interesting to study if there is any difference between retention of CTO, CFO and chairman in case of acquisition of larger high-tech firms.

Besides that, this thesis has investigated only on the rationale behind the target's managerial turnover and not on the effect of turnover on post-acquisition performance. For future study, another interesting area to extend the findings of this thesis is to link the acquirer's choice related to the target's managerial turnover and the

acquisition outcome. For example, it would be interesting to test whether retention of the founder-CEO in post-acquisition period, improves the productivity of target's employees. In line with studies such as Kapoor & Lim (2007), the productivity can be measured by number of patents generated by target's inventors. Alternatively, considering our argument about centrality of human capital in acquisition of small high-tech firms, another measure can be capturing the effect of retention of the founder-CEO on departure rates of inventors in post-acquisition period.

The thesis also explored only firm-, individual- and deal-level determinants of the target's CEO turnover. It did not explore any macro level factors in particular national distances. For example cultural distance between the acquirer and target creates a peculiar situation for studying the target's top managers (particularly CEO) in international acquisitions. The distance raises both the required level of coordination and at the same the cost of providing it. This makes the coordination capacity provided by the target's managerial resources more valuable for the acquirer. However, cultural distance enhances the potential conflicts, and resistance to changes imposed by the acquirer among the target's top managers (Krug & Hegarty, 1997). In this regard, it would be interesting to explore the managerial turnover with the moderating role of the distance. Another topic for future study would be the importance of the international experience of the target's top manager as a determinant of her departure or stay after the acquisition.

## 6. References

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# Paper A



# Paper A

**The role of top managers in  
M&A: *Reviewing thirty years  
of literature and setting  
directions for future research***

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## **Abstract**

*The present paper reviews the literature on the role of top management teams (TMT) in mergers and acquisitions (M&A). Given variety of theoretical lenses applied in this field - such as agency theory or upper echelon – and the plethora of on-going empirical studies in the last three decades, we believe this literature review has a crucial value for the existing strand of studies and future studies to come. In particular, it systematizes the extant knowledge by documenting the contradictory results of prior empirical studies, making argument on the sources of these contradictions, and pointing out future directions of research.*

# 1. Introduction

Merger and acquisition (M&A) is a popular corporate strategy, which firms have extensively practiced for accessing external knowledge and technology (Ahuja & Katila, 2001), increasing efficiencies and creating synergies via economics of scale and scope (Mata & Portugal, 2002), increasing market power and expansion (Kogut, 1991), and improving underperformed firms by restructuring them (Trautwein, 1990). Beside the aforementioned motives, it has been suggested that personal interests of acquiring top managers (in particular of the acquiring CEOs) drive many acquisitions (Jensen, 1986 and 1988; Jensen & Zajac, 2004 and Lei & Hitt, 1995).

Regardless of motivations, scholars have reported that mostly acquisitions do not meet the expected objectives and reduce acquirer's shareholders values (e.g., King et al, 2004 and Sirower, 1997). In this regards, the literature have suggested that post-acquisition implementation, including organizational restructuring and integration, is the prime suspect for acquisitions' poor performance (Haspeslagh & Jemison, 1991; Karim & Williams, 2012; Puranam et al, 2006 and 2009; Zollo & Singh, 2004). Decisions related to post-acquisition implementaion are mainly made by acquirer's top managers and necessiated the involvement of the top managers of the acquired company (hereafter: the target, Cannella & Hambrick, 1993; D'Aveni & Kesner, 1993 and Graebner, 2004 and 2009). In particular, the role of target's top managers in M&A is so crucial that some researchers have suggested their turnover as a measure for M&A outcomes (Krug et al, 2014).

In sum, according to the literature, acquirer's and target's top managers are the main drivers of the acquisition, the key players in post-acquisition implementation and a crucial element of the acquisition's outcome. Given their importance, since the early works of Kitching (1967), scholars from various disciplines (e.g., management, finance and

economics) have focused on the role in M&A of the top management team (TMT) of the acquirer, the target or both by applying diverse theoretical lens. In particular, a wide variety of theoretical approaches have been used, including market for corporate control (Manne, 1965), agency theory (Jensen & Meckling, 1976), stewardship (Davis, Schoorman, & Donaldson, 1997), hubris<sup>1</sup> (Roll, 1986), upper echelon (Hambrick & Mason, 1984), relative standing (Cannella & Hamrbick, 1993), resource-based view (RBV, Barney, 1991), and efficiency theory. The empirical findings of this research strand are contradictory and mixed. This motivates a review of the literature that systematizes extant knowledge with the aim to comprehend the sources of contradictions, reflect on applied theories, and indicate directions for future research. This systematization is even more important given the multi-disciplinary nature of the field, where lack of communication between the disciplines may lead into losing the opportunity to cross-fertilize from multidisciplinary approaches. In addition, current real-world heterogeneity in forms of M&A (e.g., acqui-hires, technological acquisitions, and mergers of equals), targets (e.g., entrepreneurial ventures, high-tech firms and family firms) and characteristics of top executives (e.g., founder executives) suggest that it is time to rejuvenate the field and reconsider the explicit and implicit assumptions behind the applied theories.

Prior literature reviews, which have tackled M&A and TMT separately, have briefly touched upon the topic (see e.g., Bakermans & Schijven, 2008, Cannella & Monroe, 1997; Dalton et al, 1998 and Menz, 2012). However, we believe that given the large stack of theoretical and prior empirical works, the topic of the role of TMT in M&A deserves an independent review. Accordingly, the present literature review introduces the main theories, discusses the most important empirical findings and their inconsistencies, and suggests new directions for future research. In so doing, it shed light on the relevance of the topic for both scholars and practitioners. In particular, we classify the studies in three categories basing on the causality direction between M&A and TMT that they propose. First, we present studies that considered TMT's characteristics and actions as antecedents of value creation (or reduction) in M&A; second, we review studies that have considered TMT as moderator

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<sup>1</sup> More generally, hubris belongs to the corpus of theories on individuals' personality traits.

(positive vs. negative) of M&A outcomes and finally, studies that have considered turnover within the TMT as a form of M&A outcomes.

The paper is organized as follows. In the next section, we describe the methodology we followed to identify the papers included in the review and present some summary statistics on the discipline and focuses of these papers. Section 3 describes the conceptual framework we adopted in reviewing the literature. Section 4 contains the literature review on the role of TMT in M&A; first, it presents main theoretical approaches used by studies on the topic, then it systematizes extant knowledge according to the conceptual framework proposed in the previous section. Section 5 discusses about the mismatch between findings and finalizes the paper with suggesting directions for future studies.

## 2. Methodology

For this review, the papers were collected from the “ISI WEB OF SCIENCE” database. The selection consisted of several steps. In the first step, we run a series of keyword inquiries on the ISI database. The inquiries were dyadic combinations of words from two sets. The first set contains the following terms: *post-acquisition*, *acquisition*, *M&A*, *merger and acquisition*, *post-merger*, *merger*, and *takeover*, while the second set contains: *CEO*, *top management team*, *TMT*, *top executive*, *top manager*, *manager*, *corporate elites* and *executive*.

In the second step, the search results were filtered based on the time horizon of 1983 and 2013 as well as the discipline of the journal, namely: finance, management, and economics. We believe that given the emergence of the empirical studies and the relevant theories that focused on the role of TMT in M&A in the mid 80’s, 1983 is a good starting point for collection<sup>2</sup>. Some examples of considered journals belonging to management disciplines are *Administrative Science quarterly*, *Journal of Management*, *Journal of Management Studies*, *Management Science*, *Strategic Management Journal*, and *Organization Science*. In finance, some examples are *Financial*

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<sup>2</sup> Some examples are seminal work of Jensen & Ruback (1983) on market for corporate control, Jensen (1986) on agency theory, Hambrick & Mason (1984) on upper echelon theory and Roll (1986) on hubris.

*Management, Journal of Finance, Journal of Financial Economics, and Review of Financial Studies*. In economics are *American Economic Review, Economica, and Rand Journal of Economics*. At this stage, we collected 325 articles.

In the third step, basing on the reading of the abstracts, we excluded papers that did not explicitly focus on either M&A or TMT (in any form, e.g. CEO, functional manager). For instance, similar to literature review conducted by Haleblian et al. (2009), the articles that focused on “knowledge acquisition” were excluded from the sample. Then we read carefully the selected articles to check whether the focus is related to the role of TMT in M&A. For instance, we excluded studies whose focus was exclusively on the board of directors and firm’s performance<sup>3</sup>. Therefore, total number of articles reduced to 160. Finally, by removing conceptual papers, the final sample reduced to 140.

To increase the validity of our methodology based on keyword inquiries, we followed Meglio & Risberg (2010) and Haleblian et al. (2009) and performed a manual search for some selected journals based on the relevance to the topic in the same period (1983-2013) and cross-check its results with the results obtained from the keyword search. These journals are *Economica, Journal of Finance, Journal of Law & Economics, Organization Science, and Strategic Management Journal*

Thirty years of studies on the TMT in M&A show us that number of contributions have increased annually, which indicates that the topic has become important overtime and attracted scholars’ attentions in management, finance, and economics (See Figure 1). Taking a deeper look at Figure 1 also suggests that finance journals pay special attention to the topic and management journals are following in the second rank, while the topic has lingered steadily in the economics major journals with lower attention in the thirty years period. The highest pick in management journals is mid 2000s and in finance journals is 2013.

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<sup>3</sup> As board of directors are one of the main moderators in M&A activities of the firm, we only include the studies that revolve around the moderating role of the board of directors on managerial decisions over M&A activities. Given the importance and large stack of empirical studies over the role of board of directors and firm performance, we believe the topic deserves an independent literature review.

Haleblian et al. (2009) have captured and reported similar trend on their review over general M&A studies between 1992 and 2007.

An overview on the papers included in our sample shows that 20 studies out of 140 investigated on hostile takeover (14.3%) and 19 studies (13.6%) investigated on takeover attempts. Moreover, only 45 studies (32.1%) differentiated between the various typologies of M&A by separating related from unrelated or horizontal from vertical acquisitions or any other construct based on the motivation behind the acquisition (See for e.g. King et al, 2004 and Trautwein, 1990). It is inferable that mostly scholars treat the acquisition as a homogenous corporate strategy. In the sample, 117 studies (83.6%) focused on domestic acquisitions and 89 of these studies (76.1%) chose US firms, out of which the large majority are public<sup>4</sup>. In other words, only 23 out of 140 (16.4%) contributions included international acquisitions. Conversely, we think that international acquisitions constitute an interesting and important topic given the large volume of annual M&As are cross borders (Datta et al., 2009 and Matta & Beamishi, 2008). For the sake of brevity, in this paper, we discuss mainly about the role of TMT in M&A as general, however we believe that in international M&A, cultural distance between the acquirer and the target poses specific challenges for top managers of both firms, that the topic deserves a dedicated investigation.

If we group studies according to their object of analysis, we notice that half of the studies have focused on the acquirer's top managers, 56 studies (40%) have investigated on target's top managers, and the rest (10%) have considered both top managers in both sides of M&A. In addition, the majority of studies, 95 out of 140 (67.9%) have focused on CEO of either the acquirer or the target. More precisely, 64 of these studies (45.8%) exclusively have chosen acquirer's CEO, 28 studies (20%) exclusively have chosen target's CEO and only three studies (2.1%) have focused on both CEOs.

From these statistics, we can infer that so far most of the contributions and received knowledge on TMT and M&A are on the deals involving US

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<sup>4</sup> Note that almost in all the studies, the acquirers are public firms and only in 10 studies the sample contains private targets.

public firms. In addition, it appears that most of our knowledge on the role of top managers in M&A is limited to CEOs. We believe that these asymmetrical emphases necessitate interested researchers to refocus their empirical settings into new directions. We will discuss about this further in the directions for future studies.

### **3. Conceptual framework of the literature review**

After in depth review of the selected studies, as explained earlier, we identified three kinds of relationships between TMT and M&A. Some studies positioned TMT as an antecedent of M&A value creation (or reduction). Specifically, the literature suggested that M&A can be managerially driven and a group of empirical studies tried to capture the effect of various managerial motivations on value creation (or reduction) of the M&A activities by measuring different proxies for outcome. The second group of studies, focused on the moderating role of TMT on value creation (or reduction) of the M&A activity. Finally, some studies use TMT turnover as a proxy for M&A outcome to investigate on value creation (or reduction) of the M&A activity. In addition, we identified three categories of studies based on the top manager's focus, namely: acquirer, target and both together. Combining the relationship and managerial focus dimensions, we have devised a conceptual framework for this literature review, which is illustrated in Figure 2.

## **4. Reviewing the literature on the role of TMT in M&A**

### **4.1 theoretical approaches**

Studies on the role of TMT in M&A have resorted to various theoretical lenses. Before reviewing the main empirical findings and contributions, it is worthy to have a quick overview on each of these theoretical lenses. For sake of brevity, we did not provide explanation for two theories, RBV and efficiency theory, as their scope of applicability goes beyond the role of TMT in M&A studies.



**Market for corporate control:** One of the earliest speculations on motivation behind the role of TMT in M&A is the argument initially developed by Manne (1965), that M&A is a market correction response when internal corporate governance mechanisms fail to discipline top managers. To put it simply, when top managers of a firm make bad decisions and consequently result in bad performance and losses of shareholders' value, market intervenes through M&A to replace the incompetent managers with more competent managers (Agrawal & Walking, 1994 and Walsh, 1988).

**Agency theory:** When there is a schism between ownership and control in firms, top managers (for instance the CEO) as economic agents do not act necessarily at the principals' (shareholders) interest; instead, they pursue their own private interest (Jensen & Meckling, 1976). Therefore, such pursue of self-interest (for e.g. desire of increasing compensation, entrenchment and empire building) influence many corporate decisions such as M&A, (Fama, 1980 and Jensen, 1986). Put it differently, according to agency theory, many acquisitions are the result of either agency problems or of the attempt of resolving agency problems through the market for corporate control.

**Stewardship:** Unlike agency theory, this theory presents top managers not as self-serving opportunists, but as the so-called *stewards* for the shareholders. The top manager is a pro-organizational individual who places higher value for collective gains compare to individual gains. Therefore, when there is a misalignment between interests, top manager prioritizes firm's interest over self-interest (Davis et al, 1997). In this view, all the corporate strategic decisions, including M&A, are well aligned with firm's overall interest and consequently shareholders' interest.

**Hubris:** Grounded on psychological theories of individuals' personality traits hubris, stimulates managerially driven acquisitions. Hubris (overconfidence) of an individual is overestimation of his abilities. The hubris argument in M&A first developed by Roll (1986) asserts that hubris as a result of prior success stimulates acquirers' top managers to engage into deals, although the odds are against any positive outcome (the so called winner's curse). Henceforth, acquirers over pay for targets

at the expense of shareholders' value and top managers overestimate their abilities in managing the deal (Malmendier & Tate, 2008).

**Upper Echelon:** According to this theory, demographic characteristics, personality traits, and cultural values of top managers affect their preferences and disposition over corporate strategies (Hambrick & Manson, 1984). In particular, these individual attributes of both target's and acquirer's top managers influence M&A and their outcome (Hambrick, 2007).

**Relative standing:** Moving from the premise that target's top managers are the key elements in successful integration of the two firms, literature on post-acquisition implementation focuses on target TMT status after the acquisition (Graebner, 2004; Jemison & Haspeslagh, 1991 and Very et al, 1997). In particular, theory of relative standing, first introduced by Cannella & Hambrick (1993) in M&A studies, argues that the decision of the target's top managers to stay and commit to the merged entity crucially depends on their status (for e.g. autonomy, power, and inferiority) in post-acquisition compared to pre-acquisition. The relative standing brings about career concern for the target's top managers, and, more generally, shape their perceptions of the acquisition.

Some of the aforementioned theories, such as market for corporate control or relative standing, are used to study target's TMT, while hubris is mainly applied to study acquirer's TMT. Scholars resort to agency theory, stewardship, and upper echelon to study TMT of both the firms. More importantly, some of the theories suggest that TMT is as a source of value destruction in M&A, while some others present TMT as a source of value creation. We believe this is the main reason why the results of empirical studies are mixed and often contradictory. In particular, the missing element in prior empirical studies on the role of TMT in M&A is the careful consideration of contextual factors. More precisely, similar to recent arguments proposed by Krug et al. (2014) for studies on target's TMT turnover after the acquisition, validating which theory is suitable for specific M&A settings depends on the contextual factors such as target's and acquirer's characteristics, acquisition motivation, and M&A characteristics. In other words, treating all M&A homogeneously and applying certain theories irrespectively of M&A heterogeneity does not

seem to generate solid findings. In the following, we review the main empirical findings of the papers in our sample with respect to the framework we discussed in the previous section.

## **4.2 TMT as the driver of M&A**

### **4.2.1 Market for corporate control**

Agency and market for corporate control theorists argue that M&A is a mechanism for corporate shareholders to replace an ineffective CEO with a more effective one (Agrawal & Walking, 1994; Jensen & Ruback, 1983; Martin & McConnell, 1991 and Mitchell & Lehn, 1990). Indeed, the main assumption behind M&A as a corporate control mechanism is that a high performing firm takes over a firm with lower performance so that incompetent target CEO is replaced. Several mechanisms exist to control and discipline CEOs internally (for e.g., CEO dismissal by the board of directors or change in the compensation policies). M&A is an external mechanism exercised by the market and usually shareholders view it as the last resort when internal mechanisms fail (Kini et al, 2004 and Scholten, 2005). Some studies reported that the threat of takeover has disciplining effect. It is a way to signal the CEO that shareholders are not satisfied with the firm's performance (Lehn & Zhao, 2006 and Scholten, 2005).

Agrawal & Walking (1994) reported that the disciplining role of M&A is so strong that the CEOs, whom replaced following an M&A, cannot find any managerial position three years after the acquisition. Some scholars documented that disciplinary role of M&A is not only prevalent in US market as they found also its evidence in other countries such as UK (See for e.g.: Dickerson et al, 2002 and Weir, 1997) and Canada (Bodolica & Spraggon, 2009a).

Nonetheless, empirical studies showed various contradictory results that disclaim predictions of the theory and limit its applicability. Some studies have shown that high performing firms are more likely to acquire high performing firms even at higher prices (see e.g., Aktas et al, 2007; Bodt, & Roll, 2011; Rhodes-Kropf & Robinson, 2008 and Wang & Zajac, 2007). Besides that, some studies did not find any relationship between TMT turnover and prior performance. Instead, TMT turnover can be the

result of price disagreement during negotiation or strategic resource redeployment in post-acquisition even in hostile takeovers<sup>5</sup> (Carroll et al, 1998; Frank & Mayer, 1996 and Walsh & Ellwood, 1991). Similarly, Mikkelson and Partch (1997) showed that market for corporate control is only strong during merger waves. This finding is in contrast with the argument provided by Denis and Kruse (2000) and Duchin and Schmidt (2013) that market is more tolerant with agency problems and top managers' bad investment in the waves. Carroll et al (1998) argued at least among the replaced top managers are those who made a biggest investment mistakes. Also, market for corporate control as a disciplinary tool is more efficient for larger firms compare to smaller firms (Offenberg, 2009)<sup>6</sup>.

#### **4.2.2 CEO compensation and attitude toward risk**

Many scholars investigated the linkages between firms' acquisition strategies and CEO's compensation. Based on agency theory (Jensen, 1986 & 1988 and Jensen & Meckling, 1976) and CEO's pursuit of self-interest, literature argues that M&A can be the choice of an opportunist CEOs (Bliss & Rosen, 2001 and Haleblian & Finkelstein, 1993). Research on this stand argues that compensation policy affects CEO's decision to make acquisitions to the point that it has direct impact acquisitive choices of top managers. Firms compensate their CEOs to engage in M&A (Weir, 1997) and evidence exists that CEOs are more acquisitive in industries with higher average compensations (Sanders, 2001 and Deutsch et al, 2007). This holds particularly true as compensation policies usually are not performance sensitive. Consequently, they are robust to M&A performance and increase the likelihood of acquirer's engagement in value destroying acquisitions (Bliss & Rosen, 2001; Grinstein & Hribar, 2004 and Harford & Li, 2007). More precisely, CEOs' compensation increases based on larger size of their firms, higher power, and control (Gomez-Mejia & Wiseman, 1997; Haleblian & Finkelstein, 1993 and Kroll et al, 1997); therefore, CEO's engagement in M&A boosts the chance of entrenchment as

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<sup>5</sup> It is a common wisdom to associate hostile takeovers as evidence of the disciplinary role of acquisition (Walsh , 1989 & 1999 and Weir, 1997)

<sup>6</sup> Offenberg (2009) did not bring theoretical argument for such finding. Nevertheless, the paper brought some insights for this evidence, such as efficiency of internal monitoring and larger market visibility of sizable firms.

organization size enlarges after the acquisition. In line with these arguments, Bliss and Rosen (2001) have shown that CEOs with stock based compensation are less likely to engage into acquisitions. Recently Minnick et al. (2011) has found that incentive-based compensation improves shareholder's wealth in M&A when the payment scheme is sensitive to performance measurement, while Lane et al. (1998) did not find such relationship. In studying the relation between compensation scheme and acquisition performance, Kroll et al. (1997) differentiated between owner managers and non-owner managers<sup>7</sup>. The paper reported that non-owner managers whose compensation is not performance sensitive (but instead depends on the firm size) are more likely to engage into value destroying acquisitions.

Attitudes toward risk are another important factor in managerial choices regarding M&A. In particular, conventional wisdom suggests that CEOs that are more risk-tolerant tend to be more acquisitive. In turn, based on the upper echelon theory, attitudes toward risk may change over time as individuals and along their career path (Lehn & Zao, 2006 and Matta & Beamishi, 2008). When CEOs are young they tolerate more risks and consequently they are more acquisitive (Herrmann & Datta, 2006). Cultural aspects also influence individuals' attitudes toward risk. Recently, studies have shown that national culture toward risk tolerance affects top managers' decision to engage in M&A; US top managers are the most risk takers and tend to be more acquisitive (Frijns et al, 2013 and Graham et al, 2013). In addition, functional background of top managers has an important impact on their risk tolerance, for instance Jensen and Zajac (2004) reported that CEOs with financial education background or formerly appointed as CFOs are more risk tolerant and tend to be more acquisitive.

Finally, Gao (2010) found that managers with a long-term perspective focus on long term value of their firms and use M&A to shift some of the current firm's overvalue equity to long term investments. On the other hand, CEO with a short-term perspective (nearly retired CEOs or CEOs with vested equity portfolios) pays attention only to short-term value

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<sup>7</sup> Literature also suggested that managerial ownership directly increases the propensity of engaging into diversification and risky acquisitions (Eisenmann, 2002).

with immediate optimistic market reaction. In addition, managers with a long-term perspective tend to make more international acquisitions (Matta & Beamishi, 2008).

#### **4.2.3 Managerial hubris and empire building**

Another managerial motivation behind acquisition is hubris. Initially articulated by Roll (1986), hubris encourages CEOs to engage in costly and risky M&A, despite scholars have shown that independent and powerful boards can stop acquisition driven by managerial hubris (Kolanski & Li, 2013). In general, studies showed that hubris increases the acquisition premiums and therefore lowers acquisition outcome in terms of financial returns (Benson & Ziedonis, 2010; Hayward & Hambrick, 1997 and Malmendier & Tate, 2008). Moreover, hubris may cause false sense of security among top managers who underestimate post-acquisitions' execution complexities (See also: Aktas et al, 2011; Benson & Ziedonis, 2010; Billett & Qian, 2008; Choi et al, 2011 and Hayward & Hambrick, 1997). Recently papers extended their research into demystifying which individual's characteristics and attribute cause hubris. For example, female managers are less prone to hubris (Dowling & Aribi, 2013), while CEO celebrities show higher level of hubris (Sinha et al, 2012 and Chatterjee & Hambrick, 2007). Age is another factor in determining an individual's level of hubris. Multiple studies have reported hubris in younger CEOs to be higher as they engage into more value destroying acquisitions (Datta et al, 2009 and Yim, 2013). Ferris et al. (2013) showed that hubris has a cultural dimension: CEOs who belong to national cultures characterized by an individualistic approach have higher levels of hubris.

So far, all the aforementioned studies implicitly assume that hubris is a negative attribute for to managers engaging in M&A, however, more recent contributions have shown that managerial hubris is not as bad as scholars have suggested (Gervais & Odean, 2001 and Gervais et al, 2011). Kim (2013) found a curvilinear relationship between level of hubris and market reaction to acquisitions, as shareholders prefer CEOs with moderate hubris to invest in risky businesses.

Mostly papers focusing on acquisition behavior of the CEOs could not disentangle hubris and *empire building* (See for e.g. Aktas et al, 2011;

Benson & Ziedonis, 2010 and Harford, 1999), notable exceptions are the studies conducted by Baker et al. (2012) and Malmendier and Tate (2008). Empire building refers to managers' tendency to expand their control via acquisitions. Other than financial gains, prior success in acquisitions, CEO's dominance seeking, and combative nature drive the acquisitions (Levi et al, 2010 and Chikh & Filbien, 2011). Empire building may increase managerial compensation due to larger organizational size in post-acquisition as explained before (Bodolica & Spraggon, 2009, Fama, 1980 and Harford, 1999 and). The main assumption in empire building is that decision related to acquisition is performed based on managerial interest at the expense of shareholders' wealth, while in hubris, CEOs do not necessarily engage into acquisition to increase personal gains; they believe that their decisions serve best to maximize shareholders' wealth (Malmendier & Tate, 2008).

#### **4.2.4 Acquisition defense and antitakeover provisions**

Evidence exists that target CEOs pursue their managerial self-interests at the expense of shareholders' interest, and therefore they tend to prevent acquisitions during negotiations (i.e., *resistance*, see for e.g. Field & Karpoff, 2002 and Singh & Harianto, 1989). Owner-managers (e.g., CEOs of family firms and entrepreneurial firms) resist more to takeover attempts because of their stake ownership, intangible asset ownership and influence over the firm (Fahlenbrach, 2009; Gao & Jain, 2012 and Lehmann et al, 2012). Based on the upper echelon theory, Buccholtz and Ribbens (1994) found that CEO's age has a curvilinear effect on the resistance. Younger and near retirement CEOs are less likely to resist against acquisitions. Recent studies demonstrated that not all target CEOs' tactics are intended to deter acquisition. Target CEOs facilitate acquisitions if they have restricted or other illiquid stocks (Bates & Lemmon, 2003; Cai & Vjih, 2007 and Walking & Long, 1984). Acquisitions result in releasing the restrictions and enable CEOs to exercise them. Hartzell et al (2004) argued that CEOs receive higher cash payments when leaving the company following acquisitions at the expense of shareholders' wealth. This agency problem is more severe in case of longer tenured CEOs who have stronger ties with board of directors (Singh & Harianto, 1989).

An important research stream in the strand of research on resistance deals with *anti-takeover provisions*. Many argue that market for corporate control urges managers to perform for myopic returns rather long-term investments. Henceforth, by reducing market for corporate control threat, anti-takeover provisions empower managers to pursue long-term returns for the shareholders (Bertrand & Mullainathan, 1999 and Garvey & Hanka, 1999). However, literature has argued that such empowering mechanism increases agency problem. For example, in a study of Mahoney and Mahoney (1993) anti-takeover provisions result in target CEOs' job security at the expense of shareholders' wealth in post-acquisition rather than bargaining for higher premiums (higher return for shareholders). Also anti-takeover provisions may exacerbate problems such as empire building and entrenchment as market for corporate control is weaker (Masulis et al, 2007). Supporting this argument a study conducted by Cheng and Indjejikian (2009) has shown that anti-takeover provisions result in increasing the CEO's compensation robustness to firm's performance and CEO retention. Anti-takeover provision is directly related to CEO's ownership. Boyle et al (1998) reported that the higher stake of the CEO reduces anti-takeover provisions but to a certain threshold (10%) and when the stake exceeds the threshold, CEO does not show any interest in reducing antitakeover provisions due to high risk exposure. On the contrary to these findings, Kacperczyk (2009) has provided evidence of the effect of anti-takeover provisions on CEO's tendency to long-term investments. The study particularly has shown that at the presence of anti-takeovers, CEO invests more in longer horizon projects which benefits not only shareholders but also stakeholders of the firm including customers, communities, employees, and suppliers.

#### **4.2.5 Merger waves**

Usually an important external factor in fostering acquisition is the so called merger waves. Early acquirers in the wave tend to buy high performing firms at lower price, while late acquirers pay higher price for low performing targets (i.e., the *bandwagon effect*, Fiol & O'Connor, 2003 and McNamara et al, 2008). More recently, Duchin & Schmidt (2013) confirmed this and found that agency problems are more severe during merger waves as market for corporate control is weaker. Henceforth, CEO turnover due to bad acquisitions in merger waves is



less frequent than in case of bad acquisition made outside the waves (Denis & Kruse, 2000). In addition, earlier acquisitions in mergers' wave result in CEO's receiving higher incentives and compensation compared to late acquisitions in the waves (Goel & Thaker, 2010). The wave has an opposite effect on target's top managers. Because of bad acquisitions, the likelihood of corporate restructuring, lay-offs and eliminating redundancies increases, which all results in higher probability of target TMT turnover (Krug et al, 2014).

## **4.3 Moderators**

### **4.3.1 Ownership, compensation, and board of directors**

In corporate governance, managerial ownership and compensation structure have always been regarded as two inter-connected mechanisms for monitoring managers. Many studies suggested that these two mechanisms affect agency costs, as they have direct impact on managerial decisions over corporate strategies (Shanley & Correa, 1992 and Walking & Long, 1984). From this stand, many studies focused on the effect of ownership structure and compensation schemes on acquirer announcement returns. There is no consensus among scholars whether there is any relationship between managerial ownership and acquisition performance or propensity of its occurrence (North, 2001). Studies reported a curvilinear relationship between managerial ownership and acquirer announcement returns (See e.g., Wright et al, 2002). On the contrary, some studies did not find such relationship (See e.g., Cosh et al, 2006 and Grinstein & Hribar, 2004). Cosh et al (2006) reported that ownership increases acquisitions' performance in terms of long-run return and operating income. Lorderer and Martin (1997) argued that performance increases the ownership rather than vice versa. CEO's anticipation of potentially prosperous acquisitions result in buying more shares (Cosh et al, 2006). Some studies suggested that CEO's ownership reduces takeover resistance (See for e.g.: Buccholtz & Ribbens, 1994) while others found that managerial ownership reduces likelihood of getting acquired (See for e.g.: North, 2001). Although at first it appears that the results are contradictory, the former group focuses on the relationship between ownership and completion of the deal and the latter group focuses on the relationship between ownership and getting an offer.

Wright et al (2002) showed that CEO payment package and incentive following an acquisition depends on the board control over managerial behaviors. The paper reported that when the board is actively monitoring CEO's activities, acquisition performance influences the CEO's compensation; in case of passive monitoring, only size of the acquirer in post-acquisition influences CEO's compensation. A takeover attempt may change the managerial compensation policies inside the firm. Singh and Harianto (1989) found that managers make the board to devise golden parachutes in post-takeover attempt; this case is more evident in longer tenured CEOs and in more stock ownership diffused firms. However, Buchholtz & Ribbens (1994) did not find any relationship between the size of parachute or the very existence of it with lower takeover resistance. Datta et al (2001) reported that there is a positive relationship between managerial stock option and subsequent acquirer announcement return. However, other studies did not confirm this (See for e.g. Devers et al, 2007).

Corporate governance literature suggests that presence of board of directors should reduce agency problems as the board monitors CEO's performance (Agrawal & Knoeber, 1996; Amihud & Lev, 1981 and Jensen & Meckling, 1976). The board of directors has legal responsibility to take corrective actions to maintain and control firm's value (Cochran et al 1985; Pfeffer, 1972 and Zald, 1969). These actions, exerted via control mechanism, can internally discipline managers; these mechanisms adjust managerial incentive and reward policy, compensation policy, golden parachute and in more severe cases replacing the incompetent managers (Agrawal & Knoeber, 1996 and Cochran et al, 1985). In M&A literature, studies confirmed monitoring role of board of directors so that if the CEO makes suboptimal acquisition deals, the board will react to it based on changing the payment structure, to increase equity ownership and reduce stock option (See for e.g.: Masulis et al, 2007; Paul, 2007; Scholten, 2005 and Spraggon & Bodolica, 2011). However, some of the empirical findings showed that in practice the boards' role is not as effective as it should be, to prevent CEOs from making bad corporate investment such as engaging into value decreasing acquisitions (See for e.g.: Cosh et al, 2006; Devers et al, 2013; Lane et al, 1988 Lehn & Zaho, 2006 and Singh & Harianto, 1989). The underlying mechanism for such ineffective

monitoring is the agency problem arises from board member selection procedure. Most often CEO chooses board members at least portion of it if not all members; this weakens monitoring power of the board (Hermalin & Weisbach, 1998). In this case, the higher the power of the CEO, the lower monitoring effectiveness is. Studies unanimously reported that when the CEO is also the chair of the board (i.e., CEO duality), monitoring effectiveness of board reduces significantly, as the influence of the CEO is entrenched over the board (See for e.g.: Masulis et al, 2007; Weir, 1997; Weir & Laing, 2003 and Wulf, 2004). In addition, generally strong ties between CEO and directors weaken the board monitoring power (Fracassi & Tate, 2012, Goranova et al, 2010 and Walters et al, 2007). Tenure of the CEO is another proxy for entrenchment and power of the CEO. Walters et al (2008) reported that monitoring role of board is weaker when longer tenure CEO makes bad acquisitions. The results encourage scholars to investigate on the antecedents of effective monitoring. Size of the board is one of these antecedents. Smaller board results in quicker decision making, and higher group productivity, which results in better monitoring ( Cyert et al, 2002; Weir & Laing, 2003 and Yermack, 1996). The board's independence<sup>8</sup> can reduce the problem with CEO's entrenchment over the board (Cochran et al, 1985 and Mizruchi, 1983). Many studies showed that independencies prevent CEO's engagement in value destroying acquisitions (See for e.g.: Cyert et al, 2002; McDonald et al, 2008 and Weir, 1997). Walters et al (2008) concluded that independent board moderately reduces the negative effect of CEO's tenure in engaging into value destroying acquisitions. Similarly, Paul (2007) reported that for the completed acquisitions, the board independence results in subsequent asset restructuring and downsizing to protect the investors from the negative pitfalls of the bad deals. Kolanski & Li (2013) confirmed that independent boards stop acquisition driven by overconfident managers. In addition, human capital embedded in board members is another important antecedent in enforcing effective monitoring. Two recent papers, Hagendroff & Keasy (2012) and McDonald et al (2008) studied human capital as prior experience of directors. They concluded that acquisition experience of directors increases their monitoring capability in evaluating focal acquisition. Another human capital captured by Li & Srinivasan (2011) is the effect

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<sup>8</sup> It is measured as the ratio of external directors to internal directors.

of founder director members and acquisition performance. The paper proposed that presence of founder directors<sup>9</sup> in the board increases monitoring power of the board as they have lower agency problems and higher psychological attachment; they may also hold some equity. Similarly, Walters et al (2008) also suggested that directors' ownership is a strong incentive for the board to monitor effectively and Cyert et al (2002) both theoretically and empirically proposed that ownership has stronger effect on monitoring compare to board size and independence. Finally, some studies suggested that board characteristics moderate the preference of type of acquisitions or of acquisition over other alternative corporate strategies. For instance, Cornett et al (2003) argued that the effectiveness of corporate governance mechanism including board monitoring are only strong in related acquisitions rather than diversified acquisitions<sup>10</sup>. Datta et al (2009) found the choice of entry mode is affected by board characteristic. The paper concluded that firms with independent board prefers international acquisition over international joint venture as the presence of external members increase the confidence of CEO to make riskier decisions and the board can provide them with more extensive expertise. In general independent boards make CEOs become less aquisitive (Kolanski & Li, 2013).

#### **4.3.2 Human Capital & target TMT turnover**

One of the important moderating factors on M&A outcome is the human capital embedded in the target's top managers to serve as managerial resource for the acquirer and their capabilities to minimize the organizational disruptions (Graebner, 2004; Krug et al, 2014 and Zollo & Singh, 2004). After the deal, top managers are key players if involved properly in the post-acquisition implementation to capture value behind the M&A and improve post-acquisition performance (Graebner & Eisenhardt, 2004; Graebner et al, 2010 and Haspeslagh & Jemison, 1991). In post-acquisition literature, there is a strong evidence of the negative effect of TMT turnover and post-acquisition outcome (Cannella & Hambrick, 1993; Hayward & Hambrick, 1997; Krishnan et al, 1997; Pablo, 1994; Saxton & Dollinger, 2004; Very et al, 1997 and Zollo &

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<sup>9</sup> The paper defined founder directors, as the founders who stay with their founded company and serve in the board.

<sup>10</sup> Cornett and authors did not provide any theoretical explanation for this finding in the paper.

Singh, 2006). Cannella and Hambrick (1993) found that the negative impact of TMT turnover on performance is higher when the top executive has the highest rank (CEO). Kiessling and Harvey (2006) argued that target TMT retention has direct positive impact on post-acquisition performance partially because of the tacit knowledge embedded in the TMT. The tacit knowledge is either external knowledge (such as knowledge about customer, competitor, and supplier) or internal knowledge (such as knowledge about employees, corporate strategy, and operation). Other than direct impact of human capital, another role of TMT is related to keeping the target key employees in line in post-acquisition (Graebner, 2004 and Lee et al, 2013), this role reported to be more significant for owner managers in family firms (Lehmann et al, 2012). Krishnan et al (1997) and Hayton and Zahra (2005) reported that complementarity of TMTs of acquirer and target has positive impact on post-acquisition performance and negative impact on TMT turnover on both related and non-related acquisitions. Lei and Hitt (1995) presented the counter argument, that acquisition increases heterogeneity of TMT in post-acquisition and consequently destroys consensus over core competencies of the firm and what is peripheral to be outsourced.

Also based on upper echelon theory, the human capital embedded in acquirer's TMT would have an impact on post-acquisition performance. Jaffe et al (2013) disentangled the effect of top managers' experience in prior acquisitions from firm's experience in prior acquisitions; the paper reported that top managers' experience rather than the firm's experience as a whole has direct positive impact on the focal acquisition outcome (Jaffe et al, 2013). Also, top manager's prior experience in target industry increases the chance of making better deals (Custodio & Metzger, 2013). Other than experience, unique human capital such as being founder for the acquirer top managers increases their risk tolerance, long-term approach toward investment, and higher valuation capability and therefore making better acquisition deals (Fahlenbarch, 2009).

### **4.3.3 Cultural misfit**

Based on the literature of process view of M&A and integration, success of M&A<sup>11</sup> depends on the extensive post-acquisition implementation and planning (Jemison & Sitkin, 1986; Jemison & Haspeslagh, 2001; Pablo, 1996; Ranft & Lord, 2000; Zollo & Singh, 2004), which requires managerial attention and involvement from both acquirer and target (Graebner, 2004 and Marks & Mirvis, 2005). Cultural misfit between TMT of target and acquirer is mostly viewed as a barrier for TMTs to actively participate, coordinate and collaborate for organizational integrations (Nahavandi & Malekzadeh, 1988). The misfit is more severe in international acquisitions as national cultural differences exacerbates the misfit (Krug & Hegarty, 1997 and 2001; Lubatkin et al, 1999). The misfit results in frictions and social conflicts between TMTs (D'Aveni & Kesner, 1993). In addition, misfit increases the communication barriers between two parties (Lubatkin et al, 1999 and Very et al, 1997) and finally TMT departure from the company. Even filling positions of departed target top managers with personnel from acquirer with high experience in acquisition does not increase the chance of post-acquisition target survival according to some studies (Hebert et al, 2005 and Karim & Williams, 2012). Studies have reported lower post-acquisition performance, divestiture of the newly bought unit as a result of cultural misfit (Hambrick & Cannella, 1993). For instance, Chatterjee et al. (1992) concluded that cultural misfit measured as cultural differences and multiculturalism on TMT between two firms negatively affects the cumulative abnormal return (CAR) in the announcement.

### **4.3.4 Resistance, psychological perception, and relative standing**

Psychological perception of the deal is yet another important factor in determining target top managers' commitment to M&A. D'Aveni & Kesner (1993) has investigated on tender offers and the determinants of target managerial resistance to the offer, which makes it to hostile takeovers. They reported that target TMT resists the acquirer's offer when TMTs of both firms connected poorly to each other or target TMT

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<sup>11</sup> In M&A studies the term "success" is a not a unique and ubiquitous construct, here we mean the conventional wisdom of meeting the acquisition's objectives (See for e.g.: Haleblan et al, 2009 and Trautwein, 1990)).

has more prestigious connections. The studies, investigated on acquisition resistance, suggest on the contrary to the notion of market for corporate control and agency theory, that powerful and prestigious managers resist against takeovers rather than incompetent or self-serving managers (See also: Krug et al, 2014). Executive's perception of M&A announcement, level of interaction with acquirer's TMT and long-term outcome of the merger would be determining factors in making their decision to leave or stay (Krug & Hegarty, 2001). Hambrick & Cannella (1993) argued that if the target executives feel inferior (lower in relative standing) it is more likely that they leave the newly formed entity. The result shows that loss of autonomy, status removal and climate of acrimony increases the likelihood of CEO turnover (See also: Lubatkin et al, 1999, Saxton & Dollinger, 2004 and Very et al, 1997).

#### **4.4 TMT's turnover as M&A outcome**

Some studies considered target TMT turnover as a measure of post-acquisition performance. Based on RBV, target's top managers are considered as providers of valuable human capital that acquirers have to retain in order to assure good acquisition performance (Bergh, 2001 and Krug et al, 2014). Wulf & Singh (2011) reported that acquirers keep better performing CEOs or higher paid CEOs (as indicators of human capital). In addition, the link between M&A performance and retention gets stronger if the acquirer's CEO owns more equity share. Over two third of CEOs departed in post-acquisition (Cannella & Hambrick, 1993; Krug & Hegarty, 1997; Krug & Hegarty, 2001; Lubatkin et al, 1999; Walsh, 1988 and 1989).

Buchholtz et al. (2003) inferred that CEO's age and acquisition relatedness increases the CEO turnover. Similarly, Bergh (2001) argued that CEO with longer tenure are more likely to stay after the acquisition. Walsh and Ellwood (1991) reported that TMT turnover and prior performance is only significant in the first 2 years after the acquisition and not later. Iverson and Pullman (2000) and Krug and Hegarty (2001) have differentiated between voluntary and involuntary CEO leaves. Hambrick & Cannella (1993) presented the theory of relative standing that if the target executives feel inferior it is more likely that they leave. So at the end, acquirers create the unbearable environment for the target executives to leave even though the leave perceived to be

voluntarily (See also Ahammad et al, 2012 and Saxton & Dollinger, 2004). TMT turnover has direct negative impact over target survival in post-acquisition that even assigning top managers with prior experience in the target industry does not help to increase the survival (Karim & Williams, 2012 and Shimizu & Hitt, 2005). In summary, multiple studies reported significant turnover of target's TMT turnover after the acquisition at least for couple of years.

## **5. Directions for future studies**

### **5.1 TMT in details and acquisition contingencies**

Most studies conducted in acquisition and TMT, includes only the strongest and highest rank member, which is CEO. Even in studies that look at top managers, the main overview is at the team level rather than individual level. Consequently, our insight on acquisition and TMT is restricted to CEOs or top management at team level (Menz, 2012). For future study we suggest more researches on non CEO executives at individual level in particular when studying turnover, and the moderating roles of human capital and managerial experience in acquisitions. What is missing in prior studies is the important fact that not all target's top managers are equally important for the acquirer. Especially, neglecting individual differences and managerial functional positions generate contradictory results. For example in technologically motivated acquisitions, acquirer might be more interested to keep chief technology officer (CTO) of the company compare to other functional managers. Similarly, acquirers might be more interested in managers with technical background in this type of acquisitions.

In addition, deeper investigation at individual attributes results in better understanding of team level demographic characteristics. For instance, diversity is reported to have both positive and negative effect on post-acquisition outcome. Based on the studies on diversity of TMT and firm performance (See for e.g. Nielsen, 2010), diversity has different dimensions namely: educational background, functional experience, ethnicity, gender and race. When considering diversity of TMT, we should acknowledge these dimensions and expect different result when



focusing on each of them (Harrison & Klein, 2007)<sup>12</sup>. Additionally, these dimensions have interactive effect on one another and therefore on acquisition outcome (Higgins & Gulati, 2006), which all suggest more comprehensive study on the diversity of TMT and acquisition. Another interesting road to explore, is studying similarity and dissimilarity between acquirer and target's TMT. Assuming any meaningful achievement from acquisition requires both teams' commitment and collaboration, it is worthy to study the effect of homophily (McPherson et al, 2001) on acquisition outcome. On one hand, similarity attraction theory suggests that similarity between TMTs decreases social frictions, conflicts and miscommunications between the teams, on the other hand information decision making perspective suggests that varieties empower information processing (Pelled, 1996). Understanding the contingencies of similarity and dissimilarity between TMTs and acquisition outcome is yet another fruitful area for future studies. This is in particular very important, because every deal has two sides (target and acquirer), focusing on managerial influence of one side would not provide us of a full picture of M&A and managerial behaviors.

Another missing element in studying TMT, is organizational design aspect (here post-acquisition organizational structure) (Menz, 2012). In organization design literature, aspects such as centralization or decentralization play an important role on both the size and structure of TMT (Collis et al, 2007). Therefore, in studying TMT turnover, there is a difference between centralized and decentralized organizations. Borrowing literature from post-acquisition corporate restructuring (See for e.g. Haspeslagh & Jemison, 1991), one interesting area would be bridging two streams of literature to understand the interplaying effect of post-acquisition organizational structure and TMTs turnover. More specifically, it would be interesting to examine the role of target's top managers in post-acquisition according to extent of decentralization of organizations. Keeping the acquired subsidiaries, strategic business units or plants as autonomous entities requires granting more autonomy to the units compare to the case of absorption or integration with the acquirer's current unit. Therefore we expect that top managers

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<sup>12</sup> Diversity can be constructed as separation, variety, and disparity. While variety has positive impact on performance, separation and disparity generate social conflicts, categorization, and miscommunication which results in lower performance (Harrison & Klein, 2007).

in charge of these autonomous entities are less likely to be replaced in post-acquisition compare to top managers in c-suit positions.

In studies focused on board effectiveness, scholars only distinguished between external and internal directors. They use proportion of external to internal directors as a surrogate of independent and vigilant board. The external board members, although distanced from the CEO's influence and organizational power in the first glance, might be socially connected to the CEO for instance through shared affiliations, clubs, and etc. Therefore, being external does not necessarily equal to being independent. Another overlooked factor is the longitudinal relationship between CEO and board of directors. The independence of external board members might be weakened over time, as the board-CEO tenure creates a group think and homogeneity (Nielsen & Nielsen, 2013). In addition, the power and influence of CEO is a function of tenure, therefore internal board of directors with longer tenure are also independent of newly assigned CEO or in general shorter tenure CEO (Walters et al, 2007). From this stand this area needs more finer-grained classification of board members and longitudinal observations. We believe that more detailed studies on human capital embedded in directors and borrowing insights from social network ties would be fruitful areas for future investigation.

## **5.2 Theoretical assumptions revisited**

The applied theories in the role of TMT in M&As, have implicit assumptions that if violated or misused, any rigorous conclusions are not possible. For instance, in compensation studies, the main assumption is oversimplification of the question related to "Who is in charge of acquisition?" Studies assume that always CEOs are in charge of the decisions related to acquisitions. Therefore, relying on agency theory, CEOs are willing to put the shareholders wealth at risk to increase their compensations in post-acquisitions. This assumption may be valid for acquisitions of target with relatively larger size to the acquirer (merger) or acquisitions that are strategically important. Acquisitions are not equally important for the acquirer, and henceforth, the decisions related to these acquisitions are not made by the CEOs instead they are made by middle managers. From this stand, CEO's managerial interest cannot explain value-destroying nature of

acquisitions. Similarly, studies investigated on empire building and size-based payment policies have overlooked at the acquisitions with significant lay-offs. A similar argument is valid for acquisition of small firms. Thus, studies on compensation in future should review these implicit assumptions.

In addition, generalizability of the findings related to agency theory and market for corporate control are under question. As Jensen & Meckling (1976) concluded: *“The level of agency costs depends, among other things, on statutory and common law and human ingenuity in devising contracts. Both the law and the sophistication of contracts relevant to the modern corporation are the products of a historical process in which there were strong incentives for individuals to minimize agency costs.”*

Empirical studies that used agency theory (on either acquirer or target) and market for corporate control are based on the Anglo American corporate governance in that ownership and control are separated. While, in other countries such as Germany or Japan, other stakeholders such as union and institutional shareholders have stronger monitoring power over top executives which results in lower agency problem. This makes generalizability of the results in market for corporate control and agency theory under question. Therefore, for the future studies it is interesting to check whether the findings related to US firms are also valid elsewhere and if not, what is an alternative theory that suits non-Anglo American firms? The second even more severe problem with market for corporate control is its validity. As explained before many studies showed that acquirers prefer to buy good performers rather than bad performers. Even in case of corporate raiders, Walsh & Kosnik (1993) did not find evidence of market for corporate control. All in all, this suggests that researchers should be cautious when using this theory, as acquisitions occur and target top managers are replaced not because of their bad performance but because of their resistance toward the acquisition.

Studies using hubris as the only theoretical argument in acquisition should be careful with the assumptions and limitations of it. As Roll (1986, pg.: 214) pointed out: *“An argument can be advanced that the hubris hypothesis implies an inefficiency in the market for corporate*

*control. If all takeovers were prompted by hubris, shareholders could stop the practice by forbidding managers ever to make any bid. Since such prohibitions are not observed, hubris alone cannot explain the takeover phenomenon.”* Hubris cannot be used to explain the motivation behind all the acquisitions. As acquisition may be driven by various motivations, singling out all the motivation with hubris does not generate valid findings. In future studies, hubris should be used as a competing or complementary theory with agency theory, or upper echelon theory. For example, as described before, studies focused on human capital embedded in TMT and M&A performance suggest that top managers with prior experience in acquisition or managers with prior good performance are more likely to have a better performance in focal acquisitions. From this stand, understanding to what extent prior good performance of top manager has positive effect on the focal acquisition and to what extent it engenders hubris is necessary to grasp a better understanding on the effect of managerial behavior in M&As. Besides that, as stated earlier some papers argue that some level of overconfidence benefits shareholders. Therefore, researchers should be meticulous when studying hubris by disentangling between necessary and excessive level of overconfidence.

Finally, upper echelon and agency theory together bring many opportunities for cross-fertilization. Upper echelon theorists argue that managerial preference over certain corporate strategies (here M&A) results from individual’s demographic characteristics. Agency theorists argue that such preference results from individual’s corporate position. Even though, it seems that these two theories are orthogonal, closer inspection show us that managerial preference in M&A can be results of both. Mostly studies focus on one and neglect the other (See Jensen & Zajac, 2004 as an exception), which results in having incomplete picture in our opinion. It would be interesting to study moderating effect of demographic characteristics on empire building or entrenchment of CEO in engaging into M&A.

### **5.3 Acquisitions as heterogeneous corporate strategies**

As explained in the introduction, M&A literature suggests that acquisitions may occur for various reasons. The acquisition’s drivers can vary from economic of scale and scope, market entry, diversification,

and acquiring new knowledge and/or technology. Studies at the intersection of TMT and M&A treat all acquisitions homogenously in terms of drivers and motivations and therefore used one proxy for performance measurement. However, performance in M&A literature is, as Zollo & Meier (2008) put it, a multifaceted construct that there is no single proxy to capture all aspects; they are both short and long term proxies across different levels namely: task, acquisition and firm. Some examples of these proxies are financial and accounting returns, customer and employee retention and innovation outcome (Zollo & Meier, 2008). Having said this most of the studies on TMT and acquisition performance only focuses on proxies based on event study. Over 80% of the studies in our sample constructed performance as stock market reaction to the acquisition announcement and formed a cumulative abnormal return (CAR) or premium paid<sup>13</sup>. While both proxies capture short term value in the acquisition (financial return) at firm level, it cannot reveal or connect to long term performance or return of the firm (Bodolica & Spraggon, 2009a). From this stand, studies that focus on target TMT turnover and M&A performance, suffer from linking turnover (which happens usually up to five years after the acquisition) with this measurement. In addition, studies that focus on moderating role of various corporate governance methods such as board monitoring, compensation structure and payment policies similarly may suffer from the same misspecification of econometric model. Alternatively, when studying effectiveness of various corporate governance mechanisms and managerial interest in engaging into M&A activities we encourage researchers to use multiple constructs for performance to extend the so called outcome to long-term returns as well as non-financial metrics such as employee or customer retention and innovation outcome.

#### **5.4 Heterogeneity in acquirers and targets**

The choice of empirical settings, as described in the earlier section, in the intersection of top managers and M&A hinders generalizability of the findings. While over two third of global M&A transactions involve acquisition of small and private firms (Zollo & Singh, 2004), almost all

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<sup>13</sup> Only 12 papers applied some other performance measurements as a complementary to CAR or premium paid.

studies focus on acquisition of public firms. The TMT structure, corporate governance, and many assumptions behind theoretical scopes used in studies are different when it comes to small and private firms (Capron & Shen, 2007). Agency theory and market for corporate control does not apply to private firms. Because unlike public firms, all owners should consent for the acquisition in private firms, and usually top executives hold a share in the firm. In addition, since ownership and control are not separable from one another, there is an alignment between top executives' interests and the shareholders' interests (Colombo & Rossi-Lamastra, 2013). Stewardship theory seems more appropriate in studying and understanding TMT in private firms. It would be interesting to understand the difference between the role of TMT in post-acquisition of private firms, the effect of their turnover on the post-acquisition performance and their motivation or psychological perception about the acquisition. Moreover, acquirers cannot evaluate private target due to information asymmetry therefore they acquire local private firms in similar business (Ragozzino & Reuer, 2009) this suggests more elimination of redundancies including TMT, which result into higher TMT turnover. On the other hand, acquirer prefers to acquire public firms in dissimilar businesses (Capron & Shen, 2007), which suggests that TMT turnover is lower. Another interesting area for future studies would be validating this argument.

In addition, on the acquirer side, almost all studies focus on the public acquirers. For similar reason discussed above, agency theory does not fit for explaining private acquirer's managerial motivation. Indeed, private acquirers tend to pay less for the acquisition compare to public acquirers (Bargeron et al, 2008). This all suggest there is a ripe field for future research in studying TMT and M&A. In the following, we go deeper in some special cases of private firms.

***Small Technological or entrepreneurial firms:*** Mostly TMT studies in M&A focus on miscellaneous industries and motivations. Motivations are varied from synergy (Jensen & Ruback, 1983), gaining market power (Kim & Singal, 1993), and economics of scope and resource acquisition (Karim & Mitchell, 2000). Many acquisitions are motivated by technological sourcing (acquiring a patent, prototype, product or knowledge embedded in human capital) (Ahuja & Katila, 2001 and Ranft & Lord, 2000 & 2002). Recently, studies in M&A have

differentiated this type of acquisition from the mainstream when studying post-acquisition outcome (See for e.g. Ahuja & Katila, 2001 and Puranam & Srikanth, 2007) productivity (See for e.g. Parunchuri et al, 2006) and implementation (See for e.g. Puranam et al, 2009 and Puranam et al, 2006). However, scholars on TMT and M&A have not paid sufficient attention except a few studies: Gao & Jain (2012), Graebner (2004) and Fahlenbarch (2009). Technologically motivated acquisition of small firms are worthy to receive specific attention in TMT due to their intrinsic characteristics. First their size of the top management team is fairly small, ownership is more concentrated and managerial power structure is limited (D'Aveni & Kesner, 1993); second taking into account that many of these small firms are entrepreneurial firms, ownership and control are not as separated as it is in larger firms. This violates the basic assumption behind agency theory (Colombo & Rossi-Lamastra, 2013 and Wasserman, 2003 & 2006). Founder CEOs' managerial behavior are best suited and described by the competing theory, stewardship, in which CEO as economic agent would lead the firm to maximize shareholders' wealth (Davis et al, 1997). Literature on founder-CEO succession, report a success paradox for founder CEOs (Wasserman, 2003), meaning that as the founder-CEO perform well and the entrepreneurial firm grows organically, the organization becomes more bureaucratic which needs new set of skills in TMT. Therefore, founder-CEO and other founder-top managers slowly forced to get replaced with professional top managers (He, 2008). One future area to study further, would be looking at acquisition to substitute founder-CEOs with professional CEOs. Additionally, by considering acquisition as an alternative mode to IPO for entrepreneurial venture (Gao & Jain, 2012), we suggest that for future study it is interesting to understand founder-top managers reaction and defence mechanism to acquisition coerced by other shareholders (for instance VCs).

Also from human capital stand, tacit knowledge embedded in key personnel in technological acquisition is important. If they leave the firm, the acquirer loses the knowledge (Kapoor & Lim, 2007). Post-acquisition implementation and corporate restructuring also affect their productivity after the acquisition (Parunchuri et al, 2006). Another interesting study would be understanding the symbolic role of target TMT in post-acquisition employees' innovation outcome (productivity).

TMT in small technological firms, not only may possess general managerial skills, or specific skills (information related to industry, customer and suppliers) (Wulf & Singh, 2011) but also they are the source of technological development and advancement specifically in case of being founder (Colombo & Grilli, 2005). From this stand, TMT in small technological firms should also be seen as key employees with invaluable embedded tacit knowledge. Borrowing insights from entrepreneurial human capital (Gimeno et al, 1997), it is interesting to study the antecedents of TMT turnover in post-acquisition of small technological firms. Taking founder top executives into account on one hand, financial gains from acquisition, psychological frustration and pressures of the venture and stressful experience of managerial position make them departing after the acquisition (Graebner et al, 2010) on the other hand, psychological attachment, accessing to new resources and synergies make them to stay after the acquisition (Graebner & Eisenhardt, 2004). Therefore, another interesting area for future investigation is relating psychological attributes of founder executives to their turnover in post-acquisition.

***Acqui hiring:*** It is another form of acquisition to recruit talents. Large incumbents such as Google, Yahoo, Apple, and Facebook take over small firms for acqui hires. In this type of acquisition, the acquirer buys a small company to recruit the human capital as a group and get them involve in on-going product development of the acquirer. The acquirer usually disposes the target's products (Coyle & Polsky, 2013). In this case, the role of target founding team executives in managing and leading the group in post-acquisition becomes crucial, as coordination cost for the acquirer is high by involving the group directly to the ongoing product development. Besides that, the newly recruited talents endanger outcomes of the acquisition by leaving after the acquisition. Borrowing the literature from founder succession, bundling organizational identity with founder identity and founder's stronger symbolic position (Dobrev & Barnett, 2005), the role of founder executives in motivating the employees to stay after the acquisition becomes important. From this stand, another road for future study would be the effect of target TMT turnover on the outcome of acqui-hires.



**family firms:** In family firms usually, the top executive is owner of the firm which affects their decisions related to corporate strategy (Romano et al, 2001). As a result in M&As, it is expected that based on the agency theory, TMT has higher bargaining power for their post-acquisition retention after the deal. Therefore, it is interesting to study the nature of TMT turnover in post-acquisitions of family firms from agency theory theory.

## Final Note

This paper makes a review on top managers and M&A. The review includes both managerial resources of target and acquirer in M&As. We divided the prior studies into three different main categories namely: Studies that investigate on top managers as an antecedent, a moderator, and an outcome of M&As. The prior empirical studies show inconsistencies in all categories. In the second part, the paper discusses about future areas for studying to address properly the inconsistencies, possible explanations for the source of the inconsistencies and some new areas for the interested scholars. We hope this literature review would provide resourceful insights for future empirical studies on this topic.

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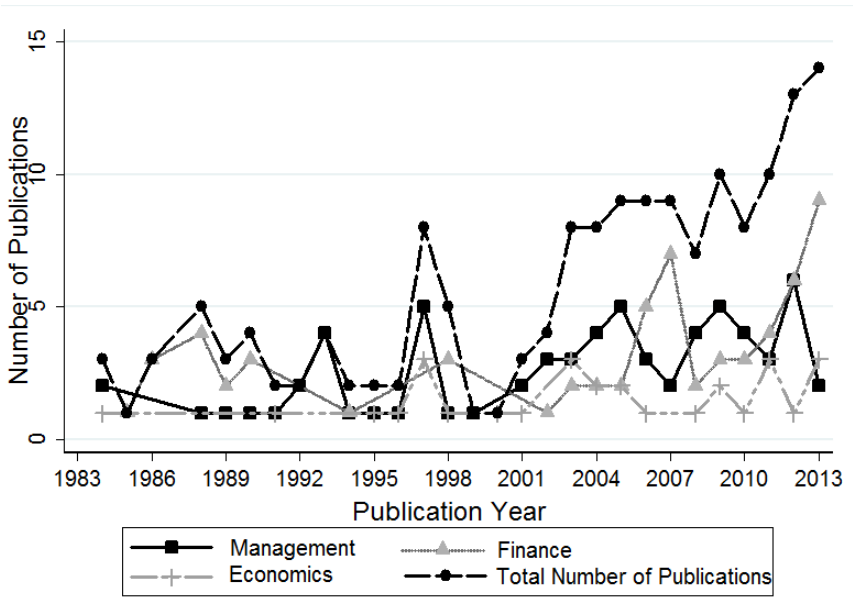


Figure 1: Frequency of publications sorted by discipline of journal

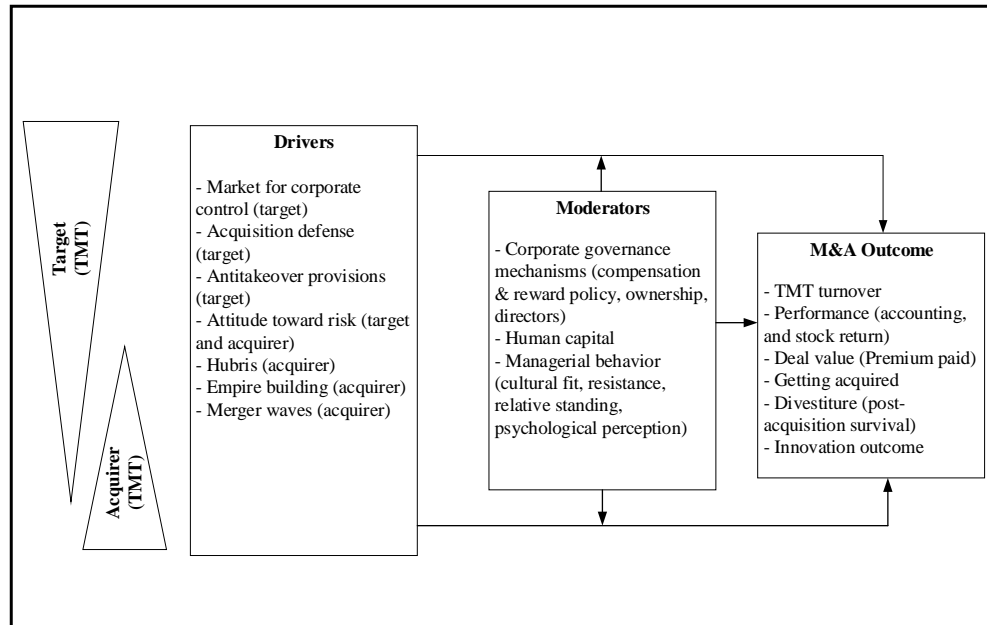


Figure 2: The conceptual framework of the literature review

# Paper B

# Paper B

**Post-acquisition**

**Implementation of small  
high-tech firms: *Looking  
beyond the surface***

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*Presented in DRUID conference in Denmark*

*June 2014*

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## **Abstract**

*In post-acquisition, the main challenge for the acquirer is choosing the right coordination mechanism with respect to the required level of coordination and associated costs of implementation of the mechanism. In acquisition of small high-tech firms, the challenge is exacerbated as technology and knowledge transfer requires high level of coordination while the costs related such as loss of autonomy and organizational disruptions are also higher. In this paper, we showed that acquirer's choice of coordination mechanisms is determined by the cost-benefit trade-off. In particular, we found that, component technology as a form of task interdependency necessitates higher level of coordination and justifies choosing mechanisms to provide high level of coordination at higher cost. On the contrary, technological relatedness and prior alliance between acquirer and target provide coordination capacity, which in turn reduce the benefits of choosing mechanisms to provide high level of coordination with respect to the associated costs. This study is based on empirical analysis of 403 acquisitions of small high-tech firms between 2001 and 2005.*



# 1. Introduction

Accessing knowledge and R&D in form of acquisition rather than internal development is a common practice among firms to complement their internal resources with external resources (Capron & Mitchel, 2012). Likewise, acquisitions favour synergy creation through bundling the innovative artefacts (in form of final product, patent and prototype) of the acquired company (from now on *target*) with acquirer's complementary assets, such as marketing, manufacturing and sales (Ahuja & Katila, 2001; Coff, 1999; Granstrand & Sjolander, 1990). Regardless of the motivation behind the acquisition and potential gains, acquirer is responsible to manage target, as a newly bought unit in post-acquisition phase (Bauer & Matzler, 2014; Datta, Pinches, & Narayanan, 1992; Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986). Scholars concur that improper acquisition implementation results in acquisition failures in terms of realization of potential synergies and, ultimately, performances . As we will explain in greater details further in the paper, this problem is even more severe in acquisitions of small high-tech firms (Kapoor & Lim, 2007; King, Slotegraaf, & Kesner, 2008; Parunchuri, Nerkar, Hambrick, 2006).

The main challenge for the acquirer in post-acquisition is *coordination* between the target and the rest of the units to facilitate technology and knowledge transfer (Granstrand & Sjolander, 1990; Grant, 1996a; Kogut & Zander, 1992; Ranft & Lord, 2002). However, exerting higher level of coordination is costly for the acquirer; these costs are associated with loss of autonomy and organizational disruptions (Puranam, Singh, Chaudhuri, 2009). Although prior empirical studies have tried to link certain acquisition implementation strategies to post-acquisition performance (Bauer & Matzler, 2014; Datta & Grant, 1990; Pablo, 1994; Parunchuri, et al., 2006; Puranam, et al., 2006; Zollo & Singh, 2004), they have overlooked at the natural cost-benefits trade off of applying certain coordination mechanisms for the acquirer. In this regard, we should consider that there is no dominant implementation strategy and the acquirers choose their strategy based on the required level of coordination (Haspeslagh & Jemison, 1991 and Schweitzer, 2005).

Moving from these premises, the main aim of this paper is to shed light over the acquirer's rationale in choosing certain coordination mechanisms. From this standpoint, the overarching research question is: “ *What are the antecedents behind the acquirer's choice of coordination mechanisms in acquisitions of small high-tech firms?*” In particular, following the literature, we focus on two alternative mechanisms to provide coordination in post-acquisition, namely: structural form of the target after the acquisition (separation vs. integration) and CEO replacement vs. retention (Haspeslagh & Jemison, 1991; Datta, et al., 1992, Graebner, 2004 and Pablo, 1994). These two dimensions are usually investigated disjointly by scholars. However, we argue that as the acquirer's challenge is providing the required level of coordination, focusing only on one dimension does not give the comprehensive picture over the post-acquisition implementation process. Indeed, structural integration equates the strongest level of coordination and separation equates to autonomy (Haspeslagh & Jemison, 1991 and Puranam, et al., 2009); in addition, CEO retention brings some coordination capacities to the acquirer while it leaves autonomy intact (Graebner, 2004). Therefore, by using interaction of these two dimensions we present multiple coordination mechanisms for the acquirer. Along with this line of reasoning and in line with prior literature, we introduce three antecedents for acquirer's choice of coordination mechanisms in acquisition of small high-tech firms, namely: *Component technology*, *technological relatedness*, and *alliance*. Our reason behind choosing these antecedents is that they affect the benefits and costs of the coordination mechanisms and thus affect the acquirer's design of the acquisition implementation process. In particular, component technology refers to the condition that the acquirer intends to integrate some technological component(s) of the target in its own product portfolio or the current product development. As we describe in details in section 3, component technology is a form of strong task interdependency between the acquirer and the target. Therefore, it requires high level of coordination between the two firms. Accordingly, the acquirer chooses coordination mechanisms that impose such level of coordination to the target despite its higher costs. Conversely, technological relatedness and the existence of prior alliances between the acquirer and the target bring coordination capacity so the acquirer does not need to provide high level of

coordination in post-acquisition. Therefore, it tends to choose mechanisms with lower coordination benefits and associated costs. Econometric estimates on a sample of 403 acquisitions of small high-tech firms between 2001 and 2005 confirm our conjecture.

We are confident that the paper provides interesting contributions to the extant literature in post-acquisition. First, our work contributes to the academic conversations on acquisition implementation by linking two streams of literature that to date scholars have developed separately: the choice of the target's structural form and target CEO's role in post-acquisition. Second, this paper contributes to the debate on the antecedents of acquisition implementation of technological acquisitions in general and of acquisitions of small high-tech firms in particular. Finally, our relatively large sample provides the opportunity to test insights from qualitative studies.

The remainder of the paper is organized as follows. Section 2 reviews the literature on coordination mechanisms in acquisition implementation. In particular, it describes three main design choices which ordered by increasing level of coordination and of the associated coordination costs, namely: no action, coordination via CEO replacement and coordination via structural integration. Section 3 develops the research hypotheses focusing on the antecedents of these design choices. Section 4 describes the data and the methodology. Section 5 reports the results; and finally Section 6 discusses about the findings and concludes the paper.

## **2. Theoretical framework**

Conventional wisdom in the field of organizational design suggests that firms choose their organization's configuration depending on internal processes and environmental contingencies (Mintzberg, 1980). Regardless of type of these processes and contingencies, *coordination* between tasks and sub-units is pivotal in shaping firms' organizational choices (Tushman & Nadler, 1978). In an acquisition, target as a newly bought unit needs to become part of the acquirer's organization (Pablo, 1994; Zollo & Singh, 2004). How this happens, depends on the required level of coordination between the acquirer and the target (Graebner, 2004; Ranft & Lord, 2002), which, in turn, depends on acquisition's

objectives, and on acquirer's existing coordination capacities (Haspeslagh & Jemison, 1991 and Jemison & Sitkin, 1986). Acquisition objectives determine the extent of interaction between the target and the rest of acquirer's organization (Jemison & Sitkin, 1986). The higher the required level of interaction, the higher is the required level of coordination (Grant, 1996a).

Achieving effective coordination is necessary in acquisitions of small high-tech firms (Parunchuri, et al., 2006; Puranam, et al., 2009; Puranam, et al., 2006; Ranft & Lord, 2002). Indeed, these acquisitions revolve around obtaining technological artefacts (in form of products, patents, or prototypes) (Ahuja & Katila, 2001; Coff, 1999; Grimpe & Hussinger, 2014; Kapoor & Lim, 2007; Makri, et al., 2010; Ranft & Lord, 2002; Sears & Hoetker, 2014) and knowledge (Grant, 1996b; Ranft & Lord, 2000; Schweitzer, 2005). Accordingly, in acquisition implementation, the acquirer needs to *coordinate* with the target to combine the target's technology and knowledge with its own resources and capabilities, to release any potential synergy or meet any acquisition objective (Graebner, 2004; Grant, 1996a; Kogut & Zander, 1992; Puranam, et al., 2006). This is far from simple. First, knowledge embedded in target's employees is dispersed and tacit (Grant, 1996b; Makri, et al., 2010; Ranft & Lord, 2002). Second, the acquired technology inherits high degree of uncertainties and complexities in applicability, which results in acquirer's poor judgment on resource redeployment and low absorptive capacity (Coff, 1999; Cohen & Levinthal, 1990; Saxton & Dollinger, 2004; Schweitzer, 2005). Therefore, the acquirer has to not only (re)group target's employees to favor the transfer of knowledge across the two organizations (Becker & Murphy, 1992; Grant, 1996a) but also have a better control over the target's technology for reducing the risks associated with uncertainties and complexities (Teece, 1996; Van de Van & Delbecq, 1974).

However, coordination also brings both short-term and long-term costs for the acquirer (Graebner, 2004; Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986; Pablo, 1994), which may be particularly detrimental in acquisitions of small high-tech firms. Higher degree of coordination generates immediate costs related to organizational restructuring and necessary changes inside target's organization (Haspeslagh & Jemison, 1991; Marks & Mirvis, 2010; Schrivastava, 1986). In addition, assuring a

high-level of coordination diverts considerable amount of acquirer's managerial resources from the operational activities (Hitt, et al., 1991; Schoar, 2002). Other than the aforementioned short-term direct costs, coordination causes loss of autonomy and organizational disruptions, which propagate lack of commitment and demotivation among target's employees, and consequently jeopardizes acquisition outcomes (Chatterjee, et al., 1992; Datta & Grant, 1990; Larsson & Finkelstein, 1999; Zollo & Singh, 2004). In acquisitions of small high-tech firms, loss of autonomy impedes acquisition outcome more severely (Graebner, 2004 & 2009; Ranft & Lord, 2002). Indeed, demotivation and lack of commitment results in employees' turnover, which, in turn, causes loss of the knowledge as in these firms knowledge is tacit and embedded in the target's employees, (Coff, 1999; Graebner & Eisenhardt, 2004; Larsson & Finkelstein, 1999; Ranft & Lord, 2000). Even in cases in which loss of autonomy does not cause turnover, empirical studies have shown that the demotivation and lack of commitment lower the productivity of target's employees. For instance, Kapoor & Lim (2007) and Parunchuri et al. (2006) have reported that acquired inventors' productivity drops significantly in years following the acquisition. Furthermore, loss of autonomy hampers target's further technological development (Puranam, et al., 2006) as it alters permanently all the valuable organizational routines in target that used to be source of technology and knowledge creation before the acquisition (Puranam, et al., 2009). Finally, small firms in high-tech industries tend to rely on informal mechanisms for coordination, and therefore, the aforementioned negative effect of imposing formal mechanisms of coordination to these targets is stronger (Cosh, et al., 2012).

Based on the insights from information processing theory in boundedly rational organizations, firms choose their organization to assure the required level of coordination between tasks and sub-units *and* minimize coordination costs (Thompson, 1967, p. 57). Henceforth, in acquisition implementation, although the key issue for the acquirer is applying certain coordination mechanisms determined by the required level of coordination between target and the rest of organization, the associated costs have an influence on acquirer's choice as regards to these mechanisms (Becker & Murphy, 1992; Tushman & Nadler, 1978; Zollo & Singh, 2004). In sum, acquirers choose coordination

mechanisms according to their associated costs and benefits (Haspeslagh & Jemison, 1991 and Puranam, et al., 2009).

In acquisition implementation literature, the decision related to the *organizational structure of target* is the primary concern of the acquirer in designing acquisition implementation (Haspeslagh & Jemison, 1991; Puranam, et al., 2009; Schweitzer, 2005). Acquirer can decide to *absorb* completely the target into its organization at one end or to leave it as a *separate subsidiary* and preserve the target's pre-acquisition conditions at the other end (Haspeslagh & Jemison, 1991). These two cases are the dominant approach for acquisitions of small high-tech firms (Graebner, 2004; Parunchuri, et al., 2006; Puranam, et al., 2006). In case of absorption, the acquirer structurally integrates the target into the rest of its units and this provides the highest level of coordination through common goals, procedures and line of authority (Haspeslagh & Jemison, 1991; Puranam, et al., 2009). The literature suggests that in acquisitions of high-tech firms, structural intergration imposes high costs to the acquirer related to loss of autonomy, which, as mentioned earlier, results in employees' demotivation, lower productivity, turnover and disruption of organizational routines and values (Kapoor & Lim, 2007; Parunchuri, et al., 2006; Puranam, et al., 2006; Ranft & Lord, 2002). In case of separation, the acquirer obtains a much lower level of coordination, while maintaining high level of autonomy (Haspeslagh & Jemison, 1991; Puranam, et al., 2009).

However, coordination mechanisms in acquisition implementation are not limited to the choice of the structural form. Although designing acquisition implementation is the acquirer executives' responsibility after the deal is closed (Chatterjee, et al., 1992; Jemison & Sitkin, 1986; Pablo, 1994; Schrivastava, 1986), target executives – and especially the target's CEO may play a crucial role if involved and delegated authority in this process (Graebner, 2004; Graebner & Eisenhardt, 2004; Jemison & Sitkin, 1986; Ranft & Lord, 2000). The target's CEO can be a valuable resource in the acquisition implementation, as she has a profounder knowledge over her firm and its employees. In particular, she has influence over target's employees to mitigate the associated demotivations during the acquisition implementation (Graebner, 2004; Ranft & Lord, 2000 and 2002). Many empirical studies have highlighted the negative effect of the target's CEO departure on post-

acquisition performance (Bergh, 2001; Buchholtz, et al., 2003; Cannella & Hambrick, 1993; Hambrick & Cannella, 1993; Wulf & Singh, 2011). Graebner (2004) has suggested that retention of the target's CEO can be viewed as a choice for acquirer to provide coordination. Indeed, target CEO can favor smooth interactions between target and acquirer workforces by improving communication and engaging in problem solving.

Based on the two aforementioned dimensions, namely structural integration vs. separation and CEO replacement vs. retention, together with the acquirer's need to provide necessary level of coordination driven by the associated costs and benefits, we present a multi-dimensional approach to acquisition implementation. Specifically, alternative coordination mechanisms (with diverse costs and benefits) result from the interaction of these two dimensions bring about the following scenarios:

*No action*, in this case, the acquirer keeps the target as a separate subsidiary and retains target CEO, who remains in charge of target's operations as before the acquisition. In her role, she acts as a soft coordination mechanism and facilitates the knowledge transfer between firms via mobilizing and mitigating actions (Graebner, 2004). No action engenders no major organizational changes and thus acquirer provides lowest level of coordination with no associated costs related to loss of autonomy and organizational disruptions.

*Coordination via target CEO replacement*, in this case, acquirer keeps the target as a separate subsidiary, while replaces the CEO with another manager of its choice (either an acquirer manager or a newly hired executive) to act as a coordinator. As target is still structurally separated, one may reasonably expect that most of the target's organizational routines and procedures remain intact in post-acquisition. In turn, by changing the target CEO, the acquirer changes the target's apex of the authority to assure target's alignment with acquirer's goals and objectives. Target CEO replacement provides some level of coordination between the two entities (Graebner, 2004 & 2009; Pablo, 1994), but it usually causes demotivation among target employees, which may reduce their productivity (Ranft & Lord, 2002). In other words, achieving coordination through target CEO replacement

while keeping the target as a separate subsidiary brings some level of autonomy to the target, albeit lower than in case of *no action*, as the acquirer assigns the target a CEO of its choice. Basing on the above discussion, we conclude that in this scenario, the acquirer benefits from some level of coordination, though accompanied by costs associated with CEO replacement.

*Coordination via structural integration*, in this case, the acquirer structurally integrates the target into its rest of the organization. As explained before, this choice provides the highest level of coordination through common goals, procedures and authorities (Haspeslagh & Jemison, 1991) while imposes the highest level of organizational disruptions and loss of autonomy (Puranam, et al., 2009). Therefore, in structural integration, the acquirer benefits from the highest level of coordination, though accompanied by immediate costs of integration and costs associated with organizational disruptions and loss of autonomy.

To conclude, the level of coordination (and thus coordination benefits) between the acquirer and the target is (are) maximum in *coordination via structural integration* and minimum in *no action*, while *coordination via target CEO replacement* engenders an intermediate level of coordination. Likewise, the costs associated with achieving coordination between the two firms are maximum in *coordination via structural integration*, intermediate in *coordination via target CEO replacement*, while *no action* engenders no cost. Moving from these premises, in the following section, we discuss how three relevant factors in acquisitions of small high-tech firms affect these benefits and costs and thus determine the ways in which the acquirer designs acquisition implementation.

### **3. Hypotheses**

#### **3.1 Task interdependencies and component technology**

Task interdependencies refer to the extent to which tasks or processes linking tasks are interrelated so that changes in the state of one of them affect the state of the others (Thompson, 1967; Van de Ven & Delbecq, 1974). Often task interdependencies result into organizational



interdependencies: if two organizations perform interdependent tasks, they become interdependent to one another (Mintzberg, 1980; Tushman & Nadler, 1978). Thompson (1967, p. 54 ) identified three types of task interdependencies (pooled, sequential and reciprocal), each of which requires different level of coordination. In particular, reciprocal interdependency requires the highest level of coordination (Grant, 1996a; Haspeslagh & Jemison, 1991; Mintzberg, 1980; Puranam et al, 2009; Tushman & Nadler, 1978). When the interdependencies involved are intrinsically technological, i.e. they result from the need to integrate diverse technological components, the required level of coordination further increases (Argyres, 1995). Indeed, technological components are usually not standardized, henceforth any change in one component imposes adjustments to the other interdependent components (Argyres, 1995; Becker & Murphy, 1992; Teece, 1996). In addition, as Thompson (1957) and Mintzberg (1980) pointed out, technological interdependencies are usually reciprocal in nature. Argyres (1995) argued that the importance of effectiveness of coordination in component technology is so much that any conflict between involved organizational members might jeopardize the outcome of knowledge transfer. Based on Williamson (1975), in knowledge transaction between interdependent parties, achieving any meaningful coordination requires lower powered rather than higher powered incentives. In other words as Grant (1996a) and Kogut & Zander (1992) put it, in interdependent knowledge transactions, common authority reduces the chance of goals' conflicts and opportunistic behaviors.

In acquisitions, if acquirer is looking for integrating certain pieces of component technology developed inside the target into its current product portfolio or an on going product development, any meaningful value is captured via tight and effective coordination (Puranam et al, 2009). Also according to the argument presented by Grant (1996a) and Kogut & Zander (1992), acquirers should reduce any possible goal misalignment and opportunistic behavior in technology and knowledge transactions. Therefore, when there is a component technology, the benefit of higher level of coordination out weight the associated costs of organizational disruptions and loss of autonomy for the acquirer. In addition, to reduce any conflicts and opportunistic behaviour, the acquirer prefers exercising common authority for the target with

respect to the rest of its organizations. Therefore, grounding on the above arguments, we put forth hypothesis H1.

*H1: In acquisitions of small high-tech firms, acquisition of component technology increases the likelihood of structural integration compare to coordination via target CEO replacement and no action.*

## **3.2 Technological relatedness and common ground**

Based on the knowledge perspective of the firm, knowledge created within a firm is *specific* and stored in individuals. Any knowledge transfer requires absorptive capacity of recipient, who should also be able to integrate external knowledge in its own knowledge base (Grant, 1996a and Tsai, 2001). As the firm specific knowledge is usually tacit, the recipient's absorptive capacity has a determining role in knowledge transfer. From this standpoint, Cohen and Levinthal (1990) emphasized the importance of extant shared knowledge and expertise to foster firm's absorptive capacity, in terms of evaluation and dissipation of new knowledge and expertise (see also: Levinthal & March (1993)). Along with this line of reasoning, when the acquirer and target share some degree of common expertise and knowledge base, the acquirer has better assessment of the target's processes, operations and values (Kogut & Zander, 1992; Grant, 1996a). In acquisitions of small high-tech firms, when the acquirer and the target are familiar with each other's technology, it is very likely that they have a shared knowledge and a common understanding (Ahuja & Katila, 2001; Anand & Khanna, 2000; Becker & Murphy, 1992). This common ground facilitates coordination between two firms' subunits when they need to combine their technologies for instance for cross product development (Grant, 1996a & 1996b; Kogut & Zander, 1992). Relatedness is a measure of acquirer and target overlapping area of expertise (Cassiman, et al., 2005; Coff, 1999; Makri, et al., 2010). Technological relatedness as an indicator of the existence of a common ground between the acquirer and target, can be perceived as a coordination capacity. As stated by Puranam et al. (2009), common ground makes reading blue prints, internal documents and product development reports easier to understand when interactions between acquirer and target is necessary.

In the acquisition literature, many studies have attempted to capture directly the effect of technological relatedness on post-acquisition R&D performance (Ahuja & Katila, 2001; Cassiman, et al., 2005; Cloudt, et al., 2006; Makri, et al., 2010) and more recently on financial returns (Grimpe & Hussinger, 2014; Sears & Hoetker, 2014). The studies have reported the positive effect of relatedness on R&D input or output (Ahuja & Katila, 2001; Cassiman, et al., 2005), inventors' productivities (Cloudt, et al., 2006; Parunchuri, et al., 2006; Makri, et al., 2010), market response (Sears & Hoetker, 2014) and deal price (Grimpe & Hussinger, 2014). Here we argue that technological relatedness improves the post-acquisition outcome as among the other things, it provides coordination capacity. It favors coordination by reducing the need for structural integration and CEO replacement with their associated organizational disruptions and consequently lowers the costs of acquisition implementation. In other words, in case of high technological relatedness, the acquirer can coordinate the target's activities while preserving its autonomy, which keeps the employees motivated and productive in post-acquisition and speed up product's innovation and time to market (Puranam, et al., 2006; Puranam & Srikanth, 2007). Autonomy improves feeling of belonging and active participation of target's CEO in post-acquisition, which reduces the likelihood of her departure (Graebner, 2004; Wulf & Singh, 2011). As mentioned earlier, target CEO has profound knowledge and extensive view over the target's business, operation and organization (Buchholtz, et al., 2003); therefore, she can act as a coordinator between acquirer and target to facilitate knowledge transfer and internally adjust the process of change in post-acquisition according to the firm's capacities without damaging the firm's technological capabilities. In sum, technological relatedness provides additional coordination capacity for the acquirer. Consequently, in presence of technological relatedness it becomes less likely that the acquirer structurally integrates the target to impose additional coordination at the cost of organizational disruptions and increases the chance of CEO retention and her active participation in post-acquisition coordination and value creation. Therefore:

*H2a: In acquisitions of small high-tech firms, technological relatedness between the acquirer and the target increases the likelihood of taking*

*no action compare to coordination via target CEO replacement and structural integration.*

If our argument is valid that acquirers chooses their coordination mechanism based on the associated cost and benefit, we expect that coordination capacity provided by technological relatedness for the acquirer diminishes the benefit of coordination via structural integration. Therefore, although component technology necessitates higher level of coordination, relatedness moderates that effect. Thus:

*H2b: In acquisitions of small high-tech firms, technological relatedness between the acquirer and the target negatively moderates the effect of component technology on likelihood of structural integration.*

### **3.3 Prior alliance between the acquirer and target**

From the organizational learning perspective, the existence of a prior alliance between acquirer and the target brings many opportunities for the acquirer to leverage from the experience gained during the alliance in the acquisition implementation (Levinthal & March, 1993; Porrini, 2004; Tsai, 2001; Yang, et al., 2011; Zaheer, et al., 2010). A prior alliance increases acquirer's capacity to glean target's firm specific knowledge and assess target's firm specific resources. This capacity is helpful not only for evaluating the target's real value in purchase (Anand & Khanna, 2000; Reuer & Ragozzino, 2008), but also in recombining and mobilizing target's resources in post-acquisition (Porrini, 2004; Zaheer, et al., 2010). Indeed, an acquirer with a history of prior alliance with a target is farther ahead in managing the acquisition implementation (Porrini, 2004). Alliances facilitate knowledge transfer between firms via cooperation and interaction (Tsai, 2001). The interaction develops certain inter-organizational routines, which results in creating coordination capacity (Hagedoorn & Sadowski, 1999). In addition, cooperation engenders knowledge creation, which is mutually beneficial for both companies (Kogut & Zander, 1992; Rothaermel & Deeds, 2004; Tsai, 2001; Yang, et al., 2011). Similar to our argument for technological relatedness, jointly created knowledge brings a common ground between the acquirer and the target that increases coordination capacity. Furthermore, a prior alliance has another byproduct: it develops trust between the two firms (Gulati, 1995; Kale & Singh,

2009)<sup>1</sup>. Indeed, a prior alliance brings strong ties between individuals of both firms, which build trust and make acquisition implementation smoother (Graebner & Eisenhardt, 2004; Hagedoorn & Sadowski, 1999; Haspeslagh & Jemison, 1991). In addition, trust increases a sense of belonging to the target's executives, which increases the chance of their retention and their active participation in coordination between the two firms and value creation (Graebner, 2004; Zaheer, et al., 2010). Basing on the above argument, we hypothesize that the additional necessary level of coordination in post-acquisition is lower when acquirer and target has a prior alliance (Hagedoorn & Sadowski, 1999; Porrini, 2004; Zaheer, et al., 2010). As a prior alliance creates additional coordination capacity for the acquirer, it becomes less likely that acquirer structurally integrates the target to impose additional coordination at the cost of organizational disruptions. Likewise, a prior alliance increases the chance of CEO retention and of her active participation in acquisition implementation and value creation. Therefore:

*H3a: In acquisitions of small high-tech firms, the existence of a prior alliance between the acquirer and the target increases the likelihood of taking no action compare to coordination via target CEO replacement and structural integration.*

Similar to our previous argument on technological relatedness, we claim that prior alliance between the two firms provides the coordination capacity, which diminishes the benefit of coordination via structural integration. Therefore, although component technology necessitates higher level of coordination, alliance moderates that effect. Along this line of reasoning, we formulate hypothesis H3b:

*H3b: In acquisitions of small high-tech firms, the existence of a prior alliance between the acquirer and the target negatively moderates the*

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<sup>1</sup> It is worthy to note that trust also plays an important role in the choice between acquisition and alliance. As Graebner (2009) pointed out, trust is asymmetric in nature and if the target does not trust the acquirer due to deception, targets prefer to establish an alliance rather than concluding an acquisition (See also Graebner & Eisenhardt, 2004). On the other hand, from transaction cost economics (Williamson, 1975), if acquirer does not trust target due to high level of opportunistic behaviour, acquisition would be the preferred mode rather than alliance (Graebner, 2009).

*effect of component technology acquisition on the likelihood of structural integration.*

## **4. Method**

In this work, we focus our attention on acquisitions of small high-tech firms made by large listed firms in the period 2001-2005. In order to build the acquisition sample, we relied on two databases widely used in the empirical acquisition literature: SDC Platinum merger and acquisition section and Zephyr belong to Burea Van Djik. We selected all acquisitions that meet the following criteria:

First, the target operates in high-tech industries conform to OECD's definition (OECD, 1997) with the exclusion of aerospace and defense as few small firms operate in those industries. Accordingly, a firm that actively operates in one of the following industries is considered to be high-tech: Drugs (283), Computer and office equipment (357), Electronic and other electrical equipment and components except computer equipment (36), Instruments (38) and Software programming (737). The SIC codes are available at both SDC Platinum and Zephyr. Second, as this study focuses in acquisitions of small firm by large incumbents, following Puranam & Srikanth (2007) and Puranam, et al. (2009), our second criterion refers to the headcounts of employees. Specifically, the targets and acquirers should employ respectively less than 500 and more than 1000 personnel at the time of acquisition.<sup>2</sup> Third, acquirers were listed in a stock exchange while targets were both consist of listed and not listed companies. Fourth, the acquirer should own 100% of the equity capital of the acquired firms after the acquisition. Finally, both firms were headquartered either in the USA or in the EU, as the two database used for identifying acquisitions in this work offer considerable lower coverage of acquisitions in other countries. Additionally, the availability of individual information related to target CEOs is considerably lower when it comes to other countries especially for small private firms. Overall, 749 acquisitions met the above criteria. 409 deals have been exclusively extracted from Zephyr, 340 deals have been exclusively extracted from SDC Platinum and the

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<sup>2</sup> Since the majority of target and acquirer in the population are headquartered in USA, we define small and large firms according to USA Small Business Administration norm.

rests have been commonly registered in both databases. In 67% of the acquisitions found in SDC Platinum, the target was located in the US, while this figure is only 41% for Zephyr.

In order to understand the events related to the acquisition between acquisition announcement and effective date, we used the related news in published online journals, daily newspapers and professional industrial magazines. To retrieve news, we relied on the Lexis Nexis database. Pieces of articles on Lexis Nexis contain valuable information about the motivations behind the acquisition, acquirers' and targets' executives personal information, their titles and reflections about the acquisition from both firms, as well as acquirers' further decision on organizational structure (Ahuja & Katila, 2001; Puranam et al, 2006; Puranam et al, 2009; Parunchuri et al, 2006). In total, we gathered news and codified variables of interests for 590 deals. In order to check the validity of codified variables two researchers independently codified them; the correlation between codifications is above 90%. After checking the discrepancies, the correlation improved to 100%. We gathered information related to firms' characteristics such as foundation year and size from Orbis belongs to Burea Van Dijk.

In the next step, we collected data related to target CEOs. Initially, the CEO names were gleaned from their interviews and public statements about the acquisition in the news as well as searching for the name of the CEOs from Bloomberg Businessweek Company Database. Then by cross searching the names in Capital IQ, Bloomberg Businessweek People database and LinkedIn, we gathered a personal biography for each CEO to check the CEO's position (retention or departure) after the acquisition. Due to unavailability of data for some individuals and to the fact that following Puranam et al. (2009) we removed acquisitions where the target has less than three employees, the final sample limited to 403 deals within which 65 percent of targets belong to software industries. Also 60 percent of targets and 65 percent of the acquirers are headquartered in USA. In the following the description of the variables and their constructs are provided.

### ***Dependent variable***

We constructed the *Acquirer's coordination choice*, based on the interaction of two separate binary variables namely, *CEO replacement* and *Structural integration*. CEO replacement is constructed following Bergh (2001), Cannella & Hambrick (1993), and Wulf & Singh (2011) as a binary variable defined as 1 if the CEO is replaced from the combined entity two years after the acquisition and 0 otherwise. As mentioned earlier, the information related to CEO's decision of departure or stay is gleaned from their biographies. Initially the name of the CEO of target was identified from the news related to the focal acquisition and Bloomberg Businessweek People database. Then biographies were hand collected from Capital IQ and Bloomberg Businessweek People database for each identified name and later cross checked with the individual's LinkedIn page if available. Using two direct sources for each individual and LinkedIn increases the validity of the data collected.

*Structural integration* is a dummy variable, which equals 1 if following the acquisition, the operations of the target were structurally integrated within the organization of the acquirer, while it equals 0 if they were maintained separate, that is the target became an autonomous subsidiary or business unit of the acquiring firm. Following Paruchuri, et al. (2006) and Puranam, et al. (2009), we applied two methods to codify this variable from the news:

1. *Acquirer's official announcements*: the news usually include acquirer's official announcement for the structural status of the target. Top executives of the acquirer (mostly CEO) announce the acquirer's official decision with regard to the structural form.
2. *Deal's description*: the deal's description in the news often covers the operational details of the transaction including the future formal structure of the target, lay-offs and etc.

If the announcements or deal descriptions report a statement such as: "*Centennial Technologies Inc. will be merged into Solectron's Technology Solutions Business Unit*", we conclude that structural integration had occurred, while if explicitly it is mentioned about retaining the target as an independent entity, such as "*Heartport Inc. will become a wholly owned subsidiary of Johnson & Johnson and will*



*continue to operate as a distinct operational unit after the acquisition*”, we recorded this as structural separation.

Also following Puranam et al. (2009), to check for validity of variable construct we control for the list of registered subsidiaries of the acquirer in Orbis, to check whether the target is listed as a separate subsidiary or not.

The dependent variable in form of categorical variable is constructed from interaction of the above mentioned variables. *No action*, is the choice that acquirer keeps the target as a separate subsidiary and CEO stays after the acquisition (*Acquirer’s coordination choice=1*); *Coordination via target CEO replacement*, is the choice that acquirer keeps the target as a separate subsidiary and CEO is replaced after the acquisition (*Acquirer’s coordination choice=2*); *Coordination via structural integration*, is the choice that acquirer structurally integrates the target after the acquisition (*Acquirer’s coordination choice=3*).

### ***Independent variables***

*Technological relatedness*: For constructing the technological relatedness, one may rely on patents similar to (Ahuja & Katila, 2001; Grimpe & Hussinger, 2014; Kapoor & Lim, 2007; Parunchuri, et al. 2006 and Sears & Hoetker, 2014). However, unlike the aforementioned studies, our sample includes many small software targets that usually have not any filed patent. In addition, some targets in other industries have been still at exploratory phase at the time of acquisition and they did not file any patent. Therefore, comparing directly the patent base of firms is not feasible in our case. Alternatively, in this study, we constructed technological relatedness based on correlation between acquirer’s technological patent portfolios five years prior to the acquisition and SIC codes of the target. For constructing this variable, we followed Dushnitsky & Leon (2005) by using Silverman (2002) concordance matrix. Initially, for each acquirer a patent portfolio five years prior to the acquisition based on four digit IPC codes was constructed. Then, corresponding SIC codes for each IPC are collected, which results into an array of potential SIC codes for the portfolio. Technological relatedness is measured as number of common SIC codes between target and the acquirer’s portfolio corresponding SIC codes divided by total number of target SIC codes. The data related to

acquirer's patent portfolio was gathered from Thompson Innovation database.

*Component technology:* Similar to Puranam et al. (2009), we assess whether the acquired firm's technology was a component of acquirer or a standalone product by examining press releases and article about the acquisition motives and its future development available in Lexis Nexis. For example, if it is reported in the article: "*Silicon Energy's solutions are already integrated with Itron's industry-leading MV-90 software systems ...*" or "*Parc's Route Server software will be incorporated into Cisco's Multiprotocol Label Switching (MPLS) Management product portfolio and will be made available as part of Cisco's IP Solution suits*" the acquisition was coded as component technology (*Component = 1*). One the other hand, if it was reported in the article that: "*KuDOS Pharmaceuticals is an excellent opportunity to acquire an established technology platform additive to our own oncology research capabilities*" or "*The addition of Chipcon's technical capabilities and leading RF (radio frequency) integrated circuits will complement Texas Instruments' existing low-power wireless product line*" then the acquisition was a standalone product (*Component = 0*).

*Alliance:* It is constructed following (Porrini, 2004) as a dummy variable equal to 1 if the acquirer and the target have established any prior alliance five years before the acquisition. The information related to prior alliance is extracted from press releases available in Lexis Nexis and cross-checked with Thompson SDC Platinum.

### **Control variables**

*Product relatedness* reflects the extent of the overlap of the operations of the target with those of the acquirer. Following Coff (1999), Porrini (2004) and Puranam et al. (2006), we calculated it as the number of 3-digit SIC codes common to acquirer and target divided by the total number of 3-digit SIC codes assigned to the target. As the acquirer has better assessment over target's market and product and there are redundancies in case of high relatedness, we expect that product relatedness increases the likelihood of structural integration and reduces the likelihood of CEO retention.

We controlled for target age as natural logarithm of difference between foundation year of the firm until acquisition (*Target age*) and relative size as the ratio of the number of employees of the acquirer and the target at the time of acquisition (*Relative size*). Finally, we controlled for target public status (*Target public*).

Following Puranam et al. (2006) and Puranam & Srikanth (2007), we controlled for acquisition motivation in terms of exploration-exploitation (*Exploitation*). If the acquisition is motivated technologically and the target has any concrete technological artifact (any filed patent or prototype or product) then acquirer is more likely to exploit it (*Exploitation=1*). We expect that exploitation increases the likelihood of structural integration as the acquirer requires higher level of coordination between target with its rest of internal departments to introduce the target's technology to the market. On the other hand, in case of exploitation, loss of autonomy resulted from structural integration is detrimental for the further development; thus exploration reduces the likelihood of structural integration.

Serial acquirers or acquirers with considerable record of acquisitions may develop certain capabilities in managing their acquisition implementation (Bakerma & Schijven, 2008; Hayward, 2002 and Zollo & Singh, 2004). In this study, we controlled for the experience's effect following Porrini (2004) and Halebian & Finkelstein (1999). To construct the measure, we collected all acquisitions conducted by the acquirer in the last five years prior to the focal acquisition and divided them into two categories of high-tech and non-high-tech acquisitions. *High-tech experience* is number of acquisitions in the high-tech industries conform to OECD (1997) definition. *Non-hightech experience* is number of acquisitions in other industries. It is reasonable to suppose that high-tech acquisition experience may generate experiential learning in conducting acquisition implementation, thus reducing coordination costs if the focal acquisition is also high-tech. We collected experience from three major sources namely: Mergerstat, SDC Mergers & Acquisitions and Corpfin Worldwide.

Finally, we control for geographical and cultural distance between acquirer and target. The distance between acquirer and target reduces the likelihood of structural integration as it increases the costs

associated with this mechanism (Angwin, 2001; Bakerma & Vermeulen, 1998; Krug & Hegarty, 2001; Krug & Hegarty, 1997). *Cross Border* is equal to 1 if acquirer and target does not belong to the same country, and zero otherwise.

The econometric model for this paper is multinomial ordered probit. We inserted in our model dummy variables to control for industries based on SIC codes as well as time effect based on acquisition year. Table 1 shows the list of variables and their definitions. All the estimations in this study are clustered around acquirers to capture the effect of serial acquirers such as Cisco and Yahoo!, which are involved in multiple deals while others are involved just in one deal in the sample. All the estimations in this study are also robust. For interpreting the moderating effects of interaction variables for both H2b and H3b we followed Ai & Norton (2001) and Hoetker (2007) suggestions and applied average marginal effects to interpret the results.

## 5. Results

Table 2 shows the descriptive statistics and correlation matrix of the dependent and independent variables. Looking at the mean of the dependent variable, *Acquirer's coordination choice*, it is inferable that mostly, acquirers prefer to keep the targets as a separate subsidiary and their CEOs in charge. In the sample, 51% of the acquirers took *No action* as coordination choice while this number is only 28.5% for *Coordination via structural integration*. In 18% of acquisitions, component technology is involved and there is a positive correlation (0.17) between *Component* and *Acquirer's coordination choice*. The magnitude and sign of the correlation is in line with our argument as well as Puranam et al. (2009) that when interdependency in the form of component technology exists, it is more likely that the acquirer structurally integrates the target to increase the coordination. The negative correlation between *Technological relatedness* and the dependent variable (-0.1) is in line with our argument on perceiving technological relatedness as coordination capacity, which reduces the attractiveness of more costly coordination mechanisms such as structural integration for the acquirer. In one fifth of the acquisitions, the acquirer has prior alliance with the target. The correlation between

*alliance* and the dependent variable is negative, though the magnitude is not comparably as large as the other two independent variables (-0.04). The highest correlation in the matrix is 33% between *Target public* and *Relative size*. Checking for multicollinearity, we calculated VIF for the variables, the highest VIF is 1.85 and the average VIF is 1.31, which excludes any potential effects of multicollinearity between variables on the estimation results.

Table 3 contains all the multinomial ordered probit estimations. In all the estimations, the baseline is *No action*. Model I is the basic estimation with control variables. When the target is a public company (*Target public=1*), it is more likely that the acquirer chooses mechanisms which provides higher level of coordination ( $p < 0.1$ ). Similarly, when the size of the target is relatively large compare to the size of the acquirer (*Relative size*), acquirer is more likely to exercise higher level of coordination ( $p < 0.05$ ). In addition, acquirer's prior experience in acquisition of high-tech firms (*High-tech experience*), increases the likelihood of choosing mechanisms to provide higher level of coordination ( $p < 0.01$ ). This finding is in line with our argument that the learning opportunities, provided by the experience in high-tech industry for the acquirer, reduce the costs of integration. In other words, for serial acquirers in high-tech sectors, the cost of structural integration is low and consequently, they tend to integrate more often. On the contrary, acquirer's prior experience in acquisition of non-high tech firms (*Non-high tech experience*) decreases the likelihood of choosing mechanisms that provide higher level of coordination ( $p < 0.05$ ). This is an interesting finding, as it shows cumulative acquisition experience does not give us a clear picture of the effect of experience over the focal acquisition. Since prior acquisitions for serial acquirers are heterogeneous, homogenous treatment of effect of prior acquisitions on the focal acquisition implementation is wrong. The negative effect of experience in non-high tech industries suggests that serial acquirers active in other industries are aware of the costs associated with structural integration from their experience. Serial acquirers in non-high-tech industries recognize that acquisitions in high-tech industries pose different challenges and the cost of integration (loss of autonomy and organizational disruptions) is higher. Compared to acquirers with no experience, they tend to have a more realistic assessment of

acquisition implementation costs and consequently, it is less likely that they structurally integrate the targets. Finally, cross border acquisitions (*Cross border=1*) reduces the likelihood of choosing mechanisms that provide higher level of coordination ( $p < 0.05$ ). This finding is in line with our expectation that the cost associated with integration in international acquisition is higher than in domestic acquisition; henceforth acquirers do not tend to choose costly mechanisms in international acquisitions.

In Model II we included the explanatory variables. As expected, *Component* increases the likelihood of exercising mechanisms which provide higher level of coordination ( $p < 0.01$ ). Table 4a, shows the marginal effects of the variables in Model II. An interdependency in the form of component technology (*Component=1*) decreases the probability of taking no action by -25.7% ( $p < 0.01$ ); increases the probability of coordination via target's CEO replacement and structural integration respectively by 3.7 % and 22% ( $p < 0.01$ ). The results confirm H1 that in case of component technology, it is more likely that acquirer chooses mechanisms, which provide higher level of coordination. More specifically, when there is a component technology, structural integration is the most likely choice in acquisition implementation. In line with hypothesis H2a, *Technological relatedness* decreases the likelihood of exercising mechanisms that provide higher level of coordination ( $p < 0.1$ ). The marginal effect in Table 4a, shows that, a unit increase in technological relatedness (*Technological relatedness=1*), increases the probability of taking no action by 15.4% ( $p < 0.1$ ); decreases the probability of coordination via target's CEO replacement and structural integration respectively by 2.2 % and 13.2% ( $p < 0.1$ ). In line with hypothesis H3a, *Alliance*, decreases the likelihood of exercising mechanisms which provide higher level of coordination ( $p < 0.01$ ). The marginal effects in Table 4a suggests that the existence of prior alliance between the acquirer and the target (*Alliance=1*) increases the probability of taking no action by 16.1% ( $p < 0.01$ ); decreases the probability of coordination via target's CEO replacement and structural integration respectively by 2.3 % ( $p < 0.05$ ) and 13.8% ( $p < 0.01$ ). In sum, the results confirm H2a and H3a that technological relatedness and prior alliance provide coordination capacity for the acquirer, so that it does not need to choose mechanisms with higher associated costs to

provide the required coordination. More specifically, when the firms are technologically related or having prior alliance, no action is the most likely choice in acquisition implementation.

In Model III, we added the first interactive term between *Component* and *Technological relatedness*. The interaction, according to Table 3, decreases the likelihood of exercising mechanisms, which provide higher level of coordination ( $p < 0.01$ ). Table 4b shows the marginal effect of *Component* at two conditions, when there is no technological relatedness between two firms (*Technological relatedness*=0) and when both firms are technologically related (*Technological relatedness*=1) on the probability of the various coordination choice; at both conditions the rest of the variables are at their means. When there is no relatedness, *Component* increases the probability of *Coordination via structural integration* by 32% ( $p < 0.01$ ) and decreases the probability of *No action* by 31.4 % ( $p < 0.01$ ). However, in case of relatedness, the previous effect does not exist on *No action* anymore and probability of *Coordination via structural integration* decreases by 5.4% ( $p < 0.05$ ). In addition, Figure 1 demonstrates the effect of relatedness on probability of exercising each choice at two different regimes: when there is a component technology (*Component*=1) and when there is not (*Component*=0). When there is no component, increase in relatedness improves slightly the probability of acquirer exercising *No action*. However, in case of component, the effect of increase in relatedness over improving the probability of acquirer exercising *No action* is significant; the probability improves from 20% to more than 70% when relatedness changes from zero to one. The component does not have any significant effect on relatedness and the probability of *Coordination via target CEO replacement*. The third choice, *Coordination via structural integration*, in case of component its probability decreases from almost 60% to 15% when relatedness changes from zero to one. The results confirm H2b that technological relatedness as a coordination capacity negatively moderates the need for an acquirer to exercise mechanisms that provide higher level of coordination when there is component technology.

In Model IV we added the interactive term between *Component* and *Alliance*. The interaction, according to Table 3, decreases the likelihood of exercising mechanisms, which provide higher level of coordination

( $p < 0.1$ ). Table 4b shows the marginal effect of *Component* at two conditions, when there is no prior alliance between two firms ( $Alliance=0$ ) and when both firms have previously established an alliance ( $Alliance=1$ ) on the probability of various coordination choice; at both conditions the rest of the variables are at their means. In case of no alliance, *Component* decreases the probability of *No action* by 32.4% ( $p < 0.01$ ) and increases the probability of *Coordination via structural integration*, by 33.8% ( $p < 0.01$ ). However in case of alliance, the previous effect does not exist anymore. In addition, when there is a component, the marginal effect of *Alliance* on the probability of acquirer exercising *No action* is improved from 9% to 27.9 % ( $p < 0.01$ ); the negative marginal effect of *Alliance* on the probability of acquirer exercising *Coordination via structural integration* improves from 6.9% to 30 % ( $p < 0.01$ ). The results confirm H3b that coordination capacity established by prior alliance negatively moderates the need for an acquirer to exercise mechanisms to provide higher level of coordination when there is component technology.

## 5.1 Robustness check

So far, the estimations have confirmed our arguments on the effect of explanatory variables on acquirer's choice of coordination mechanism on the premise of existing cost-benefit trade-off behind each mechanism. In this respect, the ordered multinomial probit is a reasonable model to include the bounded rationality of the acquirer in prioritizing mechanisms based on the trade-off. In order to check the robustness and strength of our results, we tested our hypotheses when relaxing the bounded rationality assumption and therefore prioritization by applying multinomial probit (not ordered). Table 5 contains all the multinomial probit estimations and the baseline is *No action*. Model V, similar to Model II, contained the three explanatory variables. The results suggest that *Component* increases the likelihood of acquirer's choice on mechanisms to provide higher level of coordination while both *Technological relatedness* and *Alliance* decrease the likelihood of acquirer's choice on mechanisms to provide higher level of coordination. In Model VI and VII, we included the interaction terms. The results confirm our argument on the negative moderating effect of technological relatedness and alliance on the necessity of exercising mechanisms to provide higher level of coordination in case of



component technology. All in all, as expected the results are robust when relaxing the bounded rationality assumption.

## **6. Discussion and conclusion**

The empirical findings of this paper support our argument that acquirers choose their acquisition implementation strategy based on the required level of coordination. Highest level of coordination is not always the best choice as there are costs associated to it. Some are short-term and immediate costs of implementing changes in the organization (Hitt, et al., 1991; Schoar, 2002). Some are long-terms costs related to organizational disruptions and loss of autonomy for the target, which are especially worrisome in acquisitions of small high-tech firms (Haspeslagh & Jemison, 1991; Puranam, et al., 2009). In sum, there is a cost-benefit trade-off for the acquirer in choosing certain mechanisms to provide coordination.

In this paper, we investigated on the antecedents behind the acquirer's choice of coordination mechanisms in acquisition implementation when the target is a small high-tech firm. First, in line with Puranam et al. (2006) and (2009), we found that component - as a form of reciprocal interdependencies between the acquirer and the target - increases the likelihood of *structural integration*. This coordination mechanism provides the highest level of coordination and of the associated costs (Haspeslagh & Jemison, 1991; Pablo, 1994; Van de Van & Delbecq, 1974). As interdependencies demand high level of coordination between the two firms, the acquirer chooses structural integration that provides the necessary level of coordination despite its high costs. However, these costs make acquirer to resort to structural integration only when it is mandatory. If coordination capacity exists between the acquirer and the target before the acquisition, then the acquirer chooses alternative mechanisms, which provide lower level of coordination but maintain the costs at lower level as well. Along this line of reasoning, we argue that technological relatedness between the acquirer and the target can be interpreted as an existing coordination capacity. It increases the absorptive capacity of the acquirer in knowledge transfer (Cohen & Levinthal, 1990; March, 1991) and creates a common ground between the two firms that facilitates coordination (Grant, 1996a; Kogut & Zander, 1992). In line with these arguments, our findings suggest that

when technology relatedness between acquirer and target is high, the acquirer keeps the target as a separate subsidiary and the target's CEO in charge to act as a coordinator. Additionally, the existence of prior alliances between two firms results in creating certain coordination capacity, which the acquirer can leverage in acquisition implementation (Tsai, 2001; Yang, et al., 2011). In other words, when a prior alliance between the acquirer and the target exists, the acquirer tends to keep the target as a separate subsidiary and keep the CEO in charge. The coordination capacity provided by technological relatedness and alliance is considerable enough that even in case of interdependency, structural integration as a desired choice of coordination mechanism loses its benefits over the associated costs for the acquirer.

The paper offers several contributions to the literature of acquisition implementation (Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986; Ranft & Lord, 2000 & 2002; Schrivastava, 1986; Schweitzer, 2005). First, it shows that cost-benefit trade-off drives the acquisition implementation choices of the acquirer. Prior studies have captured mainly the effect of acquisition implementation on post-acquisition performance (See for e.g.: Bauer & Matzler, 2014; Datta & Grant, 1990; Pablo, 1994; Parunchuri, et al., 2006; Puranam, et al., 2006; Zollo & Singh, 2004). However, directly linking acquisition implementation to post-acquisition performance does not give a comprehensive picture in understanding the rationale behind acquisition implementation. In particular, prior works on the topic have overlooked the fact that there is no dominant acquisition implementation strategy and acquirer chooses their strategy based on the required level of coordination (Haspeslagh & Jemison, 1991; Schweitzer, 2005). In our work, we explain the rationale behind the acquirer's choice of acquisition implementation by borrowing concepts from the organization design literature (Mintzberg, 1980; Thompson, 1967; Tushman & Nadler, 1978; Van de Van & Delbecq, 1974). The only exception that focused explicitly on acquisition implementation is Puranam et al. (2009). However, this study presented only a dichotomy of structural integration vs. separation as two choices in front of the acquirer, while in our model we presented that the choice is beyond this dichotomy. A missing element in most of the empirical works on acquisition implementation is the role of target's top executives in general and of CEO in particular as a coordinator in

post-acquisition; the only exceptions are the in-depth case studies by Graebner (2004) and (2009) and Ranft & Lord (2002). The literature on CEO's retention or replacement in post-acquisition is mainly disconnected from that on structural integration. To our knowledge, this is the first paper based on an empirical large sample, which bridges the aforementioned two streams of literature to investigate on the acquirer's rationale behind choices related to acquisition implementation. The empirical studies mainly captured the effect of CEO's departure on post-acquisition performance (Bergh, 2001; Buchholtz, et al., 2003; Cannella & Hambrick, 1993; Hambrick & Cannella, 1993; Wulf & Singh, 2011). Our finding is complementary to this stream of literature by showing that if target CEO stays and acts as a coordinator the costs of implementation specifically those related to loss of autonomy and organizational disruptions is lower and consequently performance is higher.

Finally, we contribute to the literature on acquisitions of small high-tech firms. This literature pays special attention to the effect of technological relatedness on post-acquisition outcome, and have reported positive effect of relatedness (Ahuja & Katila, 2001; Cassiman, et al., 2005; Cloudt, et al., 2006; Grimpe & Hussinger, 2014; Makri, et al., 2010; Sears & Hoetker, 2014). In addition, prior alliance between target and acquirer and its effect on acquisition outcome is another interesting topic in this type of acquisitions. The empirical studies suggested that post-acquisition performance is higher when both firms established an alliance before the acquisition (Porrini, 2004; Yang, et al., 2011; Zaheer, et al., 2010). The findings of this paper on technological relatedness and alliance as coordination capacity complement both streams of empirical studies by proposing a possible explanation on the mechanism behind higher post-acquisition performance. Coordination capacity provided by alliance and relatedness reduces the attractiveness, and consequently the probability of application, of mechanisms that provide higher level of coordination at higher costs caused by loss of autonomy and organizational disruptions. Accordingly, it is reasonable to expect that this coordination capacity is associated with higher post-acquisition outcome.

This study has certain limitations, which also lead into some suggestions for future studies. First, we have only focused on CEO replacement or

retention as the highest rank senior executive of the firm. This approach fits well with the context of acquisitions of small high-tech firms, where the CEO has high-managerial discretion and a strong symbolic role. However, it would be interesting to extend this study further to include top management team replacement or retention as a whole or the effect of certain top executive replacement or retention. As an example, in the context of acquisitions of small high-tech firms, top executives involved in R&D activities (such as the chief technology officer) may play a significant role in post-acquisition implementation. A similar argument holds for the other dimension: structural integration. In line with Puranam et al. (2009), this work takes into account only two forms of integration (structural integration vs. separation), which is common for acquisitions of small firms. However, integration choices are not bounded into total separation or full integration; hybrid approaches are practical in acquisitions of larger firms (Schweitzer, 2005). Therefore, another future area of investigation can be studying more general form of integration. Additionally, it would be of interest to study coordination mechanisms deeper. Particularly, in case of coordination via CEO replacement, further research should investigate on who would be appointed to be in charge of the unit; whether someone from target takes the position or someone from outside is in charge. Finally, in this study we did not differentiate between CEOs based on their individual characteristics, skills and capabilities. Especially in small high-tech firms, it is likely that CEOs may have firm specific human capital such as technological know-how and technical skills. More specifically, some CEOs are also founder of the company or patent holders, and acquirer may perceive these individuals as key personnel, which increases the probability of their retention in post-acquisition. Thus, it is interesting to disentangle the effect of these CEOs from professional CEOs when studying CEO replacement or retention as a coordination mechanism.

## 7. References

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Table 1: The variable description

<b>Variable</b>	<b>Definition</b>
Acquirer's coordination choice	It is a categorical variable: No action: if target's CEO stays after the acquisition and the target is kept as a separate subsidiary. Coordination via target's CEO replacement: if target's CEO is replaced while still it is kept as a separate subsidiary. Coordination via structural integration: if the target is structurally integrated.
Technological relatedness	It is measured as total number of common SIC codes between target and corresponding acquirer IPC family class divided by total number of target assigned SIC code
Component	It is equal to 1 if the acquirer intends to integrate certain target's technological artifact to its current product or on-going product development and 0 otherwise
Alliance	It is equal to 1 if target and acquirer have a prior alliance and 0 otherwise.
Product relatedness	It is measured as total number of common SIC codes between target and acquirer in the third digit level.
Target public	It is equal to 1 if target is a public company and 0 otherwise.
Target size	It is measured as total number of employees.
Relative size	It is measured as target number of employees divided by the acquirer number of employees.
Exploitation	It is equal to 1 if the target has patent, product or a prototype prior to the acquisition and 0 otherwise.
Target age	It is the target age in terms of years between the foundation year and acquisition year.
High-tech experience	It is measured as natural logarithm of total number of acquirer's prior experience in high-tech sectors, five years prior to the acquisition.
Non-high-tech experience	It is measured as natural logarithm of total number of acquirer's prior experience in non-high-tech sectors, five years prior to the acquisition.
Cross Border	It is equal to 1 if target and acquirer are headquartered in different countries and 0 otherwise.

Table 2: Descriptive statistics and pairwise Pearson correlation matrix

<b>Variables</b>	<b>Mean</b>	<b>S.D.</b>	<b>Min</b>	<b>Max</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>1. Acquirer choice</b>	1.81	0.87	1	3	1											
<b>2. Component</b>	0.18	0.39	0	1	0.17	1										
<b>3. Technological relatedness</b>	0.18	0.36	0	1	-0.1	-0.05	1									
<b>4. Alliance</b>	0.21	0.4	0	1	-0.04	0.28	-0.05	1								
<b>5. Product relatedness</b>	0.54	0.45	0	1	0.08	0.09	0.15	0.01	1							
<b>6. Target public</b>	0.3	0.46	0	1	0.18	0	0.1	0.06	0.14	1						
<b>7. Relative size</b>	0.05	0.09	0	0.46	0.11	-0.01	0.03	-0.06	0.08	0.33	1					
<b>8. Exploitation</b>	0.37	0.48	0	1	0.01	0.18	0.23	0.09	0.1	0.21	0.03	1				
<b>9. Target age</b>	15.29	16.03	0	142	-0.07	-0.04	0.18	-0.04	-0.08	0.03	0.06	0.07	1			
<b>10. High-tech experience (log)</b>	1.98	1.05	0	4.74	0.12	0.06	-0.03	0.09	0.19	0.04	-0.23	0.1	-0.03	1		
<b>11. Non-hightech experience (log)</b>	1.11	1	0	4.3	0.01	-0.08	-0.14	0.04	-0.2	-0.05	-0.22	-0.19	0.02	0.19	1	
<b>12. Cross border</b>	0.37	0.48	0	1	-0.12	-0.02	0.11	-0.03	0.13	-0.24	-0.08	-0.1	0.14	0.04	0.05	1

All the correlations above 0.08 are significant at 10 percent level

Table 3: Estimations of multinomial ordered probit (The baseline is No Action)

VARIABLES	Model I	Model II	Model III	Model IV
Component		0.760*** (0.161)	0.973*** (0.182)	1.023*** (0.224)
Technological relatedness		-0.457* (0.244)	-0.316 (0.243)	-0.424* (0.245)
Alliance		-0.477*** (0.175)	-0.485*** (0.175)	-0.264 (0.212)
Technological relatedness × Component			-1.244*** (0.413)	
Alliance × Component				-0.629* (0.365)
Product relatedness	0.124 (0.147)	0.099 (0.152)	0.085 (0.157)	0.113 (0.153)
Target public	0.260* (0.138)	0.417*** (0.141)	0.478*** (0.146)	0.430*** (0.143)
Relative size	1.470** (0.695)	1.233* (0.705)	1.102 (0.720)	1.277* (0.720)
Exploitation	0.158 (0.149)	0.145 (0.154)	0.094 (0.154)	0.141 (0.154)
Target age	-0.006 (0.005)	-0.006 (0.005)	-0.007 (0.005)	-0.006 (0.006)
High-tech experience (log)	0.260*** (0.078)	0.257*** (0.079)	0.255*** (0.078)	0.269*** (0.080)
Non-hightech experience (log)	-0.191** (0.083)	-0.182** (0.083)	-0.190** (0.082)	-0.172** (0.084)
Cross border	-0.347** (0.164)	-0.389** (0.155)	-0.372** (0.155)	-0.397** (0.156)
Industry & Time dummies	Included	Included	Included	Included

Constant cut (1)	-0.012 (0.526)	-0.34 (0.548)	-0.369 (0.540)	-0.297 (0.555)
Constant cut (2)	0.594 (0.523)	0.294 (0.549)	0.274 (0.540)	0.341 (0.554)
Observations	403	403	403	403
Log likelihood	-378.9	-366.5	-363.2	-364.9
DF	22	25	26	26
Chi2	66.25	95.51	104.6	96.71

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4a: Marginal effect of independent variables without the interactions for the ordered multinomial probit (Model II)

VARIABLES	No Action	Coordination via Target CEO Replacement	Coordination via Structural Integration
Component	-0.257*** (0.052)	0.037*** (0.012)	0.220*** (0.045)
Technological relatedness	0.154* (0.082)	-0.022* (0.013)	-0.132* (0.070)
Alliance	0.161*** (0.058)	-0.023** (0.010)	-0.138*** (0.050)
Product relatedness	-0.033 (0.051)	0.005 (0.008)	0.029 (0.044)
Target public	-0.141*** (0.046)	0.020*** (0.008)	0.121*** (0.040)
Relative size	-0.417* (0.238)	0.059 (0.038)	0.357* (0.203)
Exploitation	-0.049 (0.052)	0.007 (0.008)	0.042 (0.045)
Target age	0.002 (0.002)	-0.001 (0.001)	-0.002 (0.002)
High-tech experience	-0.087*** (0.026)	0.012*** (0.004)	0.075*** (0.023)
Non-hightech experience	0.062** (0.028)	-0.009* (0.005)	-0.053** (0.024)
Cross border	0.131** (0.051)	-0.019** (0.009)	-0.113** (0.044)
Observations	403	403	403

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Table 4b: Marginal effects of Component and alliance considering the interaction terms on acquirer's decision regarding the choice of coordination (ordered multinomial probit)

Variables	No Action	Coordination via Target CEO Rep.	Coordination via Structural Integ.
	component=1		
Technological relatedness=0	-0.314***	-0.006	0.320***
Technological relatedness=1	0.083	-0.029	-0.054**
Alliance=0	-0.324***	-0.015	0.338***
Alliance=1	-0.135	0.028	0.107
	alliance=1		
Component=0	0.090	-0.021	-0.069
Component=1	0.279***	0.022	-0.300***

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

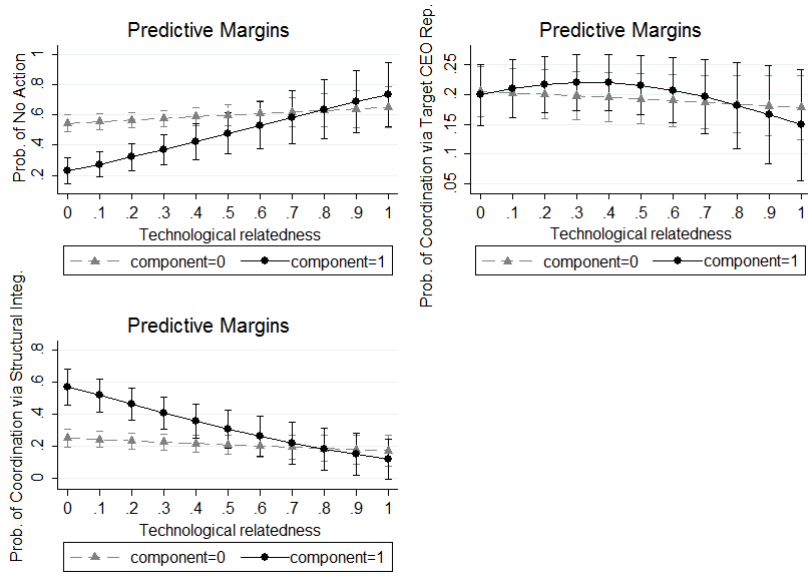


Figure 1: Predictive Marginal Effect of Technological relatedness at Two Regimes of Component=0 & Component=1 (ordered multinomial probit)

Table 5: Estimations of multinomial probit for robustness check (The baseline is No Action)

VARIABLES	Model V		Model VI		Model VII	
	Coordination Via Target CEO Replacement	Coordination Via Structural Integration	Coordination Via Target CEO Replacement	Coordination Via Structural Integration	Coordination Via Target CEO Replacement	Coordination Via Structural Integration
Component	0.470 (0.291)	1.272*** (0.263)	0.509 (0.330)	1.608*** (0.293)	0.636 (0.404)	1.704*** (0.352)
Technological relatedness	-0.989** (0.422)	-0.634 (0.424)	-0.944** (0.442)	-0.373 (0.420)	-0.964** (0.420)	-0.556 (0.431)
Alliance	-0.318 (0.287)	-0.794*** (0.295)	-0.305 (0.288)	-0.795*** (0.299)	-0.244 (0.334)	-0.432 (0.354)
Technological relatedness x Alliance x Component			-0.156 (0.658)	-2.852*** (0.849)	-0.323 (0.590)	-1.039* (0.593)
Product relatedness	-0.169 (0.284)	0.209 (0.254)	-0.152 (0.284)	0.218 (0.265)	-0.165 (0.283)	0.244 (0.256)
Target Public	0.736*** (0.255)	0.689*** (0.239)	0.753*** (0.258)	0.799*** (0.248)	0.732*** (0.254)	0.707*** (0.241)
Relative size	-0.191 (1.272)	1.893* (1.081)	-0.195 (1.290)	1.739 (1.116)	-0.124 (1.275)	2.013* (1.111)
Exploitation	0.321 (0.259)	0.194 (0.251)	0.303 (0.260)	0.098 (0.256)	0.323 (0.260)	0.192 (0.253)
Target age	0.001	-0.014	0.001	-0.015	0.001	-0.014

High-tech experience (log)	(0.001) 0.140 (0.106)	(0.010) 0.412*** (0.129)	(0.009) 0.144 (0.106)	(0.010) 0.414*** (0.128)	(0.009) 0.147 (0.106)	(0.010) 0.427*** (0.131)
Non-hightech experience (log)	-0.292** (0.141)	-0.266* (0.138)	-0.288** (0.141)	-0.264* (0.137)	-0.285** (0.142)	-0.239* (0.140)
Cross border	-0.362 (0.264)	-0.621** (0.257)	-0.359 (0.265)	-0.620** (0.262)	-0.365 (0.265)	-0.643** (0.258)
Industry & Time controls	Included	Included	Included	Included	Included	Included
Constant	-0.253 (0.902)	0.0493 (0.881)	-0.284 (0.897)	0.0257 (0.869)	-0.301 (0.901)	-0.0691 (0.888)
Observations	403	403	403	403	403	403
Log likelihood	-349.2	-349.2	-344.8	-344.8	-347.6	-347.6
DF	50	50	52	52	52	52
Chi2	129.1	129.1	149.3	149.3	130.5	130.5

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Paper C

# Paper C

## **Antecedents of target CEO departure in post- acquisitions: *The leading role of founder***

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*Presented in DRUID conference in Denmark  
January 2014*

*Presented in R&D management in Italy, July  
2015*

## **Abstract**

*This study investigates on firm specific human capital of target CEOs in small high-tech firms as the antecedent of their retention after the acquisition. The main finding of the paper is that acquirers are willing to keep the founder-CEOs because of their valuable embedded human capital. This value is to the extent that founder-CEOs compare to professional CEOs have a higher chance of retention when relatedness between acquirer and target is high or when the acquirer structurally integrates the target after the acquisition; the two conditions that general managerial skills and industry specific skills of the CEOs are not of interest for the acquirers. Also the value of firm specific human capital depends on the maturity of the target. The value diminishes as the target is more mature at the time of acquisition. This research is based on empirical analysis of acquisition of small high-tech firms between 2001 and 2005.*

# 1. Introduction

In technological acquisitions, scholars have studied their CEOs' status after the deal. Literature suggests that CEOs if kept in post-acquisition provide coordination capacity for the acquirer to transfer the knowledge and technology from the target to the acquirer while minimizing the disruptive effect of acquisition (Graebner, 2004; Graebner, et al., 2010 and Ranft & Lord, 2002). In addition, the acquirer benefits from human capital embedded in CEOs; especially in high-tech and knowledge intensive firms where they might be founders or patent holders (Buchholtz, et al., 2003; Coff, 2002; Wulf & Singh, 2011).

The empirical studies have provided evidence for the aforementioned arguments by showing that CEO's turnover causes decline in post-acquisition performance (Cannella & Hambrick, 1993; Krishnan, et al., 1997; Walsh, 1989; Zollo & Singh, 2004). However, multiple empirical studies reported abnormal CEO's turnover shortly after the acquisition (Cannella & Hambrick, 1993; Iverson & Pullman, 2000; Kiessling & Harvey, 2006; Krishnan, et al., 1997; Walsh, 1988). Some prior studies interpreted the turnover via agency theory and market for corporate control (See for e.g. Bergh, 2001 and Walsh, 1988). We believe such attempts had limited applicability. Firstly, not all of the studies found evidence of acquisition for disciplining CEOs (See for e.g. Walsh & Ellwood, 1991 and Walsh & Kosnik, 1993). Secondly, and more importantly, in technological acquisitions, the implicit assumptions behind the aforementioned theories such as separation of ownership and control are not valid as most of the acquisitions include small private firms managed by owner-managers. Additionally, many of the firms are managed by their founders and stewardship explains better the behavior of founder-CEOs rather than agency theory (Gao & Jain, 2012).

Alternatively, the second stream of literature investigates on the turnover from human capital and RBV perspective. The value of the CEO's human capital for the acquirer determines the turnover in post-



acquisition period (Buchholtz et al. 2003; Wulf & Singh, 2011). Becker (1965) differentiates between generic and specific human capital. We believe that human capital perspective brings interesting insights to study the target's CEO turnover in technological acquisitions because the so called specific human capital of CEOs in high-tech firms in general is higher and more important on firm's survival and growth (Beckman & Burton, 2008). In particular, in case of founder-CEO, her firm specific human capital would be stronger and perhaps more valuable for the acquirer. Based on the literature of founder-CEO (Gao & Jain, 2012; He, 2008; Wasserman, 2003 & 2006), managerial human capital (Castania & Helfat, 1991 and 2001; Coff, 2002), and post-acquisition implementation literature (Graebner, 2004; Haspeslagh & Jemison, 1991; Ranft & Lord, 2002) this paper tries to explain founder-CEO's turnover from human capital perspective. The three overarching interrelated research questions of this paper are: "All else being equal is there any difference between professional and founder-CEO turnover in post-acquisition period?" and if so "What makes the difference in turnover between professional and founder-CEO?" and finally "Under what circumstances, acquirer keeps the founder-CEO?"

Acquisition of small firms in high-tech industries is interesting empirical setting to answer to the aforementioned questions. Because in the literature it is customary to define technological acquisitions as acquisition of firms in high-tech sectors (See for e.g. Graebner et al. (2010) and Puranam et al. (2009)). In addition, as expressed earlier, smaller high-tech firms are replete with founder-CEOs, which fits well with the research questions. This research is based on empirical analysis of small high-tech acquisitions between 2001 and 2005 that the acquirer and the target are headquarter in Europe or USA.

The first finding of the paper indicates that founder-CEOs have lower turnover rate compare to non-founder CEOs in post-acquisition. We argue that the reason behind such difference is related to the uniqueness of the firm specific human capital of founder CEOs that help acquirers to manage post-acquisition implementation. The second finding of this paper is that the value of founders' firm specific human capital is to the extent that acquirers are willing to keep them when the targets are absorbed or relatedness between the two firm are high; the two conditions that respectively generic and industry specific human capital

of the CEOs are not of interest for the acquirers. Moreover, the value of founder-CEOs' firm specific human capital is contingent to maturity of the target at the time of acquisition. Maturity reduces the value of the firm specific human capital.

The paper makes several contributions to the literature. First, it contributes to the literature on CEO turnover in post-acquisition by differentiating founder from non-founder CEOs on the acquirers' willingness to keep them. Second, the paper contributes to the founder-CEO succession literature, by offering new insights on the founder's turnover. To our knowledge all the studies focus on the founder-CEO succession as a result of firms' organic growth, our study extends this literature by studying succession as a result of exit mode (acquisition). The third contribution is to managerial human capital, by showing that human capital is valuable for a firm if it fits to the firm's resources. Finally, this paper's contribution is its unique settings of private, and small targets in national and international acquisitions unlike most of the studies conducted on national acquisition of public local firms. Recently it is argued by some scholars that our knowledge and understanding of issues around M&As restricted to acquisition of public mainly US firms while the majority of acquisitions occur in small, private firms (Krug et al., 2014). From this standpoint, we believe the findings of this paper contribute to the general body of M&A literature.

## **2. Theoretical background**

Scholars have been interested on studying the role of the target's CEO in post-acquisition since the pioneering work of Kitching (1967). Multiple empirical studies reported significant CEOs' turnover after the acquisition both domestically and internationally (Cannella & Hambrick, 1993; Iverson & Pullman, 2000; Kiessling & Harvey, 2006; Krug & Hegarty, 2001; Lubatkin, et al., 1999; Mikkelsen & Partch, 1997; Walsh, 1988 & 1989; Walsh & Ellwood, 1991). For instance, the first empirical work on the target's CEO turnover is Walsh (1988), which reported that US targets often lose about two-thirds of their CEOs in five years period after the acquisition. Since then other empirical studies also confirmed the same turnover rate. Accordingly many researches attempts to ascertain what drive the turnover and if possible to predict

who stays and who leaves after the acquisition (See for e.g. Bergh, 2001). In this regard, there are three streams of research; in the following they are presented.

First stream investigates on turnover from market for corporate control and agency theory perspectives (Jensen, 1986; Jensen & Meckling, 1976; Jensen & Ruback, 1983). Acquirer replaces the target's CEO after the acquisition because of prior poor performance and principal-agent conflicts of interest (Walsh & Ellwood, 1991; Walsh & Kosnik, 1993). This conflict encourages the acquirer to replace the target's CEO to avoid any resistance against the post-acquisition changes or at least to restrict the CEO's control and power (Buccholtz & Ribbens, 1994; Cannella & Hambrick, 1993; Walsh, 1989). The demotion in post-acquisition (because of loss of power, control, and autonomy) motivates the CEO to leave the firm after the acquisition (D'Aveni & Kesner, 1993; Hambrick & Cannella, 1993; Lubatkin, et al., 1999; Very, et al., 1997). Although based on market for corporate control and agency theory, it is expected that the departure of the target's CEO improves post-acquisition performance; empirical studies did not find strong evidence of it. Empirical studies mostly reported performance decline when there is a high rate of CEO's turnover (Cannella & Hambrick, 1993; Krishnan, et al., 1997; Shanley & Correa, 1992; Very, et al., 1997; Walsh, 1989; Zollo & Singh, 2004).

The second stream of literature, based on RBV, focuses on human capital of the target's CEO to explain the turnover. The main premise is that acquisitions are external means to obtain necessary resources for the acquirer to provide competitive advantage (Barney, 1991 and Coff, 1997). Managerial human capital is part of the resources of the target (Carpenter, et al., 2001; Castanias & Helfat, 1991 & 2001; Coff, 1997 and 2002). This human capital can be any combination of knowledge, skill, ability or other characteristics, known as KSAOs (Ployhardt & Moliterno, 2011). To the extent that the human capital is unique to the acquirer, the likelihood of turnover reduces in post-acquisition (Krug, et al., 2014). In acquisition of high-tech firms the two key elements are technology and knowledge (Ahuja & Katila, 2001; Kapoor & Lim, 2007; Parunchuri, et al., 2006; Ranft & Lord, 2002). The knowledge is tacit, dispersed and embedded inside the individuals (Grant, 1996; Kogut & Zander, 1992). Therefore acquisition of human capital is the key

element for the acquirer to access to the target's knowledge and technology.

The earliest comprehensive work on the human capital<sup>1</sup> is the study of Becker (1964), in which managerial human capital is classified into three main categories, namely: firm specific, industry specific and generic skills. The later works of Castanias & Helfat (1991) and (2001) and Harris & Helfat (1997) based on such classification, suggested that human capital specificity of top managers (here CEO) determines the desirability of them for a firm. In addition, managerial compensation is also a function of such specificity. Most of the prior empirical studies on human capital of CEO and succession (or hire) and compensation is based on such premise and applied Becker (1964) human capital categorization (See for e.g. Boeker & Fleming, 2010; Boeker & Karichalil, 2002; Buchholtz et al., 2003; Carpenter et al., 2001; Colombo & Grilli, 2005; Jayaraman et al., 2000; Wulf & Singh, 2011). The value of the CEO's human capital like any other resources depends on its fit with other the firm's internal resources (Castanias & Helfat, 1991; Ployhardt & Moliterno, 2011). From this viewpoint, certain human capital of a CEO is valuable for one firm, while it is not necessarily valuable for the other firm. Recently Mackey, Molloy, & Morris (2013) has shown that managers with scarce and unique human capital are more likely to join resource rich firms. Similarly managers with turnaround skills are more likely to join firms in crisis (Harris & Helfat, 1997).

Firm specific human capital is the skill that is not transferrable and applicable to other firms. Industry specific human capital is the skill that is transferrable to other firms within the industry however it is not transferrable to the firms in other industries. Finally, generic human capital is the skill that is transferrable and applicable to other industries as well as other firms (Castanias & Helfat, 1991). Based on the specificity of the human capital, there is a hierarchy in the CEO's human capital, generic human capital is the baseline, and firm specific human capital is on the top of hierarchy (Harris & Helfat, 1997). All the CEOs are

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<sup>1</sup> In this paper similar to Buchholtz et al (2003), Helfat & Harris (1997), and Wulf & Singh (2011), we use the term human capital and skill interchangeably.

required to possess certain combination of all three categories. Generic managerial skills such as decision making, leadership and information processing help the CEO to increase the profitability of the firm. Industry specific skills help the CEO to understand the industry trends, competitors, suppliers and customers. Firm specific skills help the CEO to know the history, organizational structure, culture and strength and weakness of the firm (Castanias & Helfat, 1991; Carpenter et al., 2001).

In acquisition literature, target's CEO as part of the firm's human capital was the focus of many studies. Following Becker (1964) human capital categorization, acquirer desires to keep the target's CEO depending on how valuable and unique her human capital is for the acquirer (Buchholtz et al., 2003). For instance, Wulf & Singh (2011) asserted that the targets' CEOs whom in pre-acquisition received higher salary as an indicator of human capital are more likely to stay in post-acquisition. In the similar vein, Buchholtz et al. (2003) showed that in unrelated acquisitions, acquirers find the industry specific human capital of targets' CEOs valuable and unique, and increases the chance of their retention. In acquisitions, the firm specific human capital of the target's CEO such as knowledge over the organizational structure, routines, history is valuable and unique for the acquirer, because this type of human capital is directly link to post-acquisition implementation costs.

Post-acquisition literature have attempted to link CEO's turnover and decline in post-acquisition performance by proposing a process view to the acquisition in that after the deal is closed, necessary organizational changes (for e.g. integration) begin. Any miscarry in implementing the post-acquisition changes results in decline of performance (Haspeslagh & Jemison, 1991; Jemison & Sitkin, 1986). From this standpoint, many studies have highlighted the role of the target's CEO to facilitate the integration process and organizational changes, if get involved and participate actively in post-acquisition process (Graebner, 2004 and 2009; Ranft & Lord, 2002). The benefits of the target's CEO involvement in post-acquisition implementation process is related to her firm specific human capital: First, the implementation process diverts acquirer's managerial resources from the acquirer's daily operation and its core business (Hitt, et al., 1991; Schoar, 2002); the target's CEO is a reasonable candidate to be in charge of the change which liberate the acquirer's managerial resources. In addition, if the

target's CEO stays, the cost of implementation becomes lower for the acquirer as she has better knowledge over the target's organizational structure and makes smoother but more effective changes inside the target (Bergh, 2001; Graebner, 2004; Very, et al., 1997). Third, organizational disruptions reduce the employees' productivity and loss of autonomy and also bring about lack of commitment and demotivation among the employees, which ultimately have negative influence on post-acquisition performance (Ranft & Lord, 2002). In acquisition of high-tech firms the costs imposed to the acquirer due to organizational disruptions and loss of autonomy would be more severe (Graebner et al., 2010; Puranam et al., 2009). As the knowledge is tacit and embedded in target's employees, their departure due to loss of autonomy and demotivation consequently lead to loss of knowledge for the acquirer (Coff, 1999; Grant, 1996; Kogut & Zander, 1992; Ranft & Lord, 2002). Even if loss of autonomy does not cause turnover, empirical studies show that at least the demotivation and lack of commitment lower their productivity in terms of R&D outputs (Kapoor & Lim, 2007; Parunchuri et al., 2006). If the target's CEO stays after the acquisition, she can alleviate the negative effect of organizational disruptions and demotivation of employees in high-tech acquisitions (Graebner et al., 2010). All this suggests that the firm specific human of the target's CEO is valuable for the acquirer to manage post-acquisition changes and moderate the negative effect of organizational disruptions. For this reason we argue that the firm specific human capital of the target's CEO is relatively more valuable than industry specific and generic human capital especially in acquisition of high-tech firms, which technology and knowledge transfer are important for the acquirer.

High-tech industries are replete with many new ventures, which managed with founder-CEOs. The post-acquisition turnover of founder-CEOs is interesting for the following two reasons: First, a founder-CEO owns larger portion of her company's equity (He, 2008). Thus, the so called ownership and control schism that exists in larger companies which is the main concern of agency theory is not equally important for studying this type of CEOs (Wasserman, 2003 and 2006). Second, from human capital perspective, founder-CEO's firm specific human capital is unique, as she found the firm. If our argument regarding acquirer places higher value for firm specific human capital is correct, then we should

be able to provide its evidence in founder-CEO's retention in post-acquisition. Additionally, considering the notion of fit between human capital and the firm, it is interesting to investigate on contingencies that make the fit (or misfit) between the acquirer and the firm specific human capital of the founder-CEO as determinant of turnover. In this regard, in the next session we articulate set of hypotheses to indicate whether the firm specific human capital of founder-CEO is more valuable than industry specific and generic human capital for the acquirer. In addition, we try to investigate on under what circumstances it loses its value for the acquirer.

## **2.1 Founder-CEO and specific human capital**

Based on the founder-CEO succession literature, founder-CEOs possess higher firm specific human capital from three sources compare to professional CEOs which are insightful in determining their post-acquisition departure or retention. First, unlike professional CEOs who may behave as self-serving agents implied by agency theory, founder-CEOs put the firm's goals and interests as the first priority implied by stewardship theory (Gao & Jain, 2012). This difference in behavior makes the first unique firm specific human capital of a founder-CEO that is the psychological attachment and stronger commitment to the firm (Arthurs & Busenitz, 2003; Gimeno et al, 1997). From human capital view, founder-CEO devotes more of her time, energy and skills to survival and growth of the firm. Additionally, founder-CEOs unlike professional CEOs are owner of their firms. The ownership also contributes to their stronger commitment.

Second a founder-CEO has a deeper knowledge about the technology developed inside the firm. Founder CEO may have certain technical competencies and technological know-how, for instance holding a patent or being part of product development team (Boeker & Karichalil, 2002). Besides that, a founder CEO has deeper understanding of the process within which technologies developed inside the firm compare to the CEO who joined the company later (He, 2008).

The third source of firm specific human capital is related to the so called founder imprinting effect on the firm. As the founder-CEO sets the initial organizational structure, strategy and routines of the firm in the

early phase, the founder's organizational blueprint persists across the organization in adopting certain decisions and practices long after the firm grows (Baron et al., 1999). According to upper echelon theory (Hambrick & Manson, 1984), CEO's individual characteristics influence firm's corporate strategy, organizational structure, and routines. In this regard, Dobrev & Barnett (2005) postulates that founder-CEO's identity and their firms' organizational identity is tightly linked together, although the linkage depreciates as the firm grows. This suggests that founder-CEOs have invaluable firm specific human capital related to the firm's structure, resources, routines, history and strength and weakness. The secondary effect of the tie between the founder and organizational identity is the unique power of the founder in the firm, which brings about charismatic influence over the employees (Dobrev & Barnett, 2005).

In acquisition, the founder-CEO's firm specific human capital related to a comprehensive knowledge over the procedures, history and routines of the target position them uniquely for the acquirer. Also the charismatic human capital resulted from the individual-organizational bond plays significant role in persuading the key personnel to stay in post-acquisition. Consequently, founder-CEOs have advantage over professional CEOs to manage the transitional period in post-acquisition (Graebner, 2009). All in all, the founder-CEO's firm specific human capital makes them invaluable for the acquirer, thus:

*H1: In acquisition of small high-tech firms, if the target's CEO is a founder the likelihood of CEO departure decreases in post-acquisition.*

## **2.2 M&A contingencies**

The value of human capital for a firm depends on the availability of human capital either inside the firm or in the labor market. From this standpoint, value of a CEO for a firm depends on the uniqueness of her skills and expertise for the firm (Frederickson et al., 1988). In acquisition, the value of the target's CEO for the acquirer depends on the internal availability and uniqueness of such skills and expertise (Buchholtz et al., 2003; Wulf & Singh, 2011). Relatedness, as a measure of the acquirer and target overlapping area of expertise and knowledge, indicates the extent of target's human capital uniqueness for the



acquirer (Coff, 1997 and 2002). When relatedness is low, acquirer has limited knowledge of the target's industry and respectively the target's CEO is a strong candidate for the acquirer; conversely when relatedness is high, acquirer has extensive knowledge of the target's business, and respectively the acquirer's dependency on the target's CEO is lower. Put it differently, relatedness reduces the specificity of industry specific human capital of the target's CEO for the acquirer (Buchholtz et al., 2003).

Additionally, relatedness, if seen as the extent of shared knowledge and expertise between two firms, indicates the level of absorptive capacity of the firms (Zahra & Nielsen, 2002). In acquisition of high-tech firms, as the knowledge is tacit and embedded in the human capital, relatedness fosters communication and knowledge transfer from the target to the acquirer (Grant, 1996; Kogut & Zander, 1992). The secondary effect of absorptive capacity is increasing the capability to assess the new knowledge (Zahra & George, 2002). In this regard, relatedness helps acquirers to have better assessment of targets' knowledge embedded in human capital (Epple et al., 1991). In other words, relatedness increases the acquirer's assessment of firm specific human capital of the target's CEO. Similarly, in case of founder-CEOs, when relatedness is high, we expect that the acquirers are more aware of the value of their firm specific human capital, and consequently are more willing to keep the founder-CEOs in post-acquisition. From this standpoint, although the literature argues relatedness decreases uniqueness of the CEOs' industry specific human capital for the acquirers, in case of founder-CEOs and acquisition of small high-tech firms, we argue that this effect is weaker. Therefore:

*H2a: In acquisition of small high-tech firms, if the target's CEO is a founder the positive effect of relatedness on the target's CEO departure in post-acquisition is weaker.*

As stated earlier in acquisition of small high-tech firms, the main element is knowledge transfer, which usually is tacit and dispersed among the employees (Ahuja & Katila, 2001; Grant, 1996; Kogut & Zander, 1992; Parunchuri et al., 2006; Puranam & Srikanth, 2007). Coordination plays an integral role in knowledge transfer (Argyres, 1995). In post-acquisition, it is necessary for the acquirer to provide

coordination capacity for such transfer from the target to the acquirer. Post-acquisition literature suggests several mechanisms for the acquirer to provide required level of coordination. One mechanism for the acquirer is absorbing the newly bought unit (Haspeslagh & Jemison, 1991). In case of absorption, the acquirer structurally integrates the target to the rest of its organization. Absorption provides the highest level of coordination for the acquirer via defining common goals, procedures and authorities; at the same time, it brings about high cost as it permanently destroys organizational routines and autonomy of the target, which ultimately can result into demotivation and lower productivity at least for some times after the acquisition (Puranam et al., 2009; Puranam & Srikanth, 2007; Zollo & Singh, 2004). Alternatively, the acquirer can keep the target as a separate subsidiary; in this case the autonomy and organizational routines of the target are left intact, at the expense of lower coordination (Haspeslagh & Jemison, 1991). Target's managerial resources, in particular, the CEO can act as a coordinator (soft coordination) for the acquirer if stay after the acquisition (Graebner, 2004; Ranft & Lord, 2002).

If the acquirer decides to absorb the target to provide the coordination capacity, then common goal, procedures and authority provided by such mechanism makes soft coordination role of the target's CEO redundant. Thus, absorption increases the probability of the CEO's turnover. From human capital point of view, we can interpret the case of absorption as the condition that acquirer does not rely on generic managerial skills of the target's CEO to act as a coordinator between the two firms. In case of founder-CEO however, when the acquirer decides to absorb the target, still specific human capital of this type of CEOs is valuable. In this case, founder-CEO should be considered as one of the key personnel that prior to the acquisition played an integral role in the target's technological development. Henceforth, in case of founder-CEOs we expect weaker relation between absorption and her turnover. Therefore:

*H2b: In acquisition of small high-tech firms, if the target's CEO is a founder the positive effect of absorption on target's CEO departure in post-acquisition is weaker.*

### **2.3 Firm maturity as contingency**

Maturity of firms is yet another important factor in founder-CEO succession (Certo et al., 2001). Based on the organizational life cycle literature, new venture evolves as they grow, their organizations move away from entrepreneurial form and become more complex (Boeker & Karichalil, 2002; Schoonhoven et al., 1990). The growth and complexity require different type of managerial skill compare to the entrepreneurial stage. Founder-CEOs do not possess such skills. Consequently as the firm transforms, the necessity of founder substitution with more professional CEO increases (Haveman & Khaire, 2004; Jayaraman et al., 2000; Wasserman, 2003). In addition, as the firm moves away from entrepreneurial stage, the tasks are more well-defined, goals are clearer and divisions are more demarcated (Eisenhardt & Schoonhoven, 1990). This also suggests founder-CEO's control over the firm's organization and its daily operation reduces as the firm grows. Therefore, the value of firm specific human capital of founder-CEOs become less important compare to general managerial human capital as the new venture grows.

In acquisition, when the target is mature, acquirer's assessment over the daily operation and organizational structure of the target becomes clearer. In addition, task specialization and clearer routines suggest that the knowledge is easier to transfer from one unit to another unit (Grant, 1996). Therefore, in acquisition of high-tech firms, knowledge transfer from the target to the acquirer is smoother and more efficient. Henceforth, the reliance on the CEO to act as coordinator between the target and acquirer reduces as the target moves away from entrepreneurial stage. All in all, founder-CEO's firm specific human capital becomes less valuable for the acquirer to manage post-acquisition knowledge transfer.

The literature on organizational life cycle suggests two different (and to some extent intertwined) proxies for measuring maturity of an organization: age and size (Boeker & Karichalil, 2002; Certo et al., 2001; Haveman & Khaire, 2004; Jayaraman et al., 2000). Here we apply both proxies and arguing that as the target ages and grows in size, the acquirer's dependence on founder-CEOs' firm specific human capital reduces. Therefore:

*H3a: In acquisition of small high-tech firms, if the target is older, the negative effect of founder on the likelihood of CEO departure decreases in post-acquisition is weaker.*

*H3b: In acquisition of small high-tech firms, if the target is larger, the negative effect of founder on the likelihood of CEO departure decreases in post-acquisition is weaker.*

Figure 1 depicts an overview of the proposed hypotheses. In the following section, the method of testing the hypotheses including data collection, sampling, and description of variables is explained.

### **3. Method**

In this work we focus our attention on acquisitions of small high-tech firms made by large listed firms in the period 2001-2005. In order to build the acquisition sample, we relied on two databases widely used in the empirical acquisition literature: SDC Platinum merger and acquisition section and Zephyr belong to Bureau Van Dijk. We selected all acquisitions that meet the following criteria.

First, the target belongs to high-tech industries which conformed to OECD (1997) definition with the exclusion of aerospace and defense as few small firms operate in those industries. Accordingly, a firm actively operates in one of the following sectors, are considered to be high-tech: Drugs (283), Computer and office equipment (357), Electronic and other electrical equipment and components except computer equipment (36), Instruments (38) and Software programming (737). The SIC codes are available at both SDC Platinum and Zephyr. Second, as the main attribute of this study is acquisition of small firm by large firm, following Puranam & Srikanth (2007) and Puranam et al. (2009) we used headcounts of employees. Accordingly, the targets and acquirers should employ respectively less than 500 and more than 1000 personnel at the time of acquisition.<sup>2</sup> Third, acquirers were listed in a stock exchange while targets were both consist of listed and not listed firms. Fourth, the acquirer should own 100% of the equity capital of the

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<sup>2</sup> Since the majority of target and acquirer in the population are headquartered in USA, we define small and large firms according to USA Small Business Administration norm.

acquired firms after the acquisition. Finally, both firms were headquartered either in the USA or in the EU, as the two database used for identifying M&A in this work offer considerable lower coverage of acquisitions in other countries. Additionally, the availability of individual information related to CEOs is considerably lower when it comes to other countries especially for small private firms. Overall, 749 acquisitions met the above criteria. In 67% of the acquisitions found in SDC Platinum, the acquired firm was located in the US, while this figure is only 41% for Zephyr.

In order to understand the events related to the acquisition between acquisition announcement and effective date, the related news in the published online journals, daily newspapers and professional industrial magazines are used. Lexis Nexis is the database chosen to retrieve related news. These pieces of articles contain valuable information about the motivations behind the acquisition, top executives personal information, their titles and reflections about the acquisition from target and acquirer, as well as the acquirer's further decision related to formal organizational structure (Ahuja & Katila, 2001). In total, news was gathered and variables were codified for 590 deals. In order to check the validity of codified variables from the news two researchers independently codified them and the correlation between codifications is above 90%. After checking the discrepancies the correlation improved to 100%. Information related to accounting data and firms' characteristics such as foundation year and size were gathered from Orbis belong to Burea Van Djik.

In the next step, the individual data related to CEOs were collected. Initially, the target CEO's names were gleaned from their interviews and public statements about the acquisition in the news as well as searching for the name of the CEO from Bloomberg Businessweek Company Database. Then by cross searching the names in Capital IQ, Bloomberg Businessweek People database and LinkedIn for each CEO a personal CV was gathered. In some cases that CVs lack information, we have been able to extract additional information from other sources such as company's webpage. The variables related to the individuals such as age, tenure in the target, and their time of departure from the target were codified from the CVs. Due to unavailability of data for some

individuals, the final sample limited to 420 deals. In the following the description of the variables and their constructs are described.

**Dependent variable:** *CEO departure* is constructed following Bergh (2001), Cannella & Hambrick (1993), and Wulf & Singh (2011) as a binary variable defined as 1 if the CEO is departed from the combined entity two years after the acquisition and 0 otherwise (departure). The information related to CEO's decision of departure or stay is gleaned from their CVs. Initially the name of the CEO of target was identified from the news related to the focal acquisition and Bloomberg Businessweek People database. Then CVs were hand collected from Capital IQ and Bloomberg Businessweek People database for each identified name and later cross checked with the individual's LinkedIn page if available. Using two direct sources for each individual and LinkedIn increases the validity of the data collected.

**Independent variable:** *Founder* is a binary variable that equals 1 if the CEO of target was also founder of the firm, and 0 otherwise. The variable is constructed from the collected CVs.

**Other variables:** The first variable, *Product relatedness* reflects on the extent of the overlap of the operations of the target with those of the acquirer. Following Puranam and Srikanth (2007) it was calculated as the number of 3-digit SIC codes common to acquirer and target divided by the total number of 3-digit SIC codes assigned to the target. In order to test H2b, the second independent variable is an interaction term between founder and product relatedness (*Founder* × *Product relatedness*).

The second variable of interest is *Absorption*. It is a binary variable which equals to 1 if following the acquisition; the target is structurally integrated within the organization of the acquiring firm, while it equals 0 if it is maintained as a separate subsidiary that is the acquired firm became an autonomous subsidiary or business unit of the acquiring firm. Following Paruchuri et al (2006) and Puranam et al (2009), we applied two methods to codify this variable from the news:

1. *Acquirer's official announcements*: the news usually include acquirer's official announcement for the structural status of the target.

Top executives of the acquirer (mostly CEO) announce the acquirer's official decision with regard to the structural form.

2. *Deal's description*: the deal's description in the news often covers the operational details of the transaction including the future formal structure of the target, lay-offs and etc.

If the announcements or deal descriptions report a statement such as: "Centennial Technologies Inc. will be merged into Solelectron's Technology Solutions Business Unit", we conclude that structural integration had occurred, while if explicitly it is mentioned about retaining the target as an independent entity, such as "Heartport Inc. will become a wholly owned subsidiary of Johnson & Johnson and will continue to operate as a distinct operational unit after the acquisition", we recorded this as structural separation.

Also following Puranam et al (2009), to check for validity of the variable construct we control for the list of registered subsidiaries of the acquirer in Orbis, to check whether the target is listed as a separate subsidiary or not. The correlation between variable constructed from both method is above 90%. In order to test H2b, the third independent variable is an interaction term between founder and structural integration (*Founder × Absorption*).

The third and fourth variables are age and size of the target. Target age is constructed as the difference between foundation year of the firm until acquisition (*Target age*) and size is constructed as number of employees at the time of acquisition (*Target size*). In order to test H3a and H3b, the fourth and fifth independent variables are interaction terms between founder and respectively target's age and size (*Founder × Target age and Founder × Target size*).

**Control variables:** The first control variable is determining whether the target has any product or patent at the time of acquisition. For constructing the variable we check Lexis Nexis for any product announcements and Thompson Innovation for any patent registration activity before the acquisition (*Product/patent*). We control for target public status (*Target public*).

Additionally, we control for variables related to demographic characteristics of CEOs like prior studies such as Bergh (2001), Buchholtz et al. (2003), and Wulf & Singh (2011) from the CVs. A binary variable (*CEO age*) is constructed and equal to 1 if the CEO is near retirement and 0 otherwise. Near retirement CEO is the CEO with the age of 60 or over. The CEO's tenure (*CEO tenure*) is constructed as number of years she appointed to be the CEO of the firm until the time of acquisition in logarithmic format and finally we define CEO duality (*CEO duality*) if CEO is also chairman of the firm.

Technological global market, accessing to new markets and international R&D force many companies to acquire beyond their headquarters' geographic region, while the information asymmetry between acquirer and target would be higher due to language, cultural and national differences between the acquirer and target (Krug & Hegarty, 2001). Thus we expect that, acquirers become more dependent on target's CEO retention in managing their newly bought unit in international acquisitions. We differentiated between local and international acquisitions through the binary variable, which equals to 1 for international acquisitions (*Cross border*).

Considering that prior transactions between acquirer and target brought to both companies a better understanding of each other's operations as well as more trust between the top managements of both sides (see for e.g. Graebner (2009)), we controlled this effect with a dummy variable equals to 1 if acquirer has a toehold or prior stake in the target before the focal acquisition (*Minority stake*). Similarly, for prior alliance we expect the same effect as well as a smoother post-acquisition process (Paruchuri, et al., 2006). Therefore following Paruchuri et al (2006) we controlled with a dummy variable equals to one if there is any alliance between two firms five years before the acquisition (*Alliance*).

Serial acquirers may develop certain capabilities in managing their acquisition implementation (Zollo & Singh, 2004). In this study, we controlled for the experience's effect. To construct the measure, we collected all acquisitions conducted by the acquirer in the last five years prior to the focal acquisition and divided (*Acquirer experience*). We collected experience from three major sources namely: Mergerstat, SDC Mergers & Acquisitions and Corpfin Worldwide. We also control for the



acquirer's size constructed as the natural logarithm of sales at the time of acquisition (*Acquirer size*).

Lastly, we inserted in our model factor variables to control for industrial sectors based on SIC codes as well as time effect based on acquisition year for possibility of presence macroeconomic shocks. Since the dependent variable is binary we use logit model as the econometric specification. All the estimations in this study are clustered robust around acquirers as some of them such as Microsoft and Yahoo! are involved in multiple deals while others are involved just in one deal in the sample.

## 4. Results

Table 1 shows the descriptive statistics and correlation matrix of the dependent and other variables. The first variable in the table is the dependent variable, *Departure*; the mean suggests that 35 percent of the target's CEO departs after the acquisition. The rate is similar to Walsh (1988) and Lubatkin et al. (1999), slightly higher than Buchholtz et al. (2003) and Wulf & Singh (2011). In our sample, 35 percent of CEOs are founders. There is negative correlation between *Founder* and *Departure* (-0.08). The correlation is in line with our argument that acquirers keep the founder-CEOs at higher rate than the professional CEOs. In addition, acquirers in our sample absorbed 27 percent of the targets in post-acquisition. The correlation between *Absorption* and *Departure* is positive (0.12), which confirms our argument on coordination redundancy of the target's CEO, if acquirer decides to absorb the target. The fourth variable is *Product relatedness*, with the mean of 0.55. The positive correlation between *Product relatedness* and *Departure* (0.05), confirms our argument and Buchholtz et al. (2003) findings, that the value of the target's CEO for the acquirer diminished as relatedness between the firms increases. The average age and size of the targets in our sample are respectively 15 years and 142. Also, over 36 percent of the targets at the time of acquisition do not have any product or patent. Over one third of the CEOs in our sample are near to the retirement, and 16 percent of the CEOs are also chairman of their firm. The average tenure as CEO is 6 years. 28 percent of the targets were listed firms and over one third of the acquisitions were international

acquisition. Acquirers and targets had established an alliance in 21 percent of the cases and in seven percent of the cases the acquirer holds a minority stake in the target before the acquisition. Acquirers have in average, three prior acquisitions, and 1165 million Euro worth of sales. We control for multicollinearity, we calculated VIF for the variables, the highest VIF is 1.85 and the average VIF is 1.31. The figures exclude any potential effects of multicollinearity.

Table 2a contains all the logit estimations for checking the hypotheses. Model 1 is the basic estimation with the control variables. The model indicates that when Product relatedness between the acquirer and the target is high, the probability of the target's CEO departure increases ( $p < 0.1$ ). The figure confirms our argument about redundancies of resources in related acquisitions. When the acquirer absorbs the target (*Absorption=1*), the likelihood of CEO departure increases ( $p < 0.05$ ). Similar to the univariate analysis, the result confirms our argument that if the acquirer decides to absorb the target to provide the coordination capacity, then soft coordination role of the target's CEO becomes redundant and consequently increases the probability of departure. In addition, when the target has a patent or product at the time of acquisition (*product/patent=1*), the likelihood of CEO departure increases ( $p < 0.05$ ). The result confirms the studies of Ernst & Vitt (2000) and Puranam & Srikanth (2007) that acquirer seeks for less disruptive coordination mechanism such as depending on the target's CEO for coordination to minimize the organizational changes inside the target when it is in explorative phase. On the contrary, in case of presence of a product or a patent, the acquirer exerts higher level of disruptive coordination mechanism. Finally in cross border acquisition (*Cross border=1*), the likelihood of CEO departure decreases ( $p < 0.05$ ); this result is in line with our argument that in cross border acquisition, the acquirer prefers to make the least changes in the target and consequently the CEO is a candidate to manage the target in post-acquisition.

Model 2 introduces the explanatory variable, Founder, to the estimation. If the target's CEO is founder (*Founder=1*), the likelihood of her departure decreases ( $p < 0.01$ ). Following Table 2b Panel A shows the average marginal effect of Founder, and the figure suggests that being a founder decreases the probability of the target's CEO departure by 13.5

percent ( $p < 0.01$ ). The result confirms our H1 that firm specific human capital of the founder-CEO is valuable for the acquirer and consequently, acquirer prefers to keep her in post-acquisition.

Model 3 includes the interaction term between *Founder* and *Product relatedness*. The sign of the interaction shows the negative moderating effect of Founder on the effect of *Product relatedness* on the probability of target's CEO departure ( $p < 0.1$ ). However in order to interpret the interaction effects in logistic regressions as suggested by Hoetker (2007) and Ai & Norton (2001), we calculated average marginal effects to determine the magnitude and the sign of the moderating effect. In this regard, taking a look at the marginal effect of product relatedness on the probability of Departure in Table 2b Panel B conditional on being a founder or not, suggests that in average relatedness increases the probability of the target's CEO departure by 20 percent ( $p < 0.05$ ) when the CEO is not founder. This effect vanishes when the CEO is founder. Additionally, Figure 2 illustrates that relatedness increases the likelihood of CEO departure, however, when the CEO is founder, such effect does not exist. All in all, the result of Model 3 confirms H2a that being founder weakens the positive effect of relatedness on probability of the target's CEO departure in post-acquisition. For non-founder CEOs, however, relatedness increases the probability of her departure as the industry specific human capital is not unique for the acquirer; this is in line with the findings of prior studies such as Bergh (2001), Buchholtz et al. (2003), and Wulf & Singh (2011). Model 4 includes the interaction term between *Founder* and *Absorption*. The sign of the interaction term is negative, and similar to Model 3 we need to check the average marginal effects to indicate the moderating effect. Panel C indicates that the marginal effect of *Absorption* on the probability of *Departure* is different conditional on *Founder*. *Absorption* increases the likelihood of departure by 18.5 percent ( $p < 0.05$ ) when the CEO is not founder. In case of founder-CEO, Absorption does not increase the likelihood of departure. The result of Model 4 confirms H2b that being founder weakens the positive effect of absorption on probability of the target's CEO departure in post-acquisition.

Model 5 includes the interaction term between *Founder* and *Target age*. The interaction variable has a positive sign ( $p < 0.05$ ). In Table 2b Panel D, the marginal effect of *Founder* on the probability of Departure

suggests that as the target ages the effect reduces. For example, being founder reduces the likelihood of the CEO departure by 23.8 percent ( $p < 0.01$ ) when the target is very young, however, as the target ages, the effect diminishes. Model 6 includes the interaction term between *Founder* and *Target size*. In Table 2b Panel E, the marginal effect of Founder on the probability of *Departure* suggests that the changes in the size of the target do not make changes in the negative effect of founder on the probability of target's CEO departure. In other words, founder decreases the probability of the target's CEO departure regardless of the size of the target. The result of Model 5 confirms H3a that when the target makes the transition from entrepreneurial stage, the firm specific human capital of founder-CEO reduces its value for the acquirer. Our result is also in line with prior studies such as Boeker & Karichalil (2002) and Jayaraman et al.(2000) that links founder-CEO succession and maturity of the new venture. However the result of Model 6 does not support H3b. In the following section, we make a further investigation on the effect of CEO being a founder on probability of her departure with considering other alternative arguments and competing theories.

#### **4.1 Robustness check: Alternative explanations for Departure**

In this paper, we argue that founder-CEOs possess firm specific human capital that is valuable for the acquirers, and decreases the likelihood of their departure. The main premise behind our argument is that only the acquirer has the right to make the decision about stay or leave of the target's CEO. This assumption seems to violate the voluntary leave of the CEO. For example, the founder-CEO may enforce her employment contract with the acquirer at the time of acquisition or she may decide to leave the target after the deal because of financial complacency. Additionally someone can cast doubt on our argument that the firm specific human capital of a founder-CEO is the main determinant of her stay. Although the effect of high relatedness suggests that industry specific human capital becomes redundant for the acquirer, still generic human capital can be potentially valuable for the acquirer. For all these reasons in this section, we investigate on alternative explanations for the target's CEO departure (or stay).

As explained earlier, market for corporate control suggests that acquisitions have disciplining role to substitute a CEO with poor performance with a more efficient CEO. In Table 3a, Model 7 we control for disciplining effect of acquisition for the targets' CEOs. Although as we explained before the acquisition of small high-tech firms is not attenuated for market for corporate control, for robustness check we control whether the CEOs in this study are substituted after the acquisition due to their unsatisfactory pre-acquisition performances for their shareholders (Walsh, 1988). Similar to Wulf & Singh (2011) we control for average ROA three consecutive years prior to the acquisition for available sub-sample of our study<sup>3</sup>. All the values are harmonized based on Euro value in 2007. In the model, *ROA average* does not have any effect on the target's CEO departure and *Founder* decreases the likelihood of CEO departure ( $p < 0.05$ ). The interpretation of the result suggests that in our empirical setting, we can rule out acquisition as a disciplinary mechanism.

Another alternative explanation in determining founder-CEO departure is the generic human capital of the founder. As mentioned earlier, CEO has a combination of generic and specific human capital to manage the firm efficiently. Even though, our main results show that in case of absorption which generic human capital to manage the target (coordinating role) after the acquisition is not valuable, one might argue that generic human capital can be extended to other dimensions. In this regard, it is possible that the generic human capital of founder-CEO is as valuable and unique as her firm specific human capital for the acquirer. In other words, the generic human capital of the founder-CEO is the determinant of her stay in post-acquisition. This is in particular in line with some recent studies that link human capital of CEO to hiring and compensation; they argue that firms are more willing to hire and compensate more the outsider CEOs (those with out-of-industry experience) rather than internal CEOs (whom are promoted from top management team of the firm) (Costudio et al., 2013; Datta & Iskandar-Datta, 2014 and Mackey, Molloy, & Morris, 2013). In other words,

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<sup>3</sup> Due to lack of available accounting data for small private firms in our sample and considering the fact that over one third of our sample consists of the firms without product or patent before the acquisition we limit the estimation to the sub-sample of 149 acquisitions. The accounting data are retrieved from Orbis.

generic skills are more valuable than firm or industry specific skills for the firms. According to Becker (1964), generic human capital comprises of formal education and working experience. Following arguments provided by Colombo & Grilli (2005) and more recently Costudio et al. (2013) that founders with formal education background either in business and management (Similarly Datta & Iskandar-Datta (2014) differentiated between MBA and non-MBA holders) or scientific and technical fields, contribute more to their firm growth. In line with these recent works, we also include education background of the CEO as an indicator for their generic human capital into our estimation. We introduce three variables: the first variable is *CEO technical education*. It is a dummy variable equal to 1 if the CEO has technical or scientific background and zero otherwise. The second variable is *CEO MBA education*. It is also a dummy variable equal to 1 if the CEO holds an MBA degree and zero otherwise. Finally, the last variable is *Education level*. It is a categorical variable equals to 1 if the CEO has bachelor degree, 2 if the CEO has a master degree, and 3 if the CEO has a PhD<sup>4</sup>. In Table 3a, Model 8 and 9 include all three education variables. The results do not show any effect of the higher education level or the field of formal education on the probability of CEO departure. Both models include the interaction terms between *Founder* and respectively *CEO technical education* and *CEO MBA education*. In Panel A and B in Table 3c, taking a look at the marginal effect of Founder on the likelihood of Departure conditional on *CEO technical education* or *CEO MBA education* suggests that the negative effect of being founder on the CEO departure vanishes as the CEO has technical background or holds an MBA degree. The results of both models do not support any link between the generic human capital of founder-CEO and the likelihood of departure. Thus our argument related to the value of firm specific human capital of the founder-CEO for the acquirer holds.

The third alternative for CEO's turnover in post-acquisition is agency theory. Although as argued earlier in case of founder-CEO, agency problem as a result of separation between control and ownership does

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<sup>4</sup> The variables related to education background of CEOs are collected from Capital IQ, Bloomberg Businessweek People database and LinkedIn. Due to lack of availability of complete educational CV of some CEOs, we limit the estimation to the sub-sample of 355 acquisitions.

not exist, founder-CEO succession literature suggests that there is managerialism problem among founder-CEOs. As a result of entrenchment, they resist against the substitution (Boeker & Karichalil, 2002; Jayaraman et al., 2000; Wasserman , 2003). Long tenure in the firm is one source of entrenchment for the CEOs (Frederickson et al., 1988). This effect is stronger for founder-CEOs (Boeker & Karichalil, 2002) because of two reasons: first, founder-CEOs are usually owns a considerable portion of the firm and therefore they don't step down easily (Wasserman, 2003). Second, founder-CEOs have strong psychological attachment to their firms; this attachment gets stronger with longer tenure (Certo et al., 2001). In acquisition, the same conjecture can be made that the founder-CEO enforces her employment contract during the negotiation because of psychological attachment and entrenchment. In other words, acquirer decides to keep the target's founder-CEO because of managerialism not because of the valuable human capital. To check the validity of the argument, Model 10 in Table 3b includes the interaction term between *Founder* and *CEO age*. If the founder-CEO is near retirement, a possible scenario is enforcing her employment contract until she reaches the retirement. In Table 3c Panel C, taking a look at the marginal effect of Founder on the likelihood of *Departure* conditional on *CEO age*, suggests that being founder decreases the likelihood of the departure by 14.3 percent ( $p < 0.05$ ) if the CEO is not near retirement. On the contrary when the CEO is near retirement, the negative marginal effect of founder on the likelihood of departure disappears. The results do not support managerialism. Model 11 includes the interaction between *Founder* and *Tenure in CEO*. In Panel D of Table 3c, taking a look at the marginal effect of Founder on the likelihood of *Departure* suggests that the negative effect of being a founder on the likelihood of departure vanishes as the tenure increases. For example, when the tenure in organization is short, being founder reduces the likelihood of departure by 24 percent ( $p < 0.01$ ), while this effect disappears as the tenure prolongs. The results of Model 11 do not provide any evidence of managerialism as a result of tenure in organization. Model 12 includes the interaction term between *Founder* and *Public*. In this model, we want to test the effect of the ownership as the cause for entrenchment. If the firm is listed, the founder-CEO has lower ownership compare to the private firm. From this stand, if the argument of entrenchment holds, we expect that all else being equal the

founder-CEOs of listed firms are more likely to leave in post-acquisition. In Table 3c Panel E, taking a look at the marginal effect of *Founder* on the likelihood of *Departure* conditional on *Public*, suggests that being founder decreases the likelihood of the departure by 22.5 percent ( $p < 0.01$ ) if *Public* equals to 1. More interestingly, when the target is not listed ( $Public=0$ ), founder does not have effect on the departure. The results do not provide any evidence of managerialism.

Finally, another rationale behind the voluntary leave of founder-CEO is related to loss of financial motivation after the acquisition. Gao & Jain (2012) has shown that founder-CEOs receive higher premium in the acquisition due to their steward nature of this type of CEOs; they tend to maximize the shareholders' wealth and they are also owners of the firm and their reputation is connected to their firms. We argue that as the deal value of the target increases, founder receives a considerable compensation and there is a possibility that she loses financial motivation to stay in post-acquisition or decides to found another venture with the gained capital. In Model 13, we investigate on the validity of these arguments. The model includes two additional variables following Gao & Jain (2012) and Puranam et al. (2009): first, we construct deal value as the amount paid for the acquisition (*Deal value*). The figures presented in the deal value are harmonized in million Euro based at the currency value of 2007. Method of payment is defined as a binary equals to 1 if cash is involved in the payment and 0 otherwise (*Cash*)<sup>5</sup>. The model also includes interaction term between *Founder* and *Deal value*. In Panel F, taking a look at the marginal effect of *Founder* on the likelihood of *Departure* suggests that the negative effect of being a founder on the likelihood of departure conditional on Deal value increases as the deal increases. For example when the amount paid is high (*Deal value*= mean + S.D.) being founder decreases the probability of the target's CEO departure by 16.8 percent. When the amount paid is low (*Deal value*= mean - S.D.) the effect of being founder on the target's CEO departure vanishes. The results do not show any sign of departure because of loss of financial motivation. Therefore, we can rule out the alternative explanation of voluntary leave.

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<sup>5</sup> We limit the estimations to sub-sample of 321 acquisitions as some acquisitions have not disclosed the deal amount. The data related to deal structure and deal value were collected from Lexis Nexus and Capital IQ.



## 5. Discussion and Conclusion

This paper studied determinants of the target's CEO departure or retention after the acquisition of high-tech firms with special investigation on the effect of CEO being founder of the firm (the so-called founder-CEO). The result of empirical indicates that the targets' CEOs who founded the company are less likely to depart after the acquisition. This suggests that human capital embedded in founder-CEO is valuable for the acquirer. As explained in the theory before, we can divide the managerial human capital into general and specific. In the paper we found that firm specific human capital of the founder-CEOs make them valuable for the acquirers and therefore are more likely to stay after the acquisition. Our finding is based on interacting founder-CEOs with product relatedness and absorption. When relatedness is high, the industry specific human capital is not valuable for the acquirer because of the redundancies. The result shows that when relatedness is high its positive association with the CEO's departure is weaker when she is the founder. Additionally, the interaction between absorption and founder CEO reveals that CEO being a founder is valuable for the acquirer to the extent that it weakens the positive relationship between the absorption and the probability of the target's CEO departure. This finding brings a new insight to post-acquisition CEO turnover literature. By ruling out soft coordination role for the founder-CEO in absorption, general managerial skills of this type of CEOs to serve as transitional manager are undermined. The first contribution of the paper is to post-acquisition target's CEO turnover literature. In this paper, we introduce a new determinant of the target's CEO turnover. Here we showed that founder-CEOs are different than professional CEOs in post-acquisition turnover and what makes the difference is the firm specific human capital of founder-CEOs. These findings on founder suggest more in-depth studies on their retention on post-acquisition period. The research, is extendible to other founder executives to first understand whether there is a difference between founder CEO and other top executives for the acquirers and second, whether acquirers are willing to keep the founding team as a whole or founders individually.

The second contribution of this paper is to founder-CEO succession literature. Based on the study conducted by Wasserman (2003), it is a common wisdom that founder-CEOs usually face with the so called “success paradox”. Founder-CEOs are usually substituted by professional CEOs as firm grows organically. As proposed by previous studies (for e.g. Boeker & Fleming, 2010; Boeker & Karichalil, 2002; Certo et al., 2001 and Jayaraman et al., 2000) the maturity of the firm necessitates different skills that usually founder-CEOs do not possess. This paper shows that in case of acquisition, as an alternative to organic growth, founder CEOs have similar faith. Our argument about the value of firm specific human capital of founder-CEOs contingent on the maturity of the target for the acquirer opens up interesting areas for future studies. The first is investigating on founder-CEO’s position in the acquirer organization. In particular it is worthy to check whether the founder-CEO employs in the target and takes role in R&D department, product development or serves at higher strategic position. If the founder-CEO in post-acquisition continues working in the target or in the product development, then our argument about the value of firm specific human capital becomes stronger. In addition, based on the maturity argument, the value of firm specific human capital for the acquirer is till certain stage of the target’s maturity in post-acquisition. From this standpoint, for future study another direction is to investigate on the founder-CEOs’ employment contract with the acquirer in post-acquisition period.

The third contribution of the paper is to literature of managerial human capital. In this paper based on the categorization of human capital into generic, industry specific, and firm specific human capital proposed by Becker (1967), we showed that acquirers find firm specific human capital of founder-CEOs more valuable compare to two other types. Our finding is in line with the recent studies conducted by Ployhardt & Moliterno (2011) and Mackey et al. (2013) that suggest human capital of the CEO at abstract level does not provide any meaningful results for the firms. The human capital should strategically fit to the firm’s resources. Therefore, certain human capital fits to one firm while it does not fit to another firm. Put it differently, one firm finds certain human capital valuable while another firm does not. In the paper, we showed that firm specific human capital of the target’s founder-CEO under certain

circumstances strategically fits (acquisition and maturity contingencies) with the acquirer's resources. Additionally, recent studies conducted by Costudio et al. (2013) and Datta & Iskandar-Datta (2014) linked the human capital of CEOs and the probability of hire or compensation. Both studies empirically have shown that in managerial labor market, firms are more interested to hire CEOs because of their generic rather than specific human capital. Our findings contradict these two studies by showing that in case of acquisitions and founder-CEOs, firm specific human capital is more valuable for the acquirers. Furthermore, in this study we did not control for more qualitative aspects of human capital such as leadership style this is also another area for future investigation.

The final word, this paper shows the interrelation of three streams of literature, founder-CEO succession, acquisition implementation, and managerial human capital; their intersection and interconnections. We believe future studies conducted in any of the mentioned streams can get better and deeper understanding by cross fertilizing from exploring into inter-stream studies.

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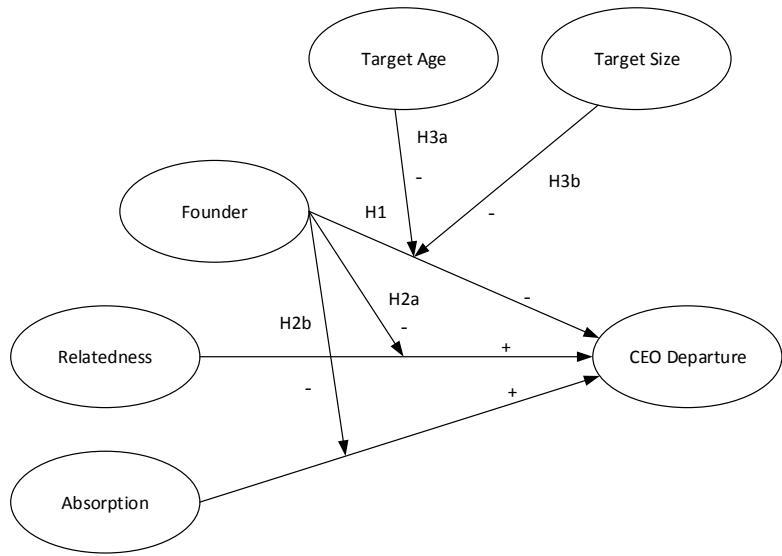


Figure 1: The overview of the hypotheses

Table 1: Descriptive statistics and pairwise Pearson correlation matrix

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<b>1. Departure</b>	0.35	0.48	1																
<b>2. Founder</b>	0.37	0.48	-0.08	1															
<b>3. Absorption</b>	0.27	0.44	0.12	-0.06	1														
<b>4. Product relatedness</b>	0.55	0.45	0.05	-0.01	0.05	1													
<b>5. Target age</b>	12.61	7.54	-0.01	-0.18	-0.09	-0.12	1												
<b>6. Target size (log)</b>	4.59	0.99	0.07	-0.08	0	0.08	0.14	1											
<b>7. Product/patent</b>	0.36	0.48	0.08	0.01	-0.07	0.01	0.14	0.17	1										
<b>8. CEO age</b>	0.35	0.48	-0.02	0.02	0.02	-0.09	0.08	-0.09	0.02	1									
<b>9. Duality</b>	0.16	0.37	0.03	0.06	0.01	0.08	0.03	0.1	0.02	-0.03	1								
<b>10. Tenure CEO (log)</b>	1.82	0.77	-0.06	0.47	-0.1	-0.18	0.12	-0.07	-0.08	0.23	0.14	1							
<b>11. Public</b>	0.28	0.45	0.16	-0.07	0.07	0.13	-0.01	0.43	0.19	-0.23	0.24	-0.21	1						
<b>12. Cross border</b>	0.36	0.48	-0.13	-0.06	-0.1	0.12	0.13	-0.06	-0.01	0.11	-0.17	0.03	-0.24	1					
<b>13. Alliance</b>	0.21	0.41	-0.01	0.03	-0.06	0.01	-0.06	0.06	-0.06	-0.1	0.05	-0.04	0.07	-0.03	1				
<b>14. Minority stake</b>	0.07	0.26	-0.02	0	-0.11	-0.06	0.02	0.12	-0.02	-0.02	0.06	-0.01	0.11	-0.01	0.57	1			
<b>15. Acquirer experience</b>	1.04	0.96	-0.02	0.04	0	-0.23	0.01	-0.03	0	-0.01	-0.08	0.05	-0.11	-0.01	0.03	0.03	1		
<b>16. Acquirer size (log sales)</b>	7.06	1.76	0.09	0.04	0.07	-0.06	0.01	0.12	0.09	-0.12	-0.02	0.02	0.1	-0.03	0.2	0.03	0.38	1	

All the correlations above 0.07 are significant at 10%

Table 2a: Result of the main estimations, logit model with the dependent variable probability of target's CEO departure <sup>a,b</sup>

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Founder		- 0.695*** (0.27)	-0.075 (0.46)	-0.520* (0.31)	- 1.483*** (0.46)	-0.707 (1.10)
Product relatedness	0.549* (0.31)	0.541* (0.31)	0.979** (0.41)	0.520* (0.31)	0.564* (0.32)	0.545* (0.31)
Absorption	0.563** (0.26)	0.602** (0.27)	0.562** (0.27)	0.857** (0.34)	0.564** (0.27)	0.587** (0.27)
Target age	-0.018 (0.02)	-0.036** (0.02)	-0.035* (0.02)	- 0.036** (0.02)	-0.054** (0.02)	-0.033* (0.02)
Target size (log employee)	0.217 (0.13)	0.21 (0.13)	0.187 (0.13)	0.18 (0.13)	0.178 (0.14)	0.196 (0.18)
Founder × Product relatedness			-0.948* (0.57)			
Founder × Absorption				-0.669		

				(0.55)		
Founder × Target age					0.078**	
					(0.04)	
Founder × Target size						0.006
						(0.24)
CEO age (retirement)	-0.027	-0.075	-0.101	-0.0462	-0.115	-0.075
	(0.29)	(0.30)	(0.30)	(0.30)	(0.30)	(0.30)
Tenure CEO (log)	-0.093	0.133	0.131	0.154	0.02	0.133
	(0.17)	(0.19)	(0.19)	(0.19)	(0.20)	(0.19)
Duality	-0.104	-0.095	-0.075	-0.092	-0.114	-0.095
	(0.34)	(0.35)	(0.35)	(0.36)	(0.35)	(0.36)
Product/patent	0.620**	0.620**	0.616**	0.616**	0.632**	0.620**
	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)
Target public	0.292	0.303	0.3	0.325	0.279	0.303
	(0.29)	(0.28)	(0.28)	(0.28)	(0.29)	(0.28)
Cross border	-	-	-	-	-	-
	0.689**	-0.692**	-0.665**	0.688**	0.688**	-0.692**
	(0.28)	(0.28)	(0.28)	(0.28)	(0.28)	(0.28)
Alliance	0.099	0.088	0.139	0.09	0.066	0.088
	(0.32)	(0.32)	(0.33)	(0.32)	(0.33)	(0.32)
Minority stake	-0.481	-0.492	-0.498	-0.494	-0.503	-0.492

	(0.62)	(0.61)	(0.60)	(0.62)	(0.61)	(0.61)
Acquirer size (log sales)	0.103	0.115	0.121	0.121	0.131	0.115
	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Acquirer experience	-0.009	-0.011	-0.012	-0.011	-0.011	-0.011
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Industry & time controls	Included	Included	Included	Included	Included	Included
Constant	-	-	-	-	-3.061**	-
	3.601***	3.575***	3.707***	3.616***		3.563***
	(1.20)	(1.20)	(1.22)	(1.19)	(1.23)	(1.28)
R <sup>2</sup>	9.31	10.41	11.04	10.85	11.37	10.51
Log likelihood	-241.1	-238.3	-236.8	-237.4	-236	-238.3
DF	29	30	31	31	31	31
Chi2	46.43	49.44	51.7	50.27	58.52	49.47

<sup>a</sup> Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
<sup>b</sup> N=419

Table 2b: Average marginal effect (M.E.) of the main estimations, the dependent variable probability of CEO departure <sup>a,b</sup>

Panel A	Model 2
Founder	-0.135*** (0.05)
Panel B	Model 3
M.E. of Product relatedness at Founder=0	0.200** (0.08)
M.E. of Product relatedness at Founder=1	-0.003 (0.08)
Panel C	Model 4
M.E. of Absorption at Founder=0	0.185** (0.07)
M.E. of Absorption at Founder=1	0.033 (0.08)
Panel D	Model 5
M.E. Founder at Target age min	-0.238*** (0.07)
M.E. Founder at Target age mean	-0.114** (0.05)
M.E. Founder at Target age max	0.127 (0.14)
Panel E	Model 6
M.E. Founder at Target size mean – S.D.	-0.129** (0.06)
M.E. Founder at Target size mean	-0.135*** (0.05)
M.E. Founder at Target size mean + S.D.	-0.140* (0.07)

<sup>a</sup> Delta method robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>b</sup> N=419



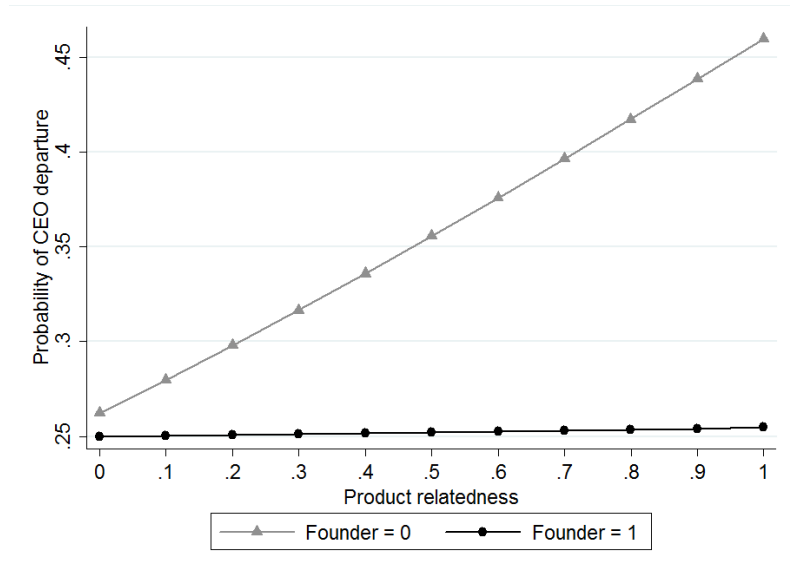


Figure 2: The effect of product relatedness on predicted probability of CEO departure in separate regimes founder = 0 and founder = 1

Table 3a: Result of the robust estimations with additional control variables, logit model with the dependent variable probability of target's CEO departure

VARIABLES	Model 7	Model 8	Model 9
Founder	-1.443** (0.59)	-0.719* (0.38)	-0.682* (0.35)
ROA average	0.114 (0.39)		
CEO technical education		-0.046 (0.38)	-0.007 (0.29)
CEO MBA education		-0.45 (0.37)	-0.439 (0.42)
CEO education level		-0.069 (0.17)	-0.07 (0.17)
Founder × CEO technical education		0.099 (0.61)	
Founder × CEO MBA education			-0.056 (0.79)
Product relatedness	1.125*	0.528	0.529

	(0.73)	(0.35)	(0.35)
Absorption	1.265**	0.840***	0.845***
	(0.49)	(0.31)	(0.31)
Target age	-0.034	-0.028	-0.028
	(0.04)	(0.02)	(0.02)
Target size (log employee)	0.162	0.300**	0.300**
	(0.26)	(0.15)	(0.15)
CEO age (retirement)	-0.074	0.156	0.159
	(0.71)	(0.37)	(0.37)
Tenure CEO (log)	0.408	0.068	0.069
	(0.34)	(0.22)	(0.22)
Duality	-1.665**	0.117	0.119
	(0.66)	(0.39)	(0.39)
Product/patent	1.466	0.725**	0.725**
	(0.92)	(0.33)	(0.33)
Target public	0.852	0.188	0.191
	(0.89)	(0.31)	(0.31)
Cross border	0.017	-0.777**	-0.779**
	(0.63)	(0.33)	(0.33)
Alliance	0.936	0.187	0.193
	(0.62)	(0.37)	(0.37)

Minority stake	-2.481**	-1.01	-1.018
	(1.20)	(0.71)	(0.71)
Acquirer size (log sales)	0.332*	0.083	0.081
	(0.18)	(0.10)	(0.10)
Acquirer experience	-0.039**	-0.006	-0.006
	(0.02)	(0.01)	(0.01)
Industry & time controls	Included	Included	Included
Constant	-		
	21.89***	-3.352**	-3.380**
	(2.39)	(1.40)	(1.41)
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R <sup>2</sup>	24.43	14.38	14.37
Log likelihood	-79.21	-193	-193
DF	30	34	34
Chi2	500.2	59.58	59.05
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Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3b: Result of the robust estimations, logit model with the dependent variable probability of target's CEO departure

VARIABLES	Model 10	Model 11	Model 12	Model 13
Founder	-0.737** (0.30)	-2.170** (0.85)	-0.449 (0.31)	-0.507 (0.48)
CEO age (retirement)	-0.183 (0.38)	-0.077 (0.30)	-0.1 (0.30)	0.355 (0.45)
Tenure CEO (log)	0.136 (0.19)	-0.128 (0.24)	0.153 (0.20)	0.227 (0.30)
Target public	0.309 (0.29)	0.308 (0.29)	0.532* (0.32)	0.847 (0.43)
Deal value (Mil Euro)				-0.001 (0.00)
Founder × CEO age (retirement)	0.247 (0.59)			
Founder × Tenure CEO (log)		0.754* (0.40)		
Founder × Target public			-0.69 (0.51)	
Founder × Deal value (Mil Euro)				-0.001 (0.00)
Cash				0.247

				(0.51)
Product relatedness	0.545*	0.533*	0.532*	1.126**
	(0.31)	(0.32)	(0.31)	(0.53)
Absorption	0.581**	0.521*	0.587**	0.329
	(0.27)	(0.27)	(0.27)	(0.44)
Target age	-0.034*	-0.041**	-0.0336*	-0.033
	(0.02)	(0.02)	(0.02)	(0.03)
Target size (log employee)	0.2	0.183	0.206	0.291
	(0.13)	(0.14)	(0.13)	(0.24)
CEO duality	-0.089	-0.065	-0.087	-0.43
	(0.35)	(0.35)	(0.36)	(0.47)
Product/patent	0.624**	0.667**	0.614**	0.683
	(0.29)	(0.28)	(0.28)	(0.47)
Cross border	-0.682**	-0.698**	-0.662**	-0.951**
	(0.28)	(0.28)	(0.28)	(0.43)
Alliance	0.094	0.045	0.11	0.156
	(0.32)	(0.33)	(0.32)	(0.50)
Minority stake	-0.502	-0.578	-0.479	-0.594
	(0.61)	(0.61)	(0.61)	(0.92)
Acquirer size (log sales)	0.114	0.139	0.122	0.291**
	(0.08)	(0.09)	(0.09)	(0.13)
Acquirer experience	-0.011	-0.0122	-0.011	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)
Industry and time controls	Included	Included	Included	Included
Constant	-3.556***	-3.152**	-3.779***	-6.342***
	(1.19)	(1.25)	(1.23)	(2.25)

R <sup>2</sup>	10.55	11.26	10.87	17.37
Log likelihood	-238.2	-236.3	-237.3	-114.8
DF	31	31	31	31
Chi2	49.58	57.19	49.88	42.7

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3c: Average marginal effect (M.E.) of the robust estimations, the dependent variable probability of CEO departure <sup>a</sup>

Panel A	Model 8
M.E. of Founder at CEO technical education=0	-0.134** (0.07)
M.E. of Founder at CEO technical education=1	-0.116 (0.10)
Panel B	Model 9
M.E. of Founder at CEO MBA education=0	-0.129** (0.07)
M.E. of Founder at CEO MBA education=1	-0.122 (0.11)
Panel C	Model 10
M.E. of Founder at CEO age (retirement) =0	-0.143** (0.06)
M.E. of Founder at CEO age (retirement) =1	-0.094 (0.10)
Panel D	Model 11
M.E. Founder at Tenure CEO mean – S.D.	-0.240*** (0.07)



M.E. Founder at Tenure CEO mean	-0.150*** (0.05)
M.E. Founder at Tenure CEO mean + S.D.	-0.05 (0.07)
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Panel E	Model 12
M.E. Founder at Target public = 0	-0.085 (0.06)
M.E. Founder at Target public=1	-0.225*** (0.08)
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Panel F	Model 13
M.E. Founder at Deal value mean – S.D.	-0.099 (0.08)
M.E. Founder at Deal value mean	-0.128* (0.07)
M.E. Founder at Deal value mean + S.D.	-0.167** (0.08)

<sup>a</sup> Delta method robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



# Paper D

# Paper D

**Similarity as an antecedent  
for target's CEO turnover:  
*Do birds of a feather flock  
together?***

By: Keivan Aghasi

*Accepted in AliG conference in Vicenza Italy*

*October 2015*

## **Abstract**

*This paper investigates on behavioral aspects of managerial turnover in post-acquisition period. In particular, the paper aims to determine to what extent demographic similarity between CEOs improves their (intergroup) relations which ultimately causes target's CEO retention in post-acquisition. The paper found that similarity in demographic characteristics of CEOs increases the probability of announcing the retention of target's CEO after the deal is closed. Additionally, similarity increases the probability of misjudgment in determining target's CEO status in post-acquisition period. Finally, the paper found that experience as the acquirer's capability reduces the effect of similarity. This results is based on acquisition of small high-tech firms between 2001 and 2005.*

# 1. Introduction

The role of the target's managerial resources in particular the CEO in post-acquisition period have been investigated by large and far in the extant literature of post-acquisition integration (D'Aveni & Kesner, 1993; Graebner, 2004 and 2009; Haspeslagh & Jemison, 1991; Kitching, 1967; Ranft & Lord, 2002; Shanley & Correa, 1992). The literature is replete with opposing views related to the status of the target's CEO in the post-acquisition period. A large body of the prior studies argued that the target's CEO retention helps the acquirer to overcome post-acquisition challenges and make more efficient and effective integration (Graebner, 2004 and 2009; Kitching, 1967; Ranft & Lord, 2002); some other suggested that the target's CEO replacement prevents resistance toward necessary post-acquisition changes, agency problem, and social conflicts (Chatterjee, et al., 1992; D'Aveni & Kesner, 1993). None of the arguments is rejectable, however a missing element in my view resides in overlooking at the behavioral aspects of acquisition. Taking a process view toward the acquisition (Jemison & Sitkin, 1986), it consists of multiple interconnected phases including due diligence, negotiation, deal finalization and integration. CEOs of the acquirer and the target as the major actors of the deal interact with each other throughout the entire phases (D'Aveni & Kesner, 1993; Graebner, 2009). Acquisition as an agreement between the acquirer (buyer) and the target (seller) is influenced by the individual skills and biases of the interacting parties, here the two CEOs (Duhaime & Schwenk, 1985). These skills and biases are shaped by the individual demographic characteristics (Ashforth & Mael, 1989). Based on this viewpoint, individual demographic characteristics of the CEOs influence the entire acquisition process including integration phase and its related decisions, in particular the role of target's CEO in post-acquisition period.

This paper introduces new antecedent for the target's CEO turnover. By borrowing insights from social categorization and similarity-attraction literature (McPherson, et al., 2001; Tajfel, 1982; Tsui & O'Reilly, 1989), this paper investigates on behavioral aspects of managerial turnover in

post-acquisition period. In particular, the paper examines to what extent demographic similarity between CEOs improves their (intergroup) relations which ultimately causes target's CEO retention in post-acquisition. The overarching research question of the paper is *“What is the effect of similarity between CEOs on the target's CEO turnover in post-acquisition?”*

Having controlled for individual characteristics of the target's CEO, the main finding of the paper is that demographic similarity between CEOs results in social attraction and consequently increases the probability of announcement of the target's CEO retention when the deal is closed. Similarity improves the positive attitude of the acquirer and target to each other during the negotiation, as similarity increases the likelihood of the target's CEO announcement of her stay in post-acquisition in the news. However, the paper found that similarity increases the problem with misjudgements in determining the target's CEO status in post-acquisition period. The misjudgement defined as the difference between what is announced in the news regarding the target's CEO stay and the target's CEO status in post-acquisition period. Finally the paper found that experience of the acquirer weakens the effect of similarity on announcement of retention and misjudgement. This research is based on empirical analysis of small high-tech acquisitions between 2001 and 2005.

The rest of the paper is organized as following: in the next section, the theories and empirical findings of prior literature on the target's CEO turnover is presented. Then the section continues with introducing similarity as an antecedent of turnover and acquirer's experience as the moderating factor. Section 3 describes the method including data collection and variable descriptions. Section 4 presents the results and Section 5 discusses about the findings and concludes the paper.

## **2. Theoretical Framework**

The post-acquisition literature highlights the role of target's CEO retention in post-acquisition period (Haspeslagh & Jemison, 1991). Target's CEO facilitates the integration process and manages the necessary organizational changes, if the acquirer keeps her in the post-acquisition period (Graebner, 2004; Graebner, 2009; Pablo, 1994; Ranft & Lord, 2002). There are several benefits associated with the retention of

target's CEO. First, integration process is a time and resource consuming process for the acquirer (Haspeslagh & Jemison, 1991; Pablo, 1994). As the acquirer's managers divert their attention from their daily operations to manage the integration process in post-acquisition period, the operating revenues of the acquirers reduce in post-acquisition period. The retention of the target's CEO frees up the acquirer's managerial resources (Hitt et al., 1991; Schoar, 2002). Second, the target's CEO has considerably comprehensive knowledge over the business, daily operation, and organizational structure of the target (Very, et al., 1997) . This brings an advantage in post-acquisition changes by lowering the disruptive effects of integration such as demotivation, and departure of employees (Graebner, 2004). Therefore, the target's CEO is a strong candidate for the acquirer to manage the target in post-acquisition period.

There are some drawbacks in keeping the target's CEO after the acquisition. First, the target's CEO may resist against the associated changes to the post-acquisition integration (Buccholtz & Ribbens, 1994; Cannella & Hambrick, 1993; Chatterjee, et al., 1992; Walsh, 1989). In addition, higher level of integration reduces autonomy granted to the target. Lack of autonomy increases the chance of target's CEO departure (Pablo, 1994). The target's CEO decides to leave after the acquisition because of inferiority and career concern (D'Aveni & Kesner, 1993; Datta & Grant, 1992; Hambrick & Cannella, 1993).

This paper focuses on the acquisition of small high-tech firms for two reasons. First, acquisitions of small firms belonging to high-tech industries are prevalent corporate practice (Graebner, et al., 2010). Notwithstanding, post-acquisition integration of these firms have not been investigated by the literature (Bauer & Matzler, 2014). Second, the cost of integration for the acquirer is higher in this type of acquisition. Integration imposes organizational disruption to the target, and cost to the acquirer. The cost is associated to loss of autonomy, changes in organizational routines, and lower productivity of the employees (Graebner & Eisenhardt, 2004; Puranam, et al., 2009; Ranft & Lord, 2002). The acquirer is interested in acquisition of technology and knowledge (Ahuja & Katila, 2001; Coff, 1999); it is tacit and embedded in human capital of the target. Knowledge transfer requires higher level of integration (Grant, 1996; Kogut & Zander, 1992) which suggests high



level of organizational changes in the target (Haspeslagh & Jemison, 1991). The changes in the form of disruptions demotivate employees and cause their departure and loss of the knowledge for the acquirer (Ernst & Vitt, 2000; Kapoor & Lim, 2007; Paruchuri, et al., 2006). The role of the target's CEO in managing the post-acquisition integration becomes more important to alleviate the drawbacks of disruption (Graebner, 2004; Shanley & Correa, 1992).

So far the rationale behind the target's CEO retention or replacement in the post-acquisition period is provided from the post-acquisition integration perspective. In the following section, the paper introduces a new antecedent namely, similarity between CEOs in explaining the target's CEO status in post-acquisition period.

## **2.1 Similarity between CEOs**

Rooted from the literature on the social psychology, individuals with different demographic characteristics such as age, gender, education, working experience have different qualities. These qualities are attributed to certain categories (McPherson et al., 2001). Individuals tend to classify themselves into social categories and make in-group versus out-group attitude when encountering other individuals (Ashforth & Mael, 1989; Tajfel, 1982). Individuals interact more with in-group individuals as they find them more trustworthy and collaborative than out-group individuals (Tsui & O'Reilly, 1989). From this standpoint, individuals have social ties with individuals whom they share similar characteristics. As McPherson and colleagues in their seminal paper put it succinctly "Birds of a feather flock together". Similarity-attraction and social category theories suggest that demographic similarity reduces any conflicts and frictions when individuals interact with one another (Tajfel, 1982).

The effect of similarity attraction is not unfamiliar in management studies. For example, in team process, Li & Hambrick (2005) on a survey of Sino-American joint ventures reported that similarity in various demographic characteristics improves the interaction and cooperation between team members, which improves the performance of the joint venture. In CEO compensation studies, Fiss (2006) found that similarity in various demographic characteristics such as tenure in the company

and age between the CEO and chairman, results in higher salaries for the CEOs in German listed firms. Pelled (1996) categorized demographic characteristics into low task related characteristics such as age and gender and high task related characteristics such as tenure and education background. She argued that although the former category is more visible, the latter category has a stronger effect; because it shapes the individual's values and cognitive capabilities.

In acquisition, the CEOs of the acquirer and target interact with one another during negotiation phase. If the arguments presented above about similarity attraction and social category holds, then it is presumable that sharing similar characteristics establishes trust, propagates positive attitude and improves interaction between the CEOs during negotiation phase. As the CEOs are attracted to each other, it is more likely they want to extend their collaboration after the acquisition. From this standpoint, it is expected that similarity increases the chance of announcing the target's CEO retention when the deal is officially closed. Therefore:

*H1: Similarity between the CEOs of the acquirer and the target increases the probability of announcement of the target's CEO retention, when the deal is closed.*

As similarity brings about initial trust between individuals, they become short sighted to evaluate the deal, the post-deal decisions and their consequences. Literature on trust and inter-organizational relations suggests that trust increases the chance of opportunistic behavior, as trust is asymmetrical in nature (individual A may find individual B trustworthy whereas individual B does not necessarily share the same opinion about individual A) (Gulati, 1995; Schoorman et al., 2007). In this regard, based on the multiple case studies of acquisitions in high-tech and knowledge intensive industries Graebner (2009) reported that initial trust between the target and the acquirer also increases the chance of acquirer's deceit and the target's vulnerability. If the target trusts asymmetrically the acquirer, the target (especially the top managers) becomes vulnerable in post-acquisition. If the acquirer trusts asymmetrically the target, there is a chance that the acquirer gets deceived about the true potentials of the targets' CEO in collaboration

and cooperation in post-acquisition. In both scenarios, the target's CEO leaves after the acquisition.

Aside from the direct effect of trust on deception and vulnerability, the initial trust creates false sense of security for the acquirer. The behavioral bias discourages the acquirers to conduct a thorough due diligence and evaluate the challenges of post-acquisition integrations (Rogan & Sorenson, 2014). Oversimplification of challenges and overestimation of collaboration with the target's CEO dissuade the acquirer to provide sufficient level of integration and therefore the acquirer relies more on the target's CEO in managing the bought firm in post-acquisition period.

The presented arguments suggest that the bias resulted from similarity between the CEOs leads to misjudgment about the decision related to the retention of the target's CEO in the post-acquisition period. Although when the deal is closed positive attitude and attraction results in announcing further collaboration and cooperation between the CEOs, the overlooked problems due to deception, or vulnerability (Graebner, 2009), or simply false sense of security emerge on the surface; either the acquirer replaces the target's CEO shortly after the acquisition or the target's CEO decides to leave because of the post-acquisition acrimonious climate (Cannella & Hambrick, 1993). Therefore:

*H2: Similarity between the CEOs of the acquirer and the target increases the probability of misjudgment about the decision related to the retention of the target's CEO in the post-acquisition period.*

## **2.2 Acquirer's experience**

Acquisition experience is considered as acquirer's capabilities in conducting acquisitions. Intuitively, it is considered that the more experienced is the acquirer, the better the acquirer is at managing the acquisitions (Haspeslagh & Jemison, 1991). There is a considerable body of empirical works that linked experience to post-acquisition processes (Ellis et al. , 2011; Hayward, 2002; Larsson & Finkelstein, 1999; Zollo & Reuer, 2010; Zollo & Singh,2004). Rooted from organizational learning, the premise is that repetition of the focal task makes improvement overtime (Epple, et al., 1991; Levinthal & March, 1993). Thus, the acquirers become better at managing the post-acquisition processes by

having a stock of experience generated from past deals. The acquisition integration process is complex and customized for each deal (the so called deal specificity), to the extent that the acquirer can transfer the learning from prior deals to the focal acquisition. Thus, efficiency and effectiveness of post-acquisition integration improves in the focal acquisition (Haspeslagh & Jemison, 1991; Zollo & Singh, 2004). Some qualitative studies reported that more experienced acquirers performed better in making necessary changes in the targets' organization. For example, Ashkenas et al. (1998) found that GE manages to finalize the integration at most in 100 days after the acquisitions, or Ferray (2011) reported that Cisco has a better record of managing its acquisition activities than Lucent Technology because Cisco has engaged into more deals compare to Lucent Technology.

Acquirers develop gradually certain routines when they involve in number of deals (Larsson & Finkelstein, 1999). These routines are helpful in post-acquisition integration. These routines make experienced acquirers to be more capable of managing the complexities of the post-acquisition integration and implementing the integration process at a lower cost (For a review see: Bakerma & Schijven, 2008). Performing the post-acquisition integration at lower cost encourages the serial acquirers to perform higher level of integration. In other words, the more experienced acquirer can afford the cost of disruptive effect of higher level of integration. For example, Zollo & Singh (2004) based on the survey study of 228 acquisitions in US banking industry reported that more experienced banker tend to choose higher level of integration. In acquisition of small high-tech firms, Puranam et al. (2009) on sample of 207 deals, found that more experience in acquisitions increases the probability of acquirers absorbing the targets as the highest level of integration rather than to keeping them as a separate subsidiary in the post-acquisition period. As serial acquirers tend to choose higher level of integration, the reliance on the target's CEO to manage the target in the post-acquisition reduces. The target's CEO retention in post-acquisition literature considers as mechanism to provide lower level of integration (Graebner, 2004; Ranft & Lord, 2002), therefore the presence of higher level of integrating mechanism such as structural integration makes lower level of integrating mechanism redundant. Empirical studies confirmed the negative relationship between higher level of integration

and the target's CEO retention (See for e.g. Ellis, et al., 2011; Zollo & Singh, 2004).

Additionally, as explained before more experienced acquirers develop certain routines in managing the post-acquisition integration process. This suggests that the acquirer has dedicated organizational resources (for example a dedicated unit or an assigned acquisition manager) for dealing with the post-acquisition decisions and integration process (Ashkenas et al., 1998; Ferrary, 2011; Haspeslagh & Jemison, 1991). Henceforth, the responsibility of certain decisions including replacement or retention of the target's CEO in post-acquisition is not directly made by the acquirer's CEO. As the involvement of the acquirer's CEO is more limited on these decisions, the similarity-attraction effect on the retention of the target's CEO reduces in more experienced acquirers.

In this regard, it is expected that the experience of the acquirer not only reduces the likelihood of the target's CEO retention but also negatively moderates the effect of similarity between CEOs on the announcement of target's CEO retention for post-acquisition period. Therefore:

*H3a: Acquirer's experience in acquisition weakens the positive relationship between the similarity and probability of announcing the target's CEO retention, when the deal is closed.*

The acquirer's experience also moderates the negative effect of similarity on misjudgment regarding the decision of target's CEO retention or replacement for two reasons. First and foremost, as the acquirer's CEO has limited involvement on the decisions related to post-acquisition integration, similar to the previous argument for announcement of retention, the effect of similarity attraction on the misjudgment reduces. Second, in more experienced acquirers, acquisition process including due diligence, target's evaluation and integration is more codified. Knowledge codification provides the acquirer's CEO with tools for executing acquisition at various phases, which improves the overall decision making outcomes (Zollo & Singh, 2004). In the similar line for example Kim et al. (2011) found that experience prevents the acquirers to over pay in the focal acquisitions, as they are equipped with better evaluation tools when asserting the acquisition premiums.

In this regard, it is expected that the experience of the acquirer not only reduces the probability of misjudgment in deciding whether to keep or replace the target's CEO, but also moderates the effect of similarity on it. Therefore:

*H3b: Acquirer's experience in acquisition weakens the positive relationship between the similarity and the probability of misjudgment about the decision related to the retention of the target's CEO in the post-acquisition period.*

### **3. Method**

#### **3.1 Sample and data collection**

The empirical analysis for this paper is based on the acquisition of small high-tech firms between 2001 and 2005. The data related to the acquisitions are gathered from Zephyr Bureau Van Dijk and Thompson SDC Platinum. The acquirers are US listed firms and the targets are headquartered in Europe or USA. The reason for not extending the study to the acquisition of the targets located in other geographical regions is the lower coverage of the deals in the databases for other regions. Similarly, extending the acquirers to other regions is more difficult as some of the constructed variables are based on codification of news, and news coverage for US listed firms are higher compare to the acquirers headquartered in other countries. This problem is exacerbated as the targets for this study are small firms, and the coverage of their acquisitions is lower for the non-US acquirers. The data collection criteria are described below:

Following prior studies on acquisition of small high-firms by large firms such as Puranam & Srikanth (2007) and Puranam et al. (2009), the paper used the headcounts to determine the size of the firms. In this regard the targets have less than 500 and the acquirer have more than 1000 employees. High-tech industries are selected based on OECD (1997) definition and criteria. Accordingly, the targets operate in the following industries are considered as hightech: Drugs (283), Computer and office equipment (357), Electronic and other electrical equipment and components except computer equipment (36), Instruments (38) and Software programming (737). The SIC codes were available at Thompson

SDC Platinum and Zephyr. Only the acquisitions were chosen that the acquirers own 100% of the equity of the targets, so that the acquirers have the autonomy to make all the relevant decisions in post-acquisition including replacing the target's CEO changes without any resistance from other shareholders. Total number of 436 acquisitions met the above mentioned criteria.

In the second step, the news related to the acquisition published in online journals, newspapers and professional industrial magazines were collected from Lexis Nexis. The news helps to understand the context of the deal, the name of the target's and acquirer's CEO, the acquirer's future plan for the target in post-acquisition period and CEO's personal reflection and attitude toward the deal. In total variables of interest were codified for 321 deals. In order to increase the reliability and validity of the codified variables, two researchers independently completed the codings and the third researcher compared their works. The correlation between the two works was 90%. After checking for the discrepancies, the correlation increases to 100%. The general information about the firms such as the age and size were gathered from Orbis belong to Bureau Van Dijk. Also for the acquirer, SEC filings were used to complement the data collection.

In the last step, the demographic characteristics of the CEOs including gender, age, and tenure in the company were collected from Bloomberg Businessweek Company Database and SEC filings. To complete the CEOs' CVs, the names were cross checked through Capital IQ, and LinkedIn. For incomplete CVs, more information was extracted from other sources such as company webpages. In total, the sample includes 252 deals. To check for sampling representation the sample was tested against multiple criteria. The t-tests did not show any difference in size and age between the targets and acquirers in the sample and population (the t values were: target size,  $t=0.237$ , target age,  $t=1.142$ , acquirer size,  $t=0.568$ , and acquirer age,  $t=0.299$ ). In addition, the Chi squared test did not show any difference in the number of deals available in SDC Platinum and Zephyr in the sample and the population (the Chi values were: SDC platinum,  $\chi=1.770$ , and Zephyr,  $\chi=0.886$ ). Wilcoxon rank-sum test did not show any difference between industrial sector's distribution of the target and the acquirer in the sample and the population (The Z values were: Target industries,  $Z=0.059$ , and Acquirer

industry,  $Z=0.349$ ). Finally the Fisher exact test did not report any difference between geographical distribution of the target in the sample and the population (Fish P-value=0.840). The tests reject any potential problems with misrepresentation of the sample.

### 3.2 Variables

**Dependent variables:** The first dependent variable is *Announcement of retention*. This variable captures the announced decision related to the status of the target's CEO after the acquisition. Following Walsh (1989), it is a binary variable, equals to 1 if the news states that the target's CEO stays after the acquisition. It is 0 if the news states that the target's CEO will leave the target after the acquisition. There are 10 observations, that the target's CEO decides to leave the firm after the acquisition because of retirement, which were excluded from the sample.

The second dependent variable is *misjudgment*. It is a binary variable equal to 1 if there is a difference between what has been announced in the news regarding the status of the target's CEO after the acquisition and the status of the CEO after the acquisition. For instance, if the acquirer announced that the target's CEO would remain at her position after the acquisition in the news, while the year after she was not employed in the firm then misjudgment is equal to 1. Misjudgment equals to 0 if there is no difference between what has been announced and the CEO status in post-acquisition period. To determine the CEO's status, I followed prior studies such as Bergh (2001), Cannella & Hambrick (1993), and Wulf & Singh (2011) and identify the CEO is replaced after the acquisition if she has not appointed to any position in the combined entity two years after the acquisition. An advantage of a two year allowance for determining the CEO's status is that in most of the acquisitions, the acquirers usually requires the target's CEO to stay after the deal for a short period usually up to 6 months with rare occasions to a year, so that the acquirers prepare for smoother transitions such as appointing new managers (Ranft & Lord, 2002).

**Independent variable:** To test the effect of similarity of CEOs on the positive effect of the target's CEO retention announcement when the deal is closed, I choose similarity in type. As explained earlier, similarity is task related characteristics represents similarity in cognitive behavior,



norms and values (Pelled, 1996). I defined the type based on the literature of CEOs and corporate strategies as whether the CEO is an internal (she gets promoted to become a CEO from the organization) or the CEO is an external (she enters to the firm directly as the CEO) (Carpenter, 2002). The internal CEOs have a better knowledge over the firm's operation, business, and structure. Moreover, the internal CEOs gain legitimacy internally from the employees and other top managers. They usually tend to stick to the status quo when it comes to corporate strategies. The external CEOs have broader knowledge in generic managerial skills and usually they tend to change corporate strategy and serves best to act as turnaround managers (Harris & Helfat, 1997). In acquisitions, the CEOs of the acquirer and target can be internal or external to their firms. Internal and external CEOs are two different types who are also different in values, attitudes and beliefs. Therefore, CEOs who share similarity in type can interact, cooperate and collaborate better with each other.

*Similarity in type* is the independent variable constructed as similarity between CEOs of the acquirer and the target in their status as being external or internal in their firms. Following prior studies such as Carpenter et al. (2001) and Carpenter (2002), external CEOs are those CEOs who join the firms as the new CEO. Internal CEOs are defined as CEOs who are founder of the firm, or get promoted to become CEO from inside of the organization, or outsider CEOs with more than 10 years tenure in the firm. In this regard, similarity in type is a binary variable equals to 1 if both CEOs are either internals or externals, and 0 otherwise.

**Moderating variable:** The acquirer experience in acquisitions is the moderating variable. Following prior studies Porrini (2004) and Haleblan & Finkelstein (1999), *Acquirer experience* is constructed as the total number of acquisitions conducted by the acquirer in five years prior to the focal acquisition. Since the variance and kurtosis of this variable is high (Variance=525.6 and Kurtosis=9.38), I use the natural logarithm transformation in the models which identically constructed by prior studies on the acquisition experience such as Ellis et al. (2011) and Porrini (2004). The result of interaction between *Acquirer experience* and *similarity in type* generates the variable of interest to capture the moderating effect of experience on misjudgment.

**Control variables:** The paper also controlled for set of variables. In order to control for other similarities between demographic characteristics of the CEOs, the age difference between the target's CEO and the acquirer's CEO is included in the model (*Age difference*). Following Fiss (2006), it is expected that similarity in age (low age difference) increases the attraction of the CEOs to one another and therefore it increases the probability of target's CEO retention announcement. In addition, this similarity increases the probability of misjudgment in assessing the target's CEO status in the post-acquisition period. The similarity in gender is potentially another variable of interest, however, in the sample only 3% of the CEOs were female. Consequently, the dominance of male CEOs do not allow to capture variance for constructing gender similarity.

The second set of controls is related to the demographic characteristics of the target's CEO, namely: duality (having dual position of the chairman and CEO) (*Target CEO duality*), tenure in the organization (*Target CEO tenure*). The third set of controls were related to the target's firm characteristics, namely: public status (*Target public*), age (*Target age*), size (*Target size*), and whether the target has been granted a patent or not (*Target patent*).

The third set of controls is related to acquisition characteristics. The paper controls for international acquisitions. The national cultural difference and the geographical distance between the acquirer and the target increases the reliance of the acquirer on the target's CEO to manage the target in the post-acquisition period (Krug & Hegarty, 1997). It is expected that in international acquisition, the probability of CEO retention announcement is higher than local acquisitions. In addition, the information asymmetry in international acquisitions increases the probability of misjudgment. *Cross border* is a binary variable equals to 1 if the target is headquartered in Europe and 0 otherwise. Another control variable is related to the decisions that the acquirer makes regarding post-acquisition changes in the target. In particular following post-acquisition literature (Haspeslagh & Jemison, 1991) the paper included a control for post-acquisition organizational structure of the target. As the targets are small firms, the acquirer can decide on a dichotomy of absorbing the firm after the acquisition or keeping it as a separate subsidiary. In case of absorption, the acquirer's reliance on the target's

CEO in post-acquisition becomes lower, therefore it is expected that absorption decreases the probability of announcement of the CEO retention and reduces the probability of misjudgment. Following Puranam et al. (2009), based on the acquirer's company report and news related to the post-acquisition decisions, *Absorption* is a binary variable equal to 1 if the acquirer structurally integrates the target with the rest of its units in the post-acquisition period and 0 otherwise. The third control is *Product relatedness*. It reflects the extent of the industrial overlap between the target and the acquirer. When relatedness is high between the acquirer and target, the acquirer has better assessment over the target's operation. Therefore, the reliance of the acquirer on the target's CEO in post-acquisition is lower. In addition, relatedness improves the acquirer's ability to assess the value of the target's CEO human capital. From this standpoint, it is expected that product relatedness decreases the probability of announcement of the target's CEO retention and reduces the probability of misjudgment. Following Puranam and Srikanth (2007), *Product relatedness* constructed as number of 3-digit SIC codes common to the acquirer and target divided by the total number of 3-digit SIC codes assigned to the target.

The final set of controls includes prior relationship between the two firms, in particular controlling for prior alliance (*Alliance*) and toehold of the acquirer before the focal acquisition (*Minority stake*). Prior partnership and transaction between the target and the acquirer improves the mutual understanding of both firms of each other's operation and business (Parunchuri et al., 2006), establishes trust between the top managements of both sides (Graebner, 2009), and reduces the required post-acquisition changes to the target including target's top management team replacement (Zollo & Reuer, 2010). Therefore, we expect that prior transactions and partnership increases the probability of target's CEO retention and misjudgment. *Minority stake* is a binary variable equals to 1 if the acquirer has a toehold and 0 otherwise. Following Parunchuri et al. (2006) and Porrini (2004), *Alliance* is constructed as a binary variable equals to 1 if there is an alliance between the target and acquirer five years prior to the focal acquisition, and 0 otherwise.

The paper used logit model as the two dependent variables are binary. Other than the above mentioned variables, the models also include factor

variables related to industry and the year of the acquisition to control for any potential macroeconomic shocks. In addition, as the database is replete with serial acquirers, that similar acquirer appears in multiple deals in the sample, the paper controlled for the acquirer's effect in the estimation by robust clustering the estimations over the acquirers. For interpreting the coefficients, the interactions, and their effect, the paper followed the procedures described by Ai & Norton (2003) and Hoetker (2007) for non-linear models. Finally for controlling for any potential presence of multicollinearity, I calculated VIF for the variables, the highest VIF is 1.63 and the average VIF is 1.23. The figures exclude any potential threat of multicollinearity.

## 4. Results

Table 1 shows the descriptive statistics (mean and standard deviation) of all the variables and the pairwise correlations. Taking a look at the first variable *Announcement of retention*, it is evident that in 68 percent of the acquisitions in the sample, the acquirers announced their decision about the retention of the target CEO. In addition, for the second dependent variable, *Misjudgment*, the figures suggest that in 42% percent of the acquisitions in the sample, the retention or replacement of the target's CEO differed from what had been announced in the news. The table also suggests that the sample is divided equally between the deals that CEOs share similarities in type and the deal that the CEOs do not share similarity in type. Taking a look at the correlation figures, it is evident that there is a significant negative correlation between *Similarity in type* and *Announcement of retention* (0.19,  $p < 0.01$ ). The figure confirms the argument presented before about the similarity-attraction effect between the CEOs. In addition, *Similarity in type* and *Misjudgment* have a significant and positive correlation (0.23,  $p < 0.01$ ), which confirms the arguments related to the negative effect of similarity on the assessment of the target's CEO replacement or retention. In average the acquirers have experience of 12 prior acquisitions in the sample. The correlation between *Acquirer experience* and *Announcement of retention* is negative and significant (-0.14,  $p < 0.05$ ); also the correlation between *Acquirer experience* and *misjudgment* is negative and significant (-0.10,  $p < 0.1$ ). Both figures confirm the arguments related to the effect of experience on the acquirer's capability

in managing the post-acquisition processes without relying on the target's CEO and improving the assessment of the target's CEO status in post-acquisition. The average age difference between the CEO's age is 17 years. The correlation between *Age difference* and *Announcement of retention* is significant and negative (-0.18,  $p < 0.01$ ) and the correlation with *Misjudgment* is significant and negative (-0.13,  $p < 0.05$ ). The correlation figures are in line with the expectation that similarity in non-task related demographic characteristics have positive effect on announcement of retention and positive effect on misjudgment. The targets' CEOs have in average 6 years of tenure in the organization and 23 percent of whom have dual role. The targets have average age of 14 years and size of 154. Over 19 percent of the acquisitions are international acquisitions. The correlation between *Cross border* and *Announcement of retention* is positive and significant (0.22,  $p < 0.01$ ) and the correlation between *Cross border* and *Misjudgment* is positive and significant (0.14,  $p < 0.01$ ). The signs and magnitude of correlation confirm the arguments that in international acquisitions, the acquirers rely more on the targets' CEOs in post-acquisition period and because of the information asymmetry cannot assess properly the status of the target's CEO in post-acquisition period.

Table 2a includes the estimations to test the hypotheses. In Model 1, 2 and 3 the dependent variable is *Announcement of retention*; respectively in Model 4, 5, and 6 the dependent variable is *Misjudgment*. Model 1 only includes the controls. Among the controls, *Age difference* ( $p < 0.01$ ), *Target age* ( $p < 0.01$ ), and *Cross border* ( $p < 0.05$ ) increase the probability of *Announcement of retention*. *Absorption* ( $p < 0.01$ ) and *Acquirer experience* ( $p < 0.05$ ) decrease the probability of *Announcement of retention*. In Model 2, the independent variable is added. *Similarity in type* increases the probability of *Announcement of retention* ( $p < 0.05$ ). Table 2b includes the average marginal effect of the variables of interest in the hypotheses on the dependent variables based on the delta method suggested by Hoetker (2007). According to Panel A, the similarity between CEOs increases the probability of the announcement of the target's CEO retention by 13.5 percent ( $p < 0.05$ ). The sign and magnitude of the effect of *Similarity in type* on *Announcement of retention* confirms H1 that the similarity in characteristics attracts the CEOs to each other and increases the positive attitude for collaboration,

cooperation and consequently it increases the likelihood of announcement of retention after the deal. Model 3 includes the interaction variable of *Acquirer experience* and *similarity in type*. The interaction variable has negative effect on probability of *Announcement of retention* ( $p < 0.05$ ). In order to analyze the moderating effect of the interaction variable as suggested by Ai & Norton (2003) and Hoetker (2007), Panel B in Table 2b represents the average marginal effect of *Similarity in type* on *Announcement of retention* at three difference conditions with respect to *Acquirer experience*. When the acquirer is inexperienced in acquisitions (*Acquirer experience* at min), similarity between CEOs increases the probability of announcement of target's CEO retention by 30.1 percent ( $p < 0.01$ ). When the acquirer has a moderate experience in the acquisition (*Acquirer experience* at mean), similarity between CEOs increases the probability of announcement of target's CEO retention by 14.5 percent ( $p < 0.05$ ). When the acquirer is a serial acquirer (*Acquirer experience* at max), similarity between CEOs does not have any effect on the probability of announcement of target's CEO retention. The descending magnitude of marginal effects of similarity on the target's CEO retention as the acquirer is more experienced in the acquisition confirms H3a.

Model 4 in Table 2a includes only the control variables. *Age difference* and *Target size* increase the probability of *Misjudgment* ( $p < 0.05$ ), on the contrary, *Acquirer experience* decreases the probability of *Misjudgment* ( $p < 0.05$ ). In Model 5, the independent variable is added. *Similarity in type* increases the probability of *Misjudgment* ( $p < 0.05$ ). According to Panel C in Table 2b, the similarity between CEOs increases the probability of misjudgment in the decision regarding the replacement or retention of the target's CEO by 16.7 percent ( $p < 0.01$ ). The sign and magnitude of the effect of *Similarity in type* on *Misjudgment* confirms H2 that the similarity in characteristics makes social and behavioral biases, which causes misjudgment about the replacement or retention of the target's CEO. Model 6 includes the interaction variable of *Acquirer experience* and *similarity in type*. The interaction variable has negative effect on probability of *Misjudgment* ( $p < 0.1$ ). Similar to Model 3, Panel D in Table 2b represents the average marginal effect of *Similarity in type* on *Misjudgment* at three different conditions with respect to *Acquirer experience*. When the acquirer is inexperienced in acquisitions (*Acquirer*

*experience* at min), similarity between CEOs increases the probability of misjudgment by 40.7 percent ( $p < 0.01$ ). When the acquirer has a moderate experience in the acquisition (*Acquirer experience* at mean), similarity between CEOs increases the probability of misjudgment by 17.2 percent ( $p < 0.01$ ). When the acquirer is a serial acquirer (*Acquirer experience* at max), similarity between CEOs does not have any effect on the probability of misjudgment. The descending magnitude of marginal effects of similarity on the misjudgment as the acquirer is more experienced in the acquisition confirms H3b.

The results of the models confirm all the hypotheses articulated in the paper. In the next section, for deeper investigation on the moderating effect of experience of the acquirer further estimations and along with the interpretation of the results are presented.

#### **4.1 Deeper investigation in the acquirer's experience**

So far the results of the estimates suggest that the acquirer's experience reduces the acquirer's reliance on the target's CEO to deal with the target's post-acquisition implementation process and challenges. Additionally, experienced acquirers are less prone to misjudge about the decision related to replacement or retention of the target's CEO in post-acquisition period. Moreover, acquirer's experience negatively moderates the effect of similarity on the target's CEO retention as well as misjudgment. In this section, I investigate further on the acquirer's experience based on how relevant the experience is to the focal acquisition. From this standpoint, the acquirer's experience constructed as the total number of past deals are divided into two categories, namely: high-tech experience and non-high-tech experience. Since this study focuses on the acquisition of high-tech targets, high-tech experiences are more relevant to the focal acquisition in this study. Acquirer high tech experience is the number of acquisitions in the high-tech industries conform to OECD (1997) definition. Acquirer non-high tech experience is the number of acquisitions in other industries. Similar to the previous model specification, in the paper I used the logarithm transformation of the experience variables.

Table 3a includes the estimations for the two independent variables. In Model 7, 8, and 9 the dependent variable is Announcement of retention;

In Model 10, 11, and 12 the dependent variable is Misjudgment. Model 7 includes the two new experience variables. The coefficient of Similarity in type is positive similar to Model 2 ( $p < 0.05$ ). Acquirer high tech experience decreases the probability of Announcement of retention ( $p < 0.01$ ). The effect of this variable is similar to the previous experience variable. On the contrary, Acquirer non-high tech experience increases the probability of Announcement of retention ( $p < 0.1$ ). The figures suggest that relevant experience of the acquirer decreases the reliance on the target's CEO in the post-acquisition period. However, less relevant experience of the acquirer has the opposite effect. In this case, when the acquirer is experienced in acquisitions in the non-high-tech sectors, the acquirer relies more on the target's CEO in the post-acquisition period. It is inferable that acquirers learn the challenges and difficulties of the post-acquisition processes from the prior acquisitions in non-high-tech sectors and consequently they acknowledge the managerial capacities provided by targets' CEOs after the deal is closed. Model 8 captures the interaction effect between Acquirer high tech experience and Similarity in type. The sign and coefficient of the interaction variable is negative ( $p < 0.05$ ). Panel A in Table 3b shows the average marginal effect of Similarity in type on Announcement of retention at three different conditions with respect to Acquirer high tech experience. When the acquirer is inexperienced in high-tech acquisitions (Acquirer high tech experience at min), similarity between CEOs increases the probability of announcement of the target's CEO retention by 26.2 percent ( $p < 0.01$ ). When the acquirer has a moderate experience in high-tech acquisitions (Acquirer high tech experience at mean), similarity between CEOs increases the probability of announcement of the target's CEO retention by 16.2 percent ( $p < 0.05$ ). When the acquirer is a serial acquirer (Acquirer high tech experience at max), similarity between CEOs does not have any effect on the probability of announcement of the target's CEO retention. Model 9 captures the interaction effect between Acquirer non-high tech experience and Similarity in type. The interaction variable is not significant in the model, however as Hoetker (2007) pointed neither the sign nor the significance of the interaction variable alone can confirm or reject the moderating effects. Taking a look at the change in Pseudo McFadden R2 with respect to the nested estimation (Model 7) suggests that adding the interaction variable does not enhance the explanatory power into the nested model ( $\Delta R^2 = 0.00$ ). Therefore, it is



inferable that only the acquirer's experience in high-tech sectors weakens the positive effect of similarity on the announcement of the target's CEO retention.

Model 10 estimates the effect of the two experience variables on Misjudgment. The coefficient of Similarity in type is positive similar to Model 5 ( $p < 0.01$ ). Acquirer high tech experience decreases the probability of Misjudgment ( $p < 0.05$ ); however Acquirer non-high tech experience does not have significant effect on the probability of Misjudgment. Model 11 captures the interaction effect between Acquirer high tech experience and Similarity in type. The sign and coefficient of the interaction variable is negative ( $p < 0.05$ ). Panel B in Table 3b shows the average marginal effect of Similarity in type on Misjudgment at three different conditions with respect to Acquirer high tech experience. When the acquirer is inexperienced in high-tech acquisitions (Acquirer high tech experience at min), similarity between CEOs increases the probability of misjudgment by 40.8 percent ( $p < 0.01$ ). When the acquirer has a moderate experience in high-tech acquisitions (Acquirer high tech experience at mean), similarity between CEOs increases the probability of misjudgment by 17.3 percent ( $p < 0.05$ ). When the acquirer is a serial acquirer (Acquirer high tech experience at max), similarity between CEOs does not have any effect on the probability of misjudgment. Model 11 captures the interaction effect between Acquirer non-high tech experience and Similarity in type. The interaction variable is not significant in the model and it does not add any explanatory power to the nested estimation ( $\Delta R^2 = 0$ ) Therefore, similar to Model 9, it is safe to assert that the variable does not have any moderating effect. It is inferable that only the acquirer's experience in high-tech sectors weakens the positive effect of similarity on misjudgment.

## **5. Discussion and conclusion**

The first finding of the paper is that similarity in managerial style of the CEOs of the acquirer and target increases the likelihood of positive attitude toward the acquisition and post-acquisition implementations. In particular, the paper found that similarity in style (being an external or internal CEO) and the age increase the chance of pronouncing further collaboration of the target's CEO in post-acquisition when the deal is

closed. This finding confirms the argument of the paper that as social categorization (Ashforth & Mael, 1989; Tajfel, 1982) and similarity attraction (Tsui & O'Reilly, 1989) theories suggest individuals who share similar characteristics, are more likely to collaborate and cooperate.

The paper also found that similarity in style increases the chance of misjudgment. As similarity brings about initial trust between individuals, they become short sighted to evaluate the deal, the post-deal decisions and their consequences. Literature on trust and inter-organizational relations suggested that trust increases the chance of opportunistic behavior, as trust is asymmetrical in nature (Gulati, 1995; Schoorman et al., 2007). If the target trusts asymmetrically the acquirer, the target (especially the top managers) becomes vulnerable in post-acquisition. If the acquirer trusts asymmetrically the target, there is a chance that the acquirer gets deceived about the true potentials of the target in collaboration and cooperation in post-acquisition. In both scenarios, the target's CEO leaves after the acquisition. This paper have not distinguished in case of CEOs' similarity what would be the more likely scenario; whether deception or vulnerability causes the target's CEO to depart in post-acquisition, though announced otherwise when the deal is officially closed. Notwithstanding, misjudgment presented in the paper, asserts a broader argument than asymmetrical notion of trust. Indeed, similarity (regardless of trust or distrust) brings about social and behavioral biases, which engenders misjudgment about the post-acquisition implementation's complications and the coordination capacity provided by the target's CEO. In the similar line, Rogan & Sorenson (2014), by borrowing insights from inter-organizational trust literature, have recently reported that when the acquirer and the target share indirect common ties through a third party (common customers), it is more likely that post-acquisition performance declines. They asserted that biases cause performing poor due diligence and false sense of security. All in all, this paper suggests that although similarity between CEOs increases trust, improves collaboration and cooperation and decreases the likelihood of the target's CEO departure in post-acquisition, it also has a dark side of misjudgment caused by either opportunistic behavior or biases, which results in the target's CEO departure shortly after the acquisition, although it was initially announced otherwise.

The third finding of the paper is that the experience in acquisition enhances the capability of the acquirer in managing the post-acquisition integration. The results showed that the more experienced acquirers have the capability on managing the targets without relying on the capacities provided by the targets' CEOs in post-acquisition period. This finding confirms prior studies linking post-acquisition integration mechanisms and acquirers' experience on post-acquisition performance (Ellis et al., 2011; Zollo & Reuer, 2010; Zollo & Singh, 2004). More importantly, the paper also found that for more experienced acquirer, the decision related to status of the targets' CEOs in post-acquisition period (retention or replacement) is robust to behavioral biases. In particular, experience of the acquirer weakens the effect of the similarity on the announcement of targets' CEOs retention when the deal is closed. In addition, the experience weakens the effect of similarity on the misjudgment in the decision related to replacement or retention of the targets' CEOs in post-acquisition period. These two findings suggest that experience improves the post-acquisition integration decisions for the acquirer. The literature finds that experience reduces the cost of integration for the acquirer which improves the post-acquisition outcome (See for e.g. Haspeslagh & Jemison, 1991; Kim et al., 2011; Larsson & Finkelstein, 1999). This paper expands this literature by showing that the experience improves the decisions made for the post-acquisition integration. When acquirer chooses a wrong mechanism to provide the necessary level of integration regardless of the cost of implementation, the post-acquisition outcome cannot be desirable. This can be another reason for the studies reported that in most acquisition the performance (with different measures) is not satisfactory enough to consider the acquisition as so called success (King et al., 2008; Zollo & Meier, 2008). In this regard, more experienced acquirers choose the right integration strategy, while less experienced acquirers are prone to make the wrong integration strategy in the first place.

The paper also made a deeper investigation on the effect of experience. While prior studies in post-acquisition integration (Parunchuri et al., 2006; Puranam & Sriknath, 2007; Puranam et al., 2009; Zollo & Singh, 2004) and target's CEO turnover (Buchholtz et al., 2003; Wulf & Singh, 2011) treated experience as cumulative number of prior deals homogeneously, each deals are unique and specific as they are derived by

different motivations such as economics scale and scope (Haspeslagh & Jemison, 1991), and technological acquisitions (Ahuja & Katila, 2001). Different motivations require different organizational structure and consequently different integration mechanism. Another source of heterogeneity is related to variety of the targets in terms of size and industry. As recently suggested by Barkema & Schijven (2008), the experience related to one setting is not transferrable or applicable to another settings. From this standpoint, acquirer's experience is beneficial to the focal acquisition if it is relevant to the acquisition. This relevance is rooted from similarity between the target in the focal acquisition and the targets of the prior acquisitions as well as between the type of deal in the focal acquisition and the prior acquisitions. This paper also acknowledged the heterogeneous nature of acquisitions. As the empirical setting of the paper includes acquisitions in high-tech industries, by categorizing prior acquisitions to high-tech sectors and non-high-tech sectors, the paper divides relevant experience from irrelevant experience. This dichotomy of experience corresponds to the two mentioned sources of heterogeneity. The homogeneity of the target in terms of industrial characteristics with the targets in prior acquisitions is more obvious in this dichotomy. Related to the acquisition type in terms of motivation, mostly obtaining technology or knowledge drives the acquisitions in high-tech sectors (Ahuja & Katila, 2001; Graebner et al., 2010; Ranft & Lord, 2002). The main aim for the acquirer in post-acquisition integration is technology and knowledge transfer from the target to the acquirer (Graebner, 2004; Puranam et al., 2009). As the knowledge is usually tacit and embedded in the target's employees, in high-tech acquisition centrality of human capital necessitates that the acquirers become more prudent in selecting integration strategies to prevent any demotivation and departure of the human capital after the acquisition (Kapoor & Lim, 2007; Parunchuri et al., 2006). Usually higher level of integration reduces the level of autonomy granted to the target (Puranam et al., 2009). Loss of autonomy stimulates demotivation and departure of the employees (Graebner et al., 2010; Pablo, 1994; Ranft & Lord, 2002). The paper found that only experience in high-tech sectors increases the acquirers' capability in managing the post-acquisition of the target. In particular, high-tech experience decreases the probability of the acquirer's misjudgment in deciding on the target's CEO retention or replacement. This finding complements prior studies such as Hayward

(2002) and Ellis et al. (2011), which reported that prior experience in similar target's industries and size improves the post-acquisition outcome for the acquirer.

This paper has several contributions to the extant literature. This paper introduces new antecedent for the CEO's turnover to the acquisition literature by explaining a behavioral argument behind the target's CEO turnover. The paper asserted that similarity between the (acquirer and the target) CEOs decreases the likelihood of the target's CEO departure. Acquisition as a formal contract includes two parties. On one side, the acquirer's CEO as the buyer, and on the other side, the target's CEO as the seller interact, negotiate and finalize the deal. Based on similarity-attraction and social categorization literature (Ashforth & Mael, 1989; McPherson, et al., 2001; Tajfel, 1982), individuals tend to connect, cooperate and collaborate easier with other individuals when they share similar characteristics. Such similarities are surrogate for similarity in values, norms, and beliefs which reduces social conflicts and frictions (Pelled, 1996), increases collaboration and cooperation (Tsui & O'Reilly, 1989) and establishes trust between individuals (Li & Hambrick, 2005).

The empirical setting for the paper brought unique opportunity for testing the similarity effect. There is a size difference between the acquirer (large incumbent) and the target (small firm). This resolves two potential problems. First, it is easier to assume that when the deal is closed, the acquirer's CEO assumes control over the target and consequently is in charge of all the decisions related to post-acquisition changes to the target. In other words, there is a clear power imbalance between the two CEOs in post-acquisition. In case of merger of equal size (MOEs), although like any other deal there is an acquirer (buyer) and a target (seller), decision making is more complicated and is not in the hand of the acquirer's CEO entirely as the target's CEO has also some influences (See Wulf, 2004 for a review on MOEs). The power balance in MOEs imposes value threat rather than attraction. When both CEOs have similar power and similar characteristics, the more likely scenario is to expect CEO's departure for competitive threat (See for e.g. Duguid et al., 2012); furthermore, RBV and efficiency theory suggest replacement due to redundancy at senior managerial positions. For the future study, it is interesting to evaluate whether similarity results in attraction or threat and redundancy. Second, in case of MOEs the deal involves top

managers of firms as well as influential shareholders and board members, therefore it is expected that the effect of similarity between CEOs on the target's CEO departure is not as strong as this setting. For future study it would be interesting to evaluate the effect of similarity between TMTs of both firms in case of MOEs on post-acquisition managerial turnover similar to the study conducted by Li & Hambrick (2005) on the effect of similarity between fractional groups in Sino-American joint ventures.

This paper also contributes to the literature of trust in acquisition. To my knowledge, all the empirical works so far have captured the effect of inter-organizational trust on the acquisition. For instance, the effect of prior alliance (Porrini, 2004), indirect or direct network ties (Graebner, 2009 and Rogan & Soresnson, 2014), and multiple exchanges (Lee, 2012) on the acquisition. This paper has provided a new perspective by linking trust at the individual level (between CEOs) on the acquisition. For the future study, it is interesting to investigate on the relative strength of interpersonal to inter-organizational trust on the acquisition; more specifically, the moderating and mediating role of similarity (or dissimilarity) between CEOs on the effect of inter-organizational trust such as prior alliance or common ties on the acquisition.

Finally this paper contributes to acquisition experience literature. As expressed before, this paper complements prior studies (For e.g.: Ellis, et al., 2011; Zollo & Reuer, 2010; Zollo & Singh, 2004) by showing that experience of the acquirer reduces not only the cost of the post-acquisition integration but also the chance of choosing the inappropriate post-acquisition integration mechanism. The deeper investigation corresponds to Barkema & Schijven (2008) call for more heterogeneous treatment of experience when studying its effect on the focal acquisitions. For future studies, it is interesting to study the post-acquisition integration experience. It can be conjectured that the acquirers choose the integration mechanisms that have been practiced more frequently by the acquirer in prior acquisitions. In a future study, this argument can be tested.

This paper has also some practical implications for the managers. First, acquirers especially CEOs should be cautious in making decisions related to the post-acquisition changes including the status of the target's CEO

after the deal. The discrepancy between what is announced after the deal and further change in the decision shows that the acquirers misjudge the post-acquisition integration and its challenges. The paper shows that more experienced acquirers are less prone to misjudgment. In this regard as mentioned before, serial acquirers such as Cisco (Ferray, 2011) and GE (Ashkenas et al., 1998) lower the cost and improve the effectiveness of the integration by codifying the experience in different phases of the acquisition process in a form of handbook to transfer the practice when necessary. Acquirers with less experience in acquisition can imitate the best practice from these serial acquirers or hire consultant to overcome the lack of experience in integration. In addition, the effect of similarity on the targets' CEO retention warns acquirers especially less experienced acquirer; they should take prudent steps to avoid behavioral biases and traps in making decisions for post-acquisition integration. Although not measured and discussed in the paper, these misjudgments are costly for the acquirer. Other than direct costs related to implementation, there are costs associated to reputation and public image of the acquirers, as it is perceived that these firms cannot honor their promises. The impaired reputation affects the acquirers' relation with the shareholders and the behavior of targets in future acquisitions.

The final word, in the paper I found that the similarity between CEOs increases the positive attitude and attraction to one another in acquisitions, and consequently increases the chance of the target's CEO retention in post-acquisition period. Nevertheless, this effect is limited to misjudgments, and biases created also by similarity, which results in replacement of the target's CEO in a short while after the deal is closed. The paper confirmed the old proverb that birds of a feather flock together, however, in case of acquisition they don't flock that long.

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Table 1: The pairwise correlation matrix and descriptive statistics of the variables <sup>a,b</sup>

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>1. Announcement of replacement</b>	0.32	0.47	1														
<b>2. Misdjudgment</b>	0.42	0.49	-0.48	1													
<b>3. Similarity in type</b>	0.5	0.5	-0.19	0.23	1												
<b>4. Age difference</b>	17.19	9.78	-0.19	0.14	0.02	1											
<b>5. Target CEO duality</b>	0.23	0.42	0.15	-0.10	0.04	-0.20	1										
<b>6. Target CEO tenure (log)</b>	1.79	0.75	-0.04	0.03	0.25	-0.20	0.12	1									
<b>7. Target public</b>	0.49	0.5	0.14	-0.08	-0.18	-0.13	0.24	-0.15	1								
<b>8. Target age</b>	13.94	12.74	-0.11	-0.02	-0.04	-0.21	0.08	0.21	0.01	1							
<b>9. Target patent</b>	0.62	0.49	0.13	0.02	-0.09	-0.18	0.02	-0.05	0.28	0.09	1						
<b>10. Target size (Nr. of employee)</b>	154	120	0.10	0.03	-0.05	-0.09	0.14	-0.06	0.43	0.13	0.12	1					
<b>11. Cross border</b>	0.19	0.39	-0.22	0.14	0.10	0.16	-0.22	0.05	-0.35	0.02	-0.19	-0.16	1				
<b>12. Absoprtion</b>	0.32	0.47	0.28	-0.10	-0.06	-0.02	0.15	-0.04	0.09	-0.05	-0.01	0.21	-0.14	1			
<b>13. Product relatedness</b>	0.68	0.42	0.08	-0.04	-0.09	-0.07	0.06	-0.18	0.12	-0.11	0.08	-0.09	0.01	0.07	1		
<b>14. Alliance</b>	0.25	0.43	0.02	-0.06	-0.03	0.04	-0.01	-0.08	0.08	-0.10	0.03	-0.01	-0.02	-0.02	-0.05	1	
<b>15. Minority stake</b>	0.05	0.22	0.03	-0.05	-0.05	0.05	0.00	0.01	0.13	-0.06	-0.08	0.07	0.12	-0.16	-0.06	0.32	1
<b>16. Acquirer experience (log)</b>	2.5	1.06	0.14	-0.10	-0.08	0.14	-0.01	-0.08	-0.03	-0.08	-0.07	0.05	0.07	0.09	0.12	0.20	0.07

<sup>a</sup> The correlations above 0.09 at absolute value are significant at  $p < 0.1$ , above 0.12 are significant at  $p < 0.05$  and above 0.15 are significant at  $p < 0.01$

<sup>b</sup> N=252

Table 2a: Result of the main estimations, logit model with the dependent variables probability of announcement of the target's CEO retention and misjudgment <sup>a,b</sup>

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-0.397 (1.19)	-0.682 (1.20)	-1.352 (1.26)	-0.951 (0.94)	-1.211 (0.93)	-1.743* (1.00)
Age difference	0.052*** (0.02)	0.050*** (0.02)	0.049*** (0.02)	0.031** (0.02)	0.031** (0.02)	0.0312** (0.02)
Target CEO duality	-0.378 (0.41)	-0.461 (0.43)	-0.435 (0.43)	-0.403 (0.40)	-0.46 (0.41)	-0.443 (0.40)
Target CEO tenure (log)	0.016 (0.24)	-0.141 (0.25)	-0.142 (0.25)	0.181 (0.20)	0.048 (0.20)	0.053 (0.19)
Target public	0.249 (0.56)	0.328 (0.54)	0.275 (0.55)	0.002 (0.01)	0.005 (0.01)	0.00389 (0.01)
Target age	0.048*** (0.02)	0.054*** (0.02)	0.052*** (0.02)	0.438 (0.37)	0.457 (0.37)	0.41 (0.37)
Target patent	-0.299	-0.276	-0.281	0.01	0.095	0.099



	(0.42)	(0.43)	(0.44)	(0.08)	(0.08)	(0.08)
Target size ( $\times 10^{-3}$ )	-0.082	-0.097	-0.087	0.876**	0.795**	0.815**
	(0.11)	(0.11)	(0.11)	(0.39)	(0.39)	(0.40)
Cross border	1.351**	1.218*	1.315*	-0.112	-0.0129	-0.022
	(0.62)	(0.62)	(0.70)	(0.43)	(0.41)	(0.42)
Absorption	-1.373***	-1.379***	-1.437***	-0.447	-0.419	-0.453
	(0.38)	(0.39)	(0.40)	(0.33)	(0.34)	(0.34)
Product Relatedness	-0.03	0.065	-0.046	0.188	0.191	0.114
	(0.43)	(0.44)	(0.44)	(0.37)	(0.36)	(0.36)
Alliance	0.281	0.248	0.19	-0.151	-0.181	-0.236
	(0.39)	(0.39)	(0.39)	(0.32)	(0.32)	(0.33)
Minority stake	-1.247	-1.162	-1.359	-0.712	-0.596	-0.733
	(0.85)	(0.88)	(0.90)	(0.66)	(0.66)	(0.66)
Acquirer experience (log)	-0.366**	-0.335*	-0.04	-0.339**	-0.304**	-0.062
	(0.18)	(0.19)	(0.23)	(0.14)	(0.15)	(0.20)
Similarity in type		0.871**	2.564***		0.797***	1.944***
		(0.39)	(0.90)		(0.29)	(0.74)
Similarity in type × Acquirer experience (log)			-0.663**			-0.462*
			(0.33)			(0.27)
Time and industry controls	Included	Included	Included	Included	Included	Included

R <sup>2</sup> (Pseudo)	0.23	0.25	0.26	0.09	0.11	0.12
ΔR <sup>2</sup>			0.01**			0.01*
Log likelihood	-122	-118.9	-116.8	-156.7	-153.1	-151.7
DF	21	22	23	21	22	23
Chi2	51.16	51.83	57.78	29.61	37.27	40.73

<sup>a</sup> Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>b</sup> N=252

Table 2b: Average marginal effects (Delta method) of similarity in type on the probability of announcement of CEO retention and misjudgment

Panel A (Announcement of retention)		Model 2
M.E. of Similarity in type		0.135** (0.06)
Panel B (Announcement of retention)		Model 3
M.E. of Similarity in type at Acquirer experience min		0.301*** (0.11)
M.E. of Similarity in type at Acquirer experience mean		0.145** (0.06)
M.E. of Similarity in type at Acquirer experience max		-0.117 (0.15)
Panel C (Misjudgment)		Model 5
M.E. of Similarity in type		0.167*** (0.06)
Panel D (Misjudgment)		Model 6
M.E. of Similarity in type at Acquirer experience min		0.407*** (0.14)
M.E. of Similarity in type at Acquirer experience mean		0.172*** (0.06)
M.E. of Similarity in type at Acquirer experience max		-0.054 (0.12)

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3a: Result of the additional estimations, logit model with the dependent variables probability of announcement of the target's CEO retention and misjudgment <sup>a,b</sup>

VARIABLES	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Constant	-0.835 (1.21)	-1.495 (1.24)	-0.807 (1.25)	-1.304 (0.92)	-1.824* (1.00)	-1.287 (0.93)
Age difference	0.050*** (0.02)	0.048*** (0.02)	0.049*** (0.02)	0.031** (0.02)	0.031** (0.02)	0.031** (0.02)
Target CEO duality	-0.504 (0.41)	-0.511 (0.42)	-0.509 (0.42)	-0.461 (0.41)	-0.443 (0.40)	-0.461 (0.41)
Target CEO tenure (log)	-0.173 (0.27)	-0.171 (0.27)	-0.174 (0.27)	0.041 (0.20)	0.054 (0.20)	0.041 (0.20)
Target public	0.42 (0.53)	0.395 (0.55)	0.424 (0.52)	-0.008 (0.42)	-0.005 (0.44)	-0.006 (0.42)
Target age	0.054*** (0.02)	0.054*** (0.02)	0.055*** (0.02)	0.004 (0.01)	0.003 (0.01)	0.004 (0.01)
Target patent	-0.171 (0.46)	-0.185 (0.46)	-0.177 (0.46)	0.475 (0.36)	0.407 (0.37)	0.475 (0.36)
Target size ( $\times 10^{-3}$ )	-0.116	-0.107	-0.116	0.095	0.1	0.095

	(0.10)	(0.11)	(0.10)	(0.08)	(0.08)	(0.08)
Cross border	1.299**	1.414*	1.292**	0.812**	0.829**	0.811**
	(0.65)	(0.73)	(0.65)	(0.39)	(0.40)	(0.39)
Absorption	-1.329***	-	-1.328***	-0.407	-0.437	-0.406
	(0.39)	(0.40)	(0.39)	(0.35)	(0.34)	(0.34)
Product Relatedness	0.253	0.16	0.27	0.229	0.168	0.236
	(0.45)	(0.46)	(0.46)	(0.36)	(0.36)	(0.36)
Alliance	0.264	0.21	0.275	-0.166	-0.23	-0.162
	(0.37)	(0.38)	(0.37)	(0.32)	(0.33)	(0.33)
Minority stake	-1.481*	-1.613*	-1.454*	-0.686	-0.829	-0.677
	(0.83)	(0.84)	(0.83)	(0.68)	(0.68)	(0.69)
Acquirer high tech experience (log)	-0.515**	-0.22	-0.517**	-0.286**	-0.025	-0.287**
	(0.21)	(0.23)	(0.20)	(0.14)	(0.19)	(0.14)
Acquirer non-high tech experience (log)	-0.442*	-0.459*	-0.401	-0.026	-0.028	-0.049
	(0.26)	(0.24)	(0.35)	(0.20)	(0.20)	(0.30)
CEO style similarity	0.961**	2.670***	0.866*	0.804***	1.912***	0.759
	(0.40)	(0.89)	(0.51)	(0.29)	(0.63)	(0.47)
Similarity in type × Acquirer high tech experience		-0.723**			-0.495**	
		(0.33)			(0.24)	
Similarity in type × Acquirer non-high tech experience			0.109			0.047
			(0.47)			(0.35)

Time and industry controls	Included	Included	Included	Included	Included	Included
R <sup>2</sup> (Pseudo)	0.27	0.28	0.27	0.11	0.12	0.11
ΔR <sup>2</sup>		0.01***	0		0.01*	0
Log likelihood	-115.6	-113	-115.6	-152.9	-151.1	-152.9
DF	23	24	24	23	24	24
Chi2	55.68	61.41	54.97	38.55	43.54	38.59

<sup>a</sup> Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>b</sup> N=252

Table 3b: Average marginal effects (Delta method) of similarity in type on the probability of announcement of CEO retention and misjudgment

Panel A (Announcement of retention)	Model 8
M.E. of Similarity in type at Acquirer high tech experience min	0.262*** (0.09)
M.E. of Similarity in type at Acquirer high tech experience mean	0.162** (0.062)
M.E. of Similarity in type at Acquirer high tech experience max	-0.132 (0.14)
Panel B (Misjudgment)	Model 11
M.E. of Similarity in type at Acquirer high tech experience min	0.408*** (0.12)
M.E. of Similarity in type at Acquirer high tech experience mean	0.173*** (0.06)
M.E. of Similarity in type at Acquirer high tech experience max	-0.085 (0.12)

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Paper E



# Paper E

## **Why diverse top management teams break up in post-acquisition periods**

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## **Abstract**

*This paper proposes a complementary explanation behind the turnover of target's top managers in post-acquisition periods. Although human capital and acquisition implementation literature describe managerial retention as desirable, empirical studies have reported significant managerial turnover in acquisition of high-tech and knowledge intensive firms. Borrowing some insights from the team diversity literature, the paper examines the ex-ante diversity among top managers of knowledge-intensive and high-tech firms as an antecedent of their turnover in post-acquisition. We argue that diversity reduces the coordination efficiency necessary to transfer knowledge and facilitate post-acquisition organizational integration, and managers belonging to such teams are more likely to be replaced. Empirical analysis drawing on 2164 top managers in 297 Swedish firms shows that managerial position diversity as a separation, pay disparity and industrial tenure diversity as a variety indeed are associated with managerial exit in three years after the acquisition.*

# 1. Introduction

In the literature on acquisition of high-tech and knowledge intensive firms, scholars pay special attention to their top managers' status after the deal. Literature suggests that these managers, if they stay in post-acquisition, provide coordination capacity for the acquirer to transfer knowledge and technology from the target to the acquirer while minimizing the disruptive effect of acquisition (Cloudt, et al., 2006; Colombo & Rabbiosi, 2014; Graebner, 2004 & 2009; Graebner, et al., 2010 and Ranft & Lord, 2002). In addition, the acquirer benefits from human capital embedded in top managers; in high-tech and knowledge intensive firms where top managers might be founder- managers and patent holders (Buchholtz, et al., 2003; Castanias & Helfat, 1991 & 2001; Coff, 1999 & 2002; Wulf & Singh, 2011). The empirical studies provide evidence for the aforementioned arguments by showing that top managers' turnover causes decline in post-acquisition performance (Cannella & Hambrick, 1993; Krishnan, et al., 1997; Shanley & Correa, 1992; Very, et al., 1997; Walsh, 1989; Zollo & Singh, 2004). However, multiple empirical studies report significant top managers' turnover in the target after both domestic and international acquisitions (Cannella & Hambrick, 1993; Iverson & Pullman, 2000; Kiessling & Harvey, 2006; Krishnan, et al., 1997; Krug & Hegarty, 2001; Lubatkin, et al., 1999; Mikkelson & Partch, 1997; Walsh, 1988 and Walsh & Ellwood, 1991). Clearly, this calls for additional work seeking to reconcile the theory on the role of top managers with empirical observation.

We believe that one reason behind this gap between theory and practice lies in the tendency of extant literature on studying managerial turnover considering only their individual dimensions; by doing so, they overlooked at the collective dimensions. Top managers do not act in silos, but their works are dependent on one another. A team perspective resonates with arguments of coordinating capacity and human capital. First, the top management team (TMT) coordinates a firm. It is

responsible for coordination in pre-acquisition and therefore is a potential candidate for coordination in post-acquisition period. Second, human capital is inherently connected to individual demographic attributes and characteristics (Buchholtz, et al., 2003; Coff, 2002). At team level however, these demographic attributes propagate diversity. Diversity is a multidimensional construct and often considered as a double edge sword that affects the overall performance of the team (Harrison & Klein, 2007; Lau & Murnighan, 1998; Pelled, 1996 and Pelled et al., 1999). Diversity determines coordinating capacity (Milliken & Martins, 1996) and the human capital of TMT (Harrison & Klein, 2007). Therefore, we expect that the diversity determines the top managers' turnover in post-acquisition period. The main objective of the paper is to demystify the effect of ex-ante diversity of target's TMT and the turnover in post-acquisition. The overarching research question in this paper is: "What is the effect of ex-ante demographic diversity in target's TMT on determining the top manager's turnover in post-acquisition?" In particular, we are interested to understand to what extent certain demographic diversity variables namely, managerial status diversity, pay dispersion, and education background and industrial tenure diversity, make an influence on top managers' turnover in post-acquisition. In this paper, we follow the operationalization of the diversity constructs suggested by Harrison & Klein (2007), and treat managerial status diversity as separation, pay dispersion as disparity and the last two constructs as variety. In order to answer the research question, our empirical sample consists of 2164 top managers of 297 Swedish firms, acquired between 2001 and 2006 in knowledge intensive and high-tech sectors. The main finding of the paper is that ex-ante TMT diversity increases the likelihood of a top manager's turnover after the acquisition. We find that managerial status diversity, pay dispersion and industrial tenure diversity increases the turnover. We did not find any evidence of the relationship between education background diversity and turnover.

This paper makes several contributions to the extant literature on managerial post-acquisition turnover, acquisition implementation, and TMT diversity studies. We believe that this paper contributes to the studies conducted on top managers' turnover in post-acquisition by introducing a new explanation to the rationale behind the top managers'

departure. This paper is among the few studies able to empirically study all the members of the TMT in post-acquisition thanks to the comprehensive data availability in our sample (See for e.g.: Bergh, 2001 and Very, et al., 1997 as exception). Prior studies on managerial turnover in post-acquisition focused mostly on CEO's departure and few studies included selected members such as CFO, COO, and CTO. This limits our view over managerial turnover in post-acquisition. As managing a firm is a collective effort rather than an individual endeavor, overall team's dynamic determines acquirer's decision about top managers' retention or replacement. In other words, managers' turnover in post-acquisition is affected by the team overall demography as well as their individual demography. The second contribution of this paper is to the acquisition implementation literature by showing that acquirers prioritize the coordination between target and the rest of their organization over human capital embedded in managerial resources. Put it differently, acquirers tend to replace inefficient coordinating teams despite of the embedded human capital for each top manager individually. Coordination is more important in acquisition of knowledge intensive and high-tech firms, as knowledge is usually tacit and its transfer requires high level of coordination and communication (Grant, 1996). Also this paper shows that target's ex-ante organizational structure determines the top manager's turnover in post-acquisition. In particular, targets with decentralized organizational structure have higher rate of turnover compare to centralized structure. Finally, this paper, to our knowledge, is the first that focuses on diversity in TMT studies and includes all types of diversity (separation, disparity and variety) together. Our finding on the positive effect of diversity on TMT turnover supports the argument provided by the studies highlighting the importance of environmental contingency on the effect of diversity on team's turnover and performance. By showing diversity in the form of variety as an antecedent of turnover, which generally in diversity studies is considered as constructive, this paper explores the strength of environmental contingency over the intrinsic characteristics of the diversity. Accordingly, we introduce acquisition as a disruption to the team, which in turn changes the tasks, routines and roles and consequently the objective for the team. Such changes activate the faultline in the form of separation (dissimilarities) or disparity, which causes social conflicts and categorization among the team members. In

addition, diversity in the form of variety is not suitable for the teams where coordination and communication efficiency are more important than creativity, which is the case for the acquisition.

The rest of the paper is organized as follows. The next section reviews the role of target's TMT in post-acquisition and diversity in TMT in the prior literature. This section ends with the hypotheses regarding the effect of ex-ante diversity on TMT's turnover in post-acquisition. Section 3 describes the data, variables and methodology. Section 4 reports the results; they are discussed further and the paper is concluded in Section 5.

## **2. Theoretical framework**

### **2.1 The role of target's TMT in M&A**

There are two streams of literature that investigated on the status of the target's top managers in post-acquisition phase. The first stream is post-acquisition literature which emphasizes on the role of target top managers in facilitating the integration process and organizational changes, if they get involved and participate actively in post-acquisition (Graebner, 2004 & 2009; Pablo, 1994; Ranft & Lord, 2002; Graebner, 2009). The key goal in integration is providing coordination between the target and the rest of the acquirer's units to set the target's activities within the acquirer's organizational boundaries. The post-acquisition integration process diverts acquirer's managerial resources from the acquirer's daily operation and the core business (Hitt, et al., 1991; Schoar, 2002); the target's top managers can be in charge of the post-acquisition integration to free up managerial resources of the acquirer. In addition, if target managers stay, the cost of implementation becomes lower for the acquirer as they have better knowledge over the target's organizational structure (Graebner, 2004; Graebner & Eisenhardt, 2004; Very, et al., 1997). Organizational disruptions reduce the employees' productivity and loss of autonomy and also bring about lack of commitment and demotivation among the employees, which ultimately have negative influence on the post-acquisition performance (Chatterjee, et al., 1992; Datta & Grant, 1990; Larsson & Finkelstein,

1999; Zollo & Singh, 2004). In acquisition of high-tech or knowledge intensive firms, the main key element is knowledge and technology transfer from the target to the acquirer (Ahuja & Katila, 2001; Parunchuri, et al., 2006). As the knowledge is mostly tacit and embedded in the target's employees high level of coordination is required (Puranam, et al., 2009). Providing high level of coordination imposes cost of losing the knowledge because of organizational disruptions and accompanied departure of key employees because of demotivation and loss of autonomy (Colombo & Rabbiosi, 2014; Graebner, et al., 2010; Puranam, et al., 2009; Ranft & Lord, 2002). Empirical studies have for example demonstrated how demotivation and lack of commitment lowers the productivity in R&D outputs in post-acquisition period (Kapoor & Lim, 2007; Parunchuri, et al., 2006). If the target's top managers stay after the acquisition, they can alleviate the negative effect of organizational disruptions and demotivation of employees (Graebner, et al., 2010; Shanley & Correa, 1992). In this regard, the target's top managers can provide coordination capacity for the acquirer in the post-acquisition phase.

The second stream of literature focuses on the human capital of the target's top managers. The target's top managers are not only resourceful in organizing the target human capital for the acquirer but also they are part of the human capital of the firm (Buchholtz, et al., 2003; Castanias & Helfat, 1991 & 2001; Coff, 1997 & 2002; Carpenter, et al., 2001; Walsh & Ellwood, 1991; Wulf & Singh, 2011). To the extent that the human capital is unique to the acquirer, the likelihood of turnover reduces in post-acquisition. In acquisition of high-tech and knowledge intensive firms, the two key elements are technology and knowledge (Ahuja & Katila, 2001; Colombo & Rabbiosi, 2014; Kapoor & Lim, 2007; Parunchuri, et al., 2006; Puranam, et al., 2006; Ranft & Lord, 2002). In high-tech and knowledge intensive firms, human capital embedded in top managers is beyond just managerial capital, as in many cases, they also participate in the knowledge creation process of the firm; founder top managers are good examples as their human capital is beyond managerial skills and include technological know-how (Coff, 1999 & 2002; Colombo & Grilli, 2005; Fahlenbarch, 2009; Graebner, et al., 2010). Accordingly, retention of target's top managers

after the acquisition is beneficial for the acquirer as they can contribute to technological know-how and managerial expertise of the firm.

In line with both the acquisition implementation view and the human capital perspective, empirical studies reported post-acquisition performance decline when there is a high rate of turnover among top managers (Cannella & Hambrick, 1993; Krishnan, et al., 1997; Shanley & Correa, 1992; Very, et al., 1997; Walsh, 1989; Zollo & Singh, 2004). However multiple empirical studies reported significant target top managers' turnover after the acquisition both domestically and internationally (Cannella & Hambrick, 1993; Iverson & Pullman, 2000; Kiessling & Harvey, 2006; Krishnan, et al., 1997; Krug & Hegarty, 2001; Lubatkin, et al., 1999; Mikkelsen & Partch, 1997; Walsh, 1988 & 1989; Walsh & Ellwood, 1991). Some studies investigated between these aforementioned countervailing findings, and suggest several rationale behind the target's managerial departure in the post-acquisition. Acquirers may replace the top managers to avoid resistance against the changes in post-acquisition (Buccholtz & Ribbens, 1994; Cannella & Hambrick, 1993). In addition, target's top managers decide to leave after the acquisition because of their psychological perception against the acquisition. In particular, loss of autonomy, inferiority and ambiguity in their future career are among the reasons mentioned for the managers' decision for departure (D'Aveni & Kesner, 1993; Hambrick & Cannella, 1993; Lubatkin, et al., 1999; Very, et al., 1997). Finally, cultural differences, which are exacerbated in international acquisitions, may result in social frictions which influence managerial departure (Chatterjee, et al., 1992; Krug & Hegarty, 2001).

Recently Krug, et al. (2014) asserted that the reason behind the mismatch between empirical findings showing abnormal turnover in post-acquisition and the theoretical lenses studying the turnover or the top managers' role in post-acquisition is the lack of attention paid to the context. Considering the fact that the target's top managers do not act in silos before and after the acquisition; they work as a team and managing a firm is a collective endeavor. Bringing a team perspective to studying the top is an important yet overlooked context in top managers' turnover in post-acquisition for two reasons. First, TMT's composition as an aggregate measure of the team members' individual demographic characteristics, is a surrogate for organizational structure (Chandler,



1991; Guadalupe, et al., 2013; Ricardo, et al., 2008). Take a look again at the post-acquisition literature, with the central notion of integration and its imposing necessary changes to the organizational structure of the target, suggests also changes in the target's TMT composition. Second, TMT's composition affects the team decision making process which results in certain decision outcome and ultimately firm performance (Bantel & Jackson, 1989; Carpenter, 2002; Menz, 2012). Therefore, active participation of the target's top managers in post-acquisition's decisions and implementation is directly affected by the TMT's composition. Finally, if the demographic characteristics of top managers at individual level propagate the human capital, at team level the interaction of these characteristics create the collective characteristics and the team composition (Menz, 2012). The team is the bundle of complementary managerial human assets for the firm resulted from variety and differences in the demographic characteristics among the team members. Diversity is the notion that captures the variety and differences in the team (Milliken & Martins, 1996). Diversity affects not only the human capital at team level but also it affects the decision making process and the decision outcome. All in all, these arguments suggest that, diversity of the target's TMT before the acquisition is directly connected to the post-acquisition of the target's top managers' status. Thus, any meaningful understanding about the effect of turnover should include the context within which the individual works. We suggest that in case of acquisitions, considering the phenomenon of top manager turnover both from an individual and a team level perspective allows us to gain important insights into the dynamics of post-acquisition processes. In the following section we investigate on the diversity as antecedents of TMT turnover in post-acquisition.

## **2.2 Diversity in TMT**

The literature on the diversity of TMT mainly applies two theoretical lenses for explaining the effect of diversity on team dynamics and outcomes. The first lens, information decision making perspective, argues that diversity among team members increases the information processing capability of the team and consequently increases the effectiveness of decision making and therefore the performance (Carpenter, 2002; Hambrick, 2007; Hambrick & Manson, 1984; Harrison & Klein, 2007). The alternative competing lens, similarity-

attraction perspective, argues that diversity causes dissimilarity, which engenders social frictions, emotional conflicts, internal power games, and competition and ultimately reduces decision making efficiency and the performance (Jehn, et al., 1999; Li & Hambrick, 2005; Pelled, 1996; Pelled, et al., 1999 ).

However, this literature reports contradictory findings on the effect of diversity (Ancona & Caldwell, 1992; Bantel & Jackson, 1989; Bell, et al., 2011; Carpenter, 2002; Hambrick, et al., 1996; Li & Hambrick, 2005; Jehn, et al., 1999; Pearsall, et al., 2008 ). Some studies reported positive effects of diversity (Carpenter, 2002); others reported negative effect (Jehn, et al., 1999; Li & Hambrick, 2005), while plenty of studies did not find any significant effect (Bantel & Jackson, 1989; Simons, et al., 1999; Wiersema & Bantel, 1992) on performance defined by various measures. More recent studies tried to reconcile between opposing lenses. Some studies perceived diversity as a multi-dimensional construct of collective effect of team members' individual characteristics and attributes. Some of these constructs create dissimilarity and causes separation and disparity inside the team while others bring variety of expertise and cognitive capabilities to the team and enrich information processing capability of the team (Harrison & Klein, 2007). In addition, other studies have proposed the influence of environmental contingencies (for instance complexity) on explaining the positive or negative effect of diversity (See for e.g.: Ancona & Caldwell, 1992; Carpenter, 2002; Hutzschenreuter & Horstkotte, 2013; Mihalache, et al., 2013; Milliken & Martins, 1996; Van der Vegt & Bunderson, 2005). Ancona & Caldwell (1992) has shown that although diversity in expertise and functional background is helpful for problem solving and creativity in product development teams, they do not necessarily increase the performance as they impede coordination, cooperation, and communication for realization of the product development. In line with the environmental contingency argument, Lau & Murnighan (1998) proposed that based on the dynamic of team composition, certain attributes inside the team creates faultlines inside the team, which engender subgrouping. These faultlines are not active and therefore not strong enough to affect the overall team dynamic and performance per se. But when certain changes in the team's task or the environmental context occur, it triggers the faultline and stimulates social categorization

(Hutzschenreuter & Horstkotte, 2013; Li & Hambrick, 2005; Van der Vegt & Bunderson, 2005). Acquisition is an environmental change imposed to the firm and the team, therefore it can activate the faultline for several reasons: first, the target faces certain disruptions in both norms and routines (Graebner, 2004; Puranam, et al., 2009); second, accompanied lay-offs create the so called career concern for the top managers (D'Aveni & Kesner, 1993; Graebner & Eisenhardt, 2004) and reduce collaboration inside the team; third, acquirer changes the target's organizational structure to make it fit with the rest of its organization (Colombo & Rabbiosi, 2014; Puranam, et al., 2009; Sears & Hoetker, 2014) which also changes the TMT composition.

Acquisitions as disruptive events bring about the coordination flux to TMT. Prior literature on team have found that before the disruptive event, teams usually have developed and established certain routines to provide coordination mechanisms and to avoid emotional conflicts in order to perform the tasks necessary for achieving the collective goals. The disruptive events as an emergent state make the teams unbalance and internally inconsistent (Marks, et al., 2001). The changes in the environment and goals force the teams to devote much of the attention, time and energy to re-orchestrating the resources and change the sequence of the tasks to comply with the change (Summers, et al., 2012). In this regard, the event disrupts the already existing coordination mechanisms to the extent that although the team functions, the efficiency of coordination reduces because of the distraction of team to redefining the routines or incapability of the existing routines to provide the coordination capacity appropriate to the change. In other words, the team does not suffer from lack of coordination but suffers from flux in coordination (Summers, et al., 2012). Additionally, the routines help the team members to handle their emotional conflicts during the team work, because of the inefficacy of routines with the disruptive events the team members become vulnerable to the conflicts (Marks, et al., 2001). In the following, based on the categorization of diversity proposed by Harrison & Klein (2007), environmental contingencies and faultline theory proposed by Lau & Murnighan (1998) and our argument on acquisition as disruptive event, we articulate our hypotheses on the effect of TMT diversity on managerial turnover in post-acquisition.

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### **2.3 Hypotheses**

The first diversity construct, separation, is defined as the extent of dissimilarity and polarization between team members (Harrison & Klein, 2007). In TMT, there is a difference between C-Suite members (functional managers) and non C-Suite members such as head of autonomous subsidiaries, strategic business units (SBUs) and plant managers (Guadalupe, et al., 2013). Accordingly one dimension of separation in TMT occurs in the difference between top managers' positions (C-Suite vs. non-C-Suite) inside the firm. Although the latter directly reports to the CEO similar to C-suite members, they are not influenced by the CEO as much as C-suite members. Based on the argument rooted from organization design literature, the non C-suit members receive higher degree of freedom and autonomy due to decentralized structure of the organization and their distance from the headquarter (Bartlett & Ghoshal, 1993; Chandler, 1991; Child, 1972). Cannella and Colleagues (2008) have shown that colocation of top management team members increases their interaction while geographical distance results in reduction of interaction and increasing social categorization that ultimately hampers the firm's performance. The separation between top managers in terms of managerial position is a faultline that in acquisition may become activated. In this situation, non-C-Suite members try to uphold their autonomy and status bestowal after the acquisition. This generates internal competition and power games between them and C-suit members (Hambrick & Cannella, 1993; Pablo, 1994). It can therefore be expected that composition of C-Suite and non-C-Suite members creates social categorization which it may propagate internal conflicts and ultimately team turnover in post-acquisitions periods. Therefore:

*H1: In acquisition of high-tech or knowledge intensive firms, ex-ante positional diversity of TMT increases the likelihood of the top manager turnover in post-acquisition.*

The second type of diversity construct, disparity, also has negative effects on team performance. Disparity as vertical disproportionate distribution of valuable and desirable resources creates inequality inside the team (Harrison & Klein, 2007). One of the disparity measurements in TMT studies is pay dispersion (See for example Bloom & Michel, 2002; Siegel & Hambrick, 2005; Wade, et al., 2006). Pay dispersion may cause feelings of dissatisfaction among team members; when they experience they are treated unfairly within the team, they become less collaborative (Pfeffer & Langton, 1993). In addition, disparity may stimulate internal rivalry and aggressive competition among team members. A hostile environment encourages team members to withhold information necessary for decision making (Eisenhardt & Bourgeois, 1988). From an information decision making processing view, disparity therefore damages the performance of the team. For high-tech firms the effect of pay dispersion among TMT members has higher negative effects on the firm performance compared to low-tech firms (Eisenhardt & Bourgeois, 1988; Siegel & Hambrick, 2005). The reason behind this higher sensitivity is the uncertainty involved in technological development which requires higher level of collaboration and coordination between top managers to make the mutual adjustments (Argyres, 1995; Kogut & Zander, 1992). In addition, technology transfer requires higher level of coordination and collaboration between units within a firm (Grant, 1996).

An alternative view of the effects of pay inequality is provided by tournament theory. This theory suggests that rank order payment inside the firms encourage employees to maximize their effort to win the tournament, which in this case is getting promoted. Such competition improves overall firm's performance as the employees exert their maximum efforts (Cappelli & Cascio, 1991; Lazear & Rosen, 1981). In TMTs, managers may for example be engaged in a tournament with the reward of becoming CEO successor (Bloom, 1999). We believe that acquisition as a disruptive event terminates the competition since it imposes a change to the firm's ownership, roles, tasks and routines. Therefore, tournament theory is not applicable in this circumstance;

however the residual dissatisfaction among lower paid top managers results in the faultline diversity that is activated by acquisition.

In acquisition of high-tech and knowledge intensive firms, technology and knowledge transfer are key activities. Therefore, high levels of coordination and collaboration are required in post-acquisition management processes. Since income disparity among TMT members – as we have argued above – tends to create additional frictions in such processes the acquirer is more likely to replace the target's TMT when high pay dispersion is present. Additionally, the top managers may find the team climate hostile and uncooperative and therefore they decide to leave the target after the acquisition. Therefore:

*H2: In acquisition of high-tech or knowledge intensive firms, ex-ante income disparity in the TMT increases the likelihood of the top manager turnover in post-acquisition.*

The third construct of diversity, variety, is the representation of the distribution of team members across different categories of knowledge and expertise. Based on the information decision making process view of the firm, variety enriches the team's knowledge domain and thereby has positive effects on team performance (Harrison & Klein, 2007). In TMT studies, variety in job-related characteristics -particularly in education or industrial background - has been found to have a positive effect on creativity, problem solving and ultimately firm performance (Bunderson, 2003; Cannella, et al., 2008; Carpenter, 2002; Hambrick, et al., 1996). However, based on the environmental contingency argument it can be argued that the type of environment also is another important determinant of the effect of variety, as the direction of the effect on performance is not always positive (Jehn, et al., 1999; Menz, 2012; Milliken & Martins, 1996; Van der Vegt & Bunderson, 2005). In particular, variety slows down the decision making process and convergence of received ideas into a potential solution (Milliken & Martins, 1996). Therefore in highly volatile environments where the team needs to react promptly, the variety is not very well connected to performance. In addition, variety makes decision making lengthier due to lack of understanding and common ground between team members with diverse background and consequently coordination and communication becomes inefficient (Pelled, et al., 1999). In M&A, on



one hand as mentioned before, the key issues for the acquirer in post-acquisitions are coordination and communication between the target and the rest of the organization to transfer the knowledge particularly in high-tech and knowledge intensive acquisitions (Argyres, 1995; Grant, 1996; Puranam, et al., 2009). On the other hand, it creates coordination flux in the target's TMT, which exacerbated the team's coordinating capability when variety is high.

Similar to prior studies on the effect of diversity on knowledge transfer from off-shores (Mihalache, et al., 2013), from product development teams (Ancona & Caldwell, 1992), and project teams (Van der Vegt & Bunderson, 2005) to the parent organizations, we argue that variety hampers efficient knowledge transfer from the target to the acquirer. Put it differently, although diversity as variety has positive influence on knowledge creation, its negative effect on knowledge transfer due to coordination flux, makes the acquirer less willing to keep the target's TMT with high degree of variability in education and industrial tenure background. Therefore:

*H3: In acquisition of high-tech or knowledge intensive firms, ex-ante diversity in the TMT that causes variety increases the likelihood of the top manager turnover in post-acquisition.*

*H3a: In acquisition of high-tech or knowledge intensive firms, ex-ante educational background diversity increases the likelihood of the top manager turnover in post-acquisition.*

*H3b: In acquisition of high-tech or knowledge intensive firms, ex-ante industrial tenure diversity increases the likelihood of the top manager turnover in post-acquisition.*

## **3. Method**

### **3.1 Data and sample**

The empirical analysis is based on the extracted data from matched employer-employee registers collected by Statistics Sweden. We identify all firms which were acquired between 2001 and 2006, and we follow the employees up to three years after the acquisition. In this study we

focused only on firms operating in high-tech, medium to high-tech and knowledge intensive industries. The selection of firms was based on the congruence of their associated NACE code with the list of NACE codes provided by OECD (1997) for the aforementioned industries. We chose top managers as individuals who are reported as senior managers for the firm. We removed smaller targets by excluding the firms that have less than 50 employees at the time of acquisition and also some observations due to lack of data availability. For controlling for the relatedness, we controlled the NACE code at two digit level. Only in two acquisitions the NACE codes were similar at two digit level. By removing the related acquisitions, the sample includes only non-related acquisitions. The final sample for this study consists of 2164 top managers in 297 firms.

## 3.2 Variables

**Dependent variable:** Top manager's turnover is a binary variable; it is equal to 0 if the top manager stays more than three years at acquirer's organization in post-acquisition and 1 if the top manager leaves the firm (and the group to which the firm belongs) sooner than three years in post-acquisition. This measure is similar to studies such as Bergh (2001) and Buchholtz et al (2003). For use in robustness checks, we also follow Lubatkin et al (1999), Wulf & Singh (2011), and Zollo & Singh (2004) in introducing alternative measures for having left the firm 2 years after the acquisition and 1 year after the acquisition, respectively.

### **Independent variables:**

*Managerial status diversity:* For each top manager of the target, we created a binary variable, *c-suit*, equal to 1 if the top manager holds a C-Suite position in the target such as chief operating officer (COO), chief technology officer (CTO) and chief financial officer (CFO) and alternatively equal to 0 if the top manager does not hold a c-suit position such as head of a subsidiary, an SBU or a plant. Managerial status diversity, following (Harrison & Klein, 2007), treated as a separation, was constructed as a team level standard deviation of *c-suit* binary variable.

*Pay dispersion*: For each top manager of the target, we calculated salary as the average three consecutive years' annual salary before the acquisition. Pay dispersion, following (Harrison & Klein, 2007) was constructed as coefficient of variation of average salaries at team level. Therefore:

$$PayDispersion = \frac{\sqrt{(Salary_{ind} - Salary_{mean})^2 / n}}{Salary_{mean}}$$

Where  $Salary_{ind}$  is the salary of each top manager,  $Salary_{mean}$  is the mean of salaries at the team level and  $n$  is number of top managers in the team.

*Education background diversity*: For each top manager of the target, we defined education background as a categorical variable. We created 7 major categories namely: Business administration, engineering, healthcare, humanity and art, natural science, social science, and other studies. Education background diversity, following (Harrison & Klein, 2007) was constructed as a team level Blau index (variety). Therefore:

$$Educationbackgrounddiversity = 1 - \sum Education_i^2$$

Where

$Education_i$  is the proportion of team members belonging to certain category of education.

*Industrial tenure diversity*: For each top manager of the target, firstly, we checked their tenure in different industries based on the first two digit NACE code. Secondly, for each top manager, we identified the corresponding industry with maximum tenure. Finally, similar to *Education background diversity*, we applied Blau index to calculate the variety at the team level. Therefore:

$$Industrialtenurediversity = 1 - \sum Industry_i^2$$

Where

*Industry<sub>i</sub>* is the proportion of team members belong to certain category of industry.

**Control variables:** Our first set of controls relates to the demographic attributes gender and age of the individual top manager. Male is a binary variable, equal to 1 if the top manager is male and 0 if the top manager is a female. In addition, we control for age of the top manager. Following Buchholtz et al (2003) we predict that there is a curvilinear relationship between age and turnover. The turnover is less likely for mid age top managers who look for more stability and have more career concern compared to younger top managers and near retired top managers. From human capital argument, acquirers are more willing to keep the mid age top managers as they have higher level of human capital compared to the younger top managers and acquirer can invest more on their human capital as they stay with the firm longer compared to the near retirement top managers (Wulf & Singh 2011). Age and Age<sup>2</sup> represents the age and age square of the top manager at the time of acquisition.

Beyond demographic factors, we also control for further individual characteristics of the top manager. We constructed the variable Education level as a categorical ordered variable; no academic background is associated with the value 0, undergraduate education with 1 and graduate education with 2. We also control for the average three consecutive years' annual salary (Salary) and managerial experience of the top manager (Managerial experience) as the number of years the individual holds managerial position in the firm in the last 10 years which is normalized by 10. We expect that top managers with higher salary have higher turnover because of two reasons. First by considering the high salary as a proxy for strong relative standing (status, prestige, power and autonomy) in the target before the acquisition, these top managers are more sensitive to losing their status, autonomy and power in post-acquisition (Cannella & Hambrick, 1993; Lubatkin, et al., 1999 and Very, et al., 1997). Second, considering salary as a proxy for human capital embedded in the top managers (Wulf & Singh, 2011), they have less career concern after leaving the firm in post-acquisition. For the similar reason we expect managerial experience to increase the likelihood of managerial exit.

Furthermore, we add a set of team-level controls. In particular, we control for the natural logarithm of team size (Team size) and gender diversity (Gender diversity). Prior studies highlighted the negative effect of gender diversity in the team as it causes separation inside the team and creates emotional and task conflicts and inter-team rivalry (Jehn, 1995; Li & Hambrick, 2005; Pelled, 1996; Pelled, et al., 1999; Pearsall, et al., 2008 and Randel, 2002). Gender diversity causes social categorization and separation inside the target' TMT (Harrison & Klein, 2007). In addition, gender diversity potentially creates a faultline inside the team (Pearsall, et al., 2008). Similar to our argument related to managerial status diversity, acquisition, as a disruptive event, activates this faultline. This situation is not favorable both in terms of post-acquisition performance and integration process; therefore it is more likely that acquirer replaces the team.

Finally, we control for relative size of the target with respect to the acquirer based on the head count of employees at the time of acquisition (Relative size) similar to Very et al (1997), Wulf & Singh (2011), and Zollo & Singh (2004). We expect that for larger target, it is less likely that the acquirer depends on the target's top managers to manage the firm after the acquisition. Since larger firms are more bureaucratic and divisional, changes on the top managers do not affect the overall organization as much as it does in smaller firms. Therefore, we expect that replacing top managers would be easier for the acquirer in larger targets. Finally we control for geographical distance between the target and the acquirer, by a binary variable (Distance) indicating whether both firms are located in the same province or not. We expect that the distance between target and acquirer, decreases the likelihood of turnover as the acquirer is more dependent on the target's top managers to manage the target located in another geographical region.

### **3.3 Model specification**

As the turnover of the individual in our study is considered to be a function of variables at two levels of analysis - individual and team level - we applied a multilevel mixed effect model to allow for both fixed effect (FE) and random effect (RE). While the individual variables are specific to each manager, the team variables are common to the members of the team. By applying a mixed-effect model to our data, we

do not only measure the effect of the independent variables on the mean of the dependent variable (FE) but we also take into consideration the effect provoked by a variation across subgroups of the sample.

The two-level mixed effect model with M clusters and a set of  $u_j$  random effects is expressed as following

$$\Pr(y_{ij} = 1 | x_{ij}, u_j) = H(x_{ij}\beta + z_{ij}u_j)$$

Where  $y_{ij}$  is a binary-valued response representing the manager's turnover (0 or 1),  $j=1, \dots, M$  clusters where each cluster consisting of  $i=1, \dots, n_j$  observations.

The model is estimated with a logistic regression:

$$H(v) = \frac{\exp(v)}{1 + \exp(v)}$$

Where

$H(v)$  is the logistic cumulative distribution function predicting the probability of a success.

## 4. Results

Table 1 includes both descriptive statistics and pairwise correlation matrix of the variables. 52 percent of the top managers in our sample have left the firm within three years after the acquisition. Our turnover figure is in line with prior studies such as Bergh (2001), Buchholtz et al (2003), Hambrick & Cannella (1993), Lubatkin et al (1999), and Walsh (1988) claiming that over 50 percent of the top managers left the target in a three years window after the acquisition. The first independent variable, Managerial position diversity, has a mean of 0.24 and a correlation of 0.05 with turnover ( $P < 0.1$ ). The correlation magnitude and sign is in line with our argument that ex-ante diversity increases the probability of turnover. The second independent variable, Pay dispersion, has a mean of 0.37 and the correlation of 0.11 with turnover

( $P < 0.1$ ). The sign and magnitude of the correlation is also in line with our argument that ex-ante disparity increases the probability of turnover. The last two independent variables, Education background diversity and Industrial tenure diversity, are positively correlated with TMT turnover ( $P < 0.1$ ). Similarly, the sign and magnitude of the correlation is in line with our argument that ex-ante diversity in the form of variety increases the probability of turnover. The descriptive statistics also show that 78 percent of top managers in our sample are male. The average age of top managers in our sample is 45. In addition the average TMT size is eight. In average, the target has the relative size of 0.40 to the acquirer and in 45 percent of the cases the companies are not located in the same region. The highest correlation in Table 1 is 0.34 reported between Education background diversity and Gender diversity, which removes any suspicions of multicollinearity.

Table 2 includes the estimations. Model I is a basic estimation, where only control variables are included. The first control variable with an effect on turnover is age. The results show negative effect of Age, and positive effect of Age<sup>2</sup> on the probability of top manager's turnover (both at  $P < 0.01$ ). This confirms our expected curvilinear relationship between turnover and age inferred from the human capital argument presented by Buchholtz et al (2003). In addition, Salary and Managerial experience increases the probability of top manager's turnover (respectively at  $P < 0.01$  and  $P < 0.1$ ). This finding is in line with our expectation of higher sensitivity of top managers with higher salary and longer managerial experience to losing relative standing proposed by Cannella & Hambrick (1993) and less career concern to leave the firm because of human capital argument, as proposed by Wulf & Singh (2011). Gender diversity also increases the probability of top manager's turnover ( $P < 0.05$ ). Our finding on gender diversity supports the argument proposed by studies such as Jehn (1995), Li & Hambrick (2005), Pelled (1996), Pelled, et al (1999), Pearsall et al (2008), and Randel (2002) that the acquisition may be considered as a disruptive event activating the faultline of gender diversity which causes separation inside the target's TMT. Relative size increases the probability of top manager's turnover ( $P < 0.01$ ). This confirms our argument on easier replacement of top managers for the acquirer in larger targets. Team size decreases the probability of top manager's turnover ( $P < 0.01$ ).

In Model II, the independent variables related to our three hypotheses are included. The first such independent variable, Managerial status diversity, increases probability of top manager's turnover ( $P < 0.01$ ). This positive effect of turnover supports our H1 that ex-ante positional diversity of TMT increases the likelihood of the top manager turnover in post-acquisition. The second independent variable, Pay dispersion, also increases the probability of top manager's turnover ( $P < 0.05$ ). This positive effect on turnover supports our H2 that ex-ante income disparity in the TMT increases the likelihood of the top manager turnover in post-acquisition. The third independent variable, Education background diversity, does not have a significant effect on the probability of top manager's turnover. Therefore, the result does not support our argument in H3a related to the positive effect of education diversity background on top manager's turnover in post-acquisition. However, the last independent variable, Industrial tenure diversity, increases the probability of top manager's turnover ( $P < 0.01$ ). This positive effect supports our H3b that ex-ante industrial tenure diversity increases the likelihood of the top manager turnover in post-acquisition.

#### **4.1 Robustness check**

To check the validity and robustness of our argument on turnover we tested our independent variables for other alternative definitions of turnover similar to (Lubatkin, et al., 1999 and Wulf & Singh, 2011). In Table 3, Model III is the estimation with the dependent variable as the turnover of top managers in a year after the acquisition. The first independent variable, *Managerial status diversity*, does not increase the probability of turnover. The second independent variable, *Pay dispersion*, increases the probability of turnover ( $P < 0.01$ ). *Education background diversity*, similar to our main estimation does not have any effect on turnover. The last independent variable, *Industrial tenure diversity*, increases the probability of turnover ( $P < 0.01$ ). Model IV is the estimation with the dependent variable as the turnover of top managers in two years after the acquisition. The first independent variable unlike Model III increases the probability of turnover ( $P < 0.01$ ). In addition, the second and forth variables increase the probability of turnover ( $P < 0.01$ ). Similar, to Model II and Model III, we did not find any effect of *Education background diversity* on probability of turnover. The only independent variable that is not congruent with our main estimation's



results is *Managerial status diversity* for turnover in the first year after the acquisition. In overall as expected the results from both models indicate that the effect of ex-ante diversity on top manager's turnover after the acquisition is salient that even by varying the definition of turnover, still the effect persists.

## **5. Discussion and conclusion**

In this paper we have shown that ex-ante diversity in the TMT of firms in knowledge-intensive and high-tech sectors increases the rate of top managers' turnover in post-acquisition periods. First, we found that positional diversity of TMT as form of separation increases the turnover. This finding validates our argument related to the effect of separation on social friction, categorization and sub grouping, which increases the turnover in post-acquisition. This finding also suggests that ex-ante organizational structure of the target determines top managers' turnover in post-acquisition. Following the arguments proposed by Argyres (1995), Child (1972), Chandler (1991), and Guadalupe et al (2013), as the TMT composition is the reflection of organizational structure, and number of general managers as non-C-Suite members of TMT represents the degree of decentralization of the firm, it is inferable that targets with decentralized structure are more likely to face turnover.

Secondly, we found that ex-ante pay disparity increases the top managers' turnover in post-acquisition. This finding confirms our argument that pay disparity hampers information processing capability of TMT as team members are less collaborative and withhold information necessary for decision making (Eisenhardt & Bourgeois, 1988 and Pfeffer & Langton, 1993). We conclude that the argument provided by the tournament theorists that pay dispersion has positive effect on the overall firm's performance as all the players in the competition (here top managers) maximize their effort to outperform the others and win the competition (in this case become a CEO), has limited bearing in the case of post-acquisition processes.

Finally, in the paper we found that diversity as variety causes turnover of top managers in post-acquisition. Here in the paper as we argued that, variety hampers efficiency in decision making, communication,

and coordination between top managers. In this case, acquirers replace the target's top managers shortly after the acquisition to prevent such inefficiencies. The results support that diversity in industrial background, as a form of variety, increases the probability of turnover, however we did not capture similar effect on education background as another form of variety. Such difference between the results of the two variety constructs confirms the argument presented by Bell et al. (2011) and Harrison & Klein (2007), that conceptualization of diversities of all task related attributes into a unified diversity index, does not give proper insight to the researchers. As the attributes are independent from one another, their diversity at team level has independent and somewhat different effect. One possible explanation for not finding expected effect for education background on turnover can be related to the diminishing effect of time on education background, especially considering the fact that the average age of top managers in our sample is 45. Notably Bell et al. (2011) in their meta-analysis failed to find strong positive effect of variety in education background as a surrogate of knowledge background on team performance, and the paper also provided similar argument that the team members are years away from the time that they completed their education. This explanation is also in line with the notion of the importance of dynamism in organizational demography, suggested by Lawrence (1997) that some of the easily measurable attributes may not be as influential as it appears when considering its effect over time.

Additionally, the fact that the acquirers and the targets are not related based on common industry standard code (NACE code); the results are robust to any redundancy argument for the top managers' turnover in post-acquisition period. Another issue to stress is related to voluntary and involuntary leave of top managers. We believe bringing the team dynamics and diversity to top managers' turnover at individual level is robust to involuntary as well as voluntary leave. Assuming involuntary leave of top managers, the social conflicts, separation, and disparity resulted from ex-ante diversity increase the dissatisfaction of the top managers and they decide to leave shortly after the acquisition. In the similar vein, the effect of acquisition as a trigger for coordination flux is exacerbated when variety among top managers is higher. Inefficiency of prior routines increases the acrimonious climate and lack of support for

handling emotional conflicts and cognitive dissonance resulted from variety in their background in the team. This increases the inefficiencies and voluntary departure of some top managers.

The main conclusion of this paper is that ex-ante diversity in the pre-acquisition TMT directly determines the target's managerial turnover in post-acquisition. The team view brings a fresh perspective to the literature on post-acquisition managerial turnover and acquisition implementation literature, in that it gives an alternative explanation over the rationale behind the turnover. Previous studies on acquisition implementation argue that the target's top managers can be valuable for the acquirer's efforts to minimize the negative effect of organizational disruptions exerted to the target while acting as coordinators between the target and the rest of the acquirer's organization. This paper suggests that the composition of the TMT determines the extent to which it can provide such coordination capacity. Driven by a combination of acquirer and TMT member preferences, diversity thus increases the likelihood of managerial turnover in post-acquisition periods.

Our findings resonates with studies such as Cloudt et al (2006), Parunchuri et al (2006), and Kapoor & Lim (2007) that questioned why acquirers go to great length in choosing disruptive implementation strategies such as organizational integration that lower inventors 'productivity, R&D outputs and future innovations in the acquired units. In addition, our findings explain why although studies such as Graebner (2004), Graebner et al (2010), and Ranft & Lord (2002) suggested the opportunity of exploiting coordinating capacity present in retention of targets' top managers for the acquirers, in practice acquirers choose not to rely on such coordinating capacity.

Another inference from our results is that the acquirer does not compromise transferring the knowledge already existed in the target over the potential knowledge created in future even in high-tech and knowledge intensive acquisitions. Even though diversity in the form of variety supports creativity, knowledge development and innovation based on information process view, it reduces coordination efficiency to transfer the knowledge already created in the target. This insight also explains why managerial turnover in acquisition of high-tech and

knowledge intensive firms are still higher than normal regardless of the human capital embedded in managerial resources. Accordingly, this paper provides complementary explanation to the studies such as Bergh (2001), Buchholtz et al (2003), and Wulf & Singh (2011), which linked human capital to turnover. The paper also provides a new antecedent of target's managerial turnover, which is ex-ante organizational structure of the target before the acquisition. We found that targets with decentralized structure (for instance matrix organizations) face with higher managerial turnover. Empirically we confirmed the proposition presented by Argyres (1995) and more recently Ricardo et al (2008), who suggested that centralized organizational forms are more suitable for technology development as this organizational form facilitates knowledge transfer via centralized coordinating mechanisms. This argument also validates a recent observation reported by Guadalupe et al (2013) that in the last two decades, US large firms have shifted from decentralized to centralized forms. If our argument is correct, we expect to see more centralized organizational form for the targets in post-acquisition rather than just replacing top managers. In other words, the acquirers reduce TMT's size of the targets (lay-offs) rather than substitute them. For the future studies, it would be interesting to validate this argument.

This paper also contributes to the literature of TMT's diversity. The first contribution is to the environmental contingency studies by showing that acquisition has disruptive effects on the organizations. We argued that the changes in the norms, values and routines in the organization, and consequently in the TMT, clearly activate the diversity in the form of separation. Our finding is in line with the theory of faultline proposed by Lau & Murnighan (1998). Prior empirical studies such as Li & Hambrick (2005) and Pearsall et al (2008) focused on activation of faultline when the team is forming. This study complements them by showing that faultline can be activated also when roles, routines and to some extent goals of the team change even though the team has performed for a long period. In addition, prior studies on faultline mainly focused on visible demographic characteristics (such as age, gender, and race). Our finding on managerial position diversity is a response to a call by Bell et al (2011), Hutzschenreuter & Horstkotte (2013), and Rico et al (2007) to investigate on the diversity faultline of

task related characteristics. Here, we focused on the ex-ante diversity of the target's TMT, and the diversity faultline for the target; however acquisition has a disruptive effect on the acquirer's organization as well, though it is less pronounced than the target. In future studies, it would be interesting to investigate on how and to what extent acquisition also activates the diversity faultline inside the acquirer's TMT. In addition, in mergers of equals that both the acquirer and target are relatively equal in terms of size, sales and market power (Wulf , 2004), it is more likely that both TMTs merge together and form a new TMT. The conflict, social categorization, rivalry across the former teams also suggests a fruitful for area for future scholars interested in studying the effect of diversity in team formations and performance.

Another interesting insight from the result is the importance of acquisition as an environmental contingency; it is to the extent that although variety is beneficial intrinsically to the team's decision making effectiveness based on the information process view, it can be harmful when the environment changes. From this standpoint, this paper complements prior studies such as Mihalache et al (2013) and Van der Vegt & Bunderson (2005) reporting that diversity in the form of variety harms decision making efficiency and coordination especially in the contexts that they are more important than creativity. The last contribution of this paper is to the tournament theory by showing its limitation of applicability. When circumstances change (here because of acquisition) the benefits of tournament vanishes while the rivalry and the dissatisfaction among players lingers. But acquisition also defines a new tournament for the target's top managers; it is surviving the acquisition or joining the acquirer's TMT. For the future, it is interesting to study the antecedents of the decision of the target's top managers to enter the new tournament.

Other than theoretical contribution, we believe our results have some practical implications. As suggested by the title, acquirers should be vigilant with target selection and due diligence during scouting period. Acquirers usually pay attention to potential synergies, firm value, and technological artefact (patents, prototypes, and products) in case of acquisition of high-tech or knowledge intensive firms before making any deal, however they overestimate the potential problems caused by organizational fit and structure of the targets after the deal. This paper

suggests to the acquirers to evaluate top management structure and composition of the potential targets, otherwise acquirers face high implementation costs in post-acquisition. In particular based on the findings, diversity in target's TMT increases the coordination inefficiencies, which results in managerial substitutions and replacements which are costly in short and long term; the short term costs of implementation, and the long-term opportunity costs of departing human capital, lower productivity, and acquisition failure.

On a final note, this paper shows the interrelation of three streams of literature, managerial turnover, acquisition implementation, and team diversity; their intersection and interconnections. We believe there is significant potential for future studies interested in any of the mentioned streams to benefit from cross fertilization with the other two streams.

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Table 1: Descriptive statistics and pairwise correlation matrix

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>1. Turnover</b>	0.52	0.50	1														
<b>2. Managerial status diversity</b>	0.24	0.23	0.05	1													
<b>3. Pay dispersion</b>	0.37	0.16	0.11	-0.05	1												
<b>4. Education background diversity</b>	0.52	0.19	0.06	0.09	0.31	1											
<b>5. Industrial tenure diversity</b>	0.01	0.01	0.18	0.02	0.16	0.11	1										
<b>6. Male</b>	0.78	0.42	-0.03	-0.01	-0.05	-0.08	0.04	1									
<b>7. Age</b>	45.30	9.38	-0.01	-0.03	-0.03	-0.02	-0.08	0.16	1								
<b>8. Age2</b>	2139.81	867.54	0.01	-0.02	-0.02	-0.01	-0.08	0.15	0.99	1							
<b>9. Education level</b>	1.70	1.98	0.03	-0.17	-0.05	-0.05	-0.01	-0.05	-0.1	-0.11	1						
<b>10. Salary</b>	0.06	0.05	0.05	-0.15	0.23	0.04	0.02	0.2	0.12	0.1	0.24	1					
<b>11. Managerial experience</b>	0.20	0.52	0.03	0.02	0.09	0.08	-0.1	0.03	0.13	0.13	0.03	0.1	1				
<b>12. Gender diversity</b>	0.32	0.20	0.08	-0.05	0.16	0.34	0.07	0.32	-0.13	-0.13	0.08	-0.03	0.05	1			
<b>13. Team size (log)</b>	2.12	0.50	-0.14	0.07	0.11	0.11	-0.08	0.08	0.03	0.03	0.02	0.07	0	0.01	1		
<b>14. Relative size (log)</b>	-0.92	2.12	0.14	0.12	0.07	0.16	0.16	-0.02	-0.09	-0.08	-0.09	-0.11	-0.1	0.13	0.14	1	
<b>15. Distance</b>	0.45	0.50	-0.04	-0.12	0.15	0.02	-0.01	0.02	-0.04	-0.05	0.1	0.17	0.03	0.07	0.04	-0.11	1

Correlations above 0.05 are significant at  $P < 0.1$



Table 2: Estimations of mixed random effect logit

<b>VARIABLES</b>	<b>Model I</b>	<b>Model II</b>
Managerial status diversity		0.639***
		-0.327
Pay dispersion		1.298**
		-0.512
Education background diversity		-0.176
		-0.403
Industrial tenure diversity		74.540***
		-17.148
Male	-0.011	-0.033
	-0.117	-0.136
Age	-0.226***	-0.226***
	-0.045	-0.053
Age <sup>2</sup>	0.003***	0.003***
	-0.001	-0.001
Education level	0.036	0.058**

	-0.024	-0.028
Salary (10 million SEK)	2.96 <sup>***</sup>	2.550 <sup>*</sup>
	-1.133	-0.134
Managerial experience	0.149 <sup>*</sup>	0.250 <sup>**</sup>
	-0.088	-0.12
Gender diversity	0.569 <sup>**</sup>	0.547
	-0.24	-0.392
Team size (log)	-0.700 <sup>***</sup>	-0.814 <sup>***</sup>
	-0.092	-0.156
Relative size (log)	0.157 <sup>***</sup>	0.165 <sup>***</sup>
	-0.023	-0.038
Distance	-0.144	-0.232
	-0.092	-0.153
Constant	6.267 <sup>***</sup>	5.447
	-1.018	-1.262
<hr/>		
Observations	2164	2164
Log likelihood	-1423.2	-1345.6
DF	10	14
Chi2	148.64 <sup>***</sup>	108.33 <sup>***</sup>
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Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3: Estimations mixed random effect logit for turnover in the first year and the second year after the acquisition

<b>VARIABLES</b>	<b>Model III</b>	<b>Model IV</b>
Managerial status diversity	0.412	0.604***
	-0.344	-0.321
Pay dispersion	1.864***	1.938***
	-0.535	-0.501
Education background diversity	-0.151	0.061
	-0.443	-0.42
Industrial tenure diversity	56.639***	60.605***
	-18.503	-17.022
Male	0.052	-0.047
	-0.145	-0.136
Age	-0.135**	-0.166**
	-0.054	-0.051
Age <sup>2</sup>	0.002***	0.002***

	-0.001	-0.001
Education level	0.067**	0.062**
	-0.03	-0.028
Salary (10 Million SEK)	2.646*	2.695*
	-1.364	-1.322
Managerial experience	0.281**	0.367***
	-0.127	-0.118
Gender diversity	0.153	0.372
	-0.409	-0.383
Team size (log)	-0.577***	-0.711***
	-0.167	-0.155
Relative size (log)	0.195***	0.181***
	-0.039	-0.037
Distance	-0.142	-0.330**
	-0.165	-0.151
Constant	1.62	3.204***
	-1.3	-1.23
Observations	2164	2164
Log likelihood	-1212.3	-1327
DF	14	14

Chi2	82.9	110.66
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Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1